

San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report



A Collaborative Effort of:

City of Chula Vista
City of Coronado
City of Imperial Beach
City of La Mesa
City of Lemon Grove
City of National City
City of San Diego
County of San Diego
Port of San Diego
San Diego County Regional Airport Authority

January 31, 2011

STATEMENT OF CERTIFICATION

San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report

I certify under penalty of law that the San Diego Bay Watershed Urban Runoff Management Program Annual Report for 2009-2010 was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



DAVID MERK
Director
Environmental Services
San Diego Unified Port District

***San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report
Statement of Certification***

Signed certification statements for the participating San Diego Bay Copermitttees are located in Appendix A of this report.

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Acknowledgements

The development and production of this Watershed Urban Runoff Management Program Document for the San Diego Bay Watershed Management Area (San Diego Bay WMA) are the result of the talents and experience of numerous individuals. Their contributions and insight made this document a collective success for the environment and for the watersheds. The primary authors of the text include:

Stephanie Bauer	<i>Port of San Diego</i>
Phil Gibbons	<i>Port of San Diego</i>
Stephanie Bracci	<i>City of San Diego</i>
Marisa Fontanoz	<i>City of Chula Vista</i>
Sara Dadkhah	<i>D-Max Engineering for National City</i>
Chris Helmer	<i>City of Imperial Beach</i>
Annie Martin	<i>San Diego County Regional Airport Authority</i>
Joe Kuhn	<i>City of La Mesa</i>
Tracy Cline	<i>County of San Diego</i>

Others that provided comment and guidance to the development of this document include:

Karen Holman	<i>Port of San Diego</i>
John Quenzer	<i>D-Max Engineering for National City</i>

The San Diego Bay Copermittees were represented by:

Stephanie Bauer	<i>Port of San Diego</i>
Marisa Fontanoz	<i>City of Chula Vista</i>
Kirk Duhala	<i>City of Coronado</i>
Chris Helmer	<i>City of Imperial Beach</i>
Joe Kuhn	<i>City of La Mesa</i>
Cora Long	<i>City of Lemon Grove</i>
Din Daneshfar	<i>City of National City</i>
Stephanie Bracci	<i>City of San Diego</i>
Tracy Cline	<i>County of San Diego</i>
Annie Martin	<i>San Diego County Regional Airport Authority</i>

The San Diego Bay Copermittees also wish to recognize the public for their continued expressed concern for the protection and conservation of the San Diego Bay WMAs environmental resources.

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ACRONYMS AND ABBREVIATIONS

303(d)	Section of the Clean Water Act
BLTEA	Baseline Long-Term Effectiveness Assessment
BMP	Best Management Practices
BOD	Biologic Oxygen Demand
BWE	Baseline Watershed Evaluation
CALTRANS	California Transportation Department
CBI	Clean Beach Initiative
CBSM	Community Based Social Marketing
CCC	California Coastal Commission
CMC	Criterion Maximum Concentration
COD	Chemical Oxygen Demand
Copermittees	The 18 cities: San Diego County, the County of San Diego, the Port of San Diego, and the San Diego County Regional Airport Authority
CRAM	California Rapid Assessment Method
CSDM	Coastal Storm Drain Monitoring
CWA	Clean Water Act
DDT	Dichlorodiphenyl trichloroethane
DPR	Department of Pesticide Regulation
DWM	Dry Weather Monitoring
EIS	Environmental Impact Assessment
EPA	Environmental Protection Agency
FOG	Fats, Oils, and Grease Program
FY	Fiscal Year
HHW	Household Hazardous Waste
HA	Hydrologic Area
HCH	Hexachlorocyclohexane
HOA	Homeowners Association
HPWQP	High Priority Water Quality Problem
HSA	Hydrologic Sub-Area
HU	Hydrologic Unit
IBI	Index of Biological Integrity
IC/ID	Illicit Connection / Illicit Discharge
ILACSD	I Love A Clean San Diego
IPM	Integrated Pest Management
JURMP	Jurisdictional Urban Runoff Management Program
LTEA	Long-Term Evaluation Assessment
MBAS	Methylene Blue Active Substances
MLS	Mass Loading Station
MS4	Municipal Separate Storm Sewer System
MSCP	Multiple Species Conservation Program
Municipal Permit or Permit	San Diego Regional Water Quality Control Board Order 2007-0001
NOV	Notice of Violation
NPDES	National Pollution Discharge Elimination System

**San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report
Acronyms and Abbreviations**

OAL	Office of Administrative Law
ORCA	Online Research Coastal Academy
ORWMP	Otay River Watershed Management Plan
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PCW	Project Clean Water
PSA	Public Service Announcement
RGP	Regional General Permit
RFI	Request For Proposal
RHMP	Regional Harbor Monitoring Program
RURMP	Regional Urban Runoff Management Plan
RWQCB	Regional Water Quality Control Board
SAMP	Special Area Management Plan
San Diego Bay Copermittees	The County of San Diego, the Port of San Diego, and the Cities of Chula Vista, Coronado, Imperial Beach, La Mesa, National City, San Diego, and Airport Authority
SCCWRP	Southern California Coastal Water Research Project
SDA	Special Drainage Area
SDAPCD	San Diego Air Pollution Control District
SDB	San Diego Bay
SDCRAA	San Diego County Regional Airport Authority (Airport Authority)
SDRWQCB	San Diego Regional Water Quality Control Board
SIO	Scripps Institute of Oceanography
SIYB	Shelter Island Yacht Basin
SMC	Stormwater Monitoring Coalition
SSO	Site Specific Objective
SUSMP	Standard Urban Stormwater Management Plan
SWAMP	Surface Water Ambient Monitoring Program
SWELL	Stewardship Watershed Education for Lifelong Leadership
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SWQMP	Stormwater Quality Master Plans
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
TWAS	Temporary Watershed Assessment Station
UCCE	University of California Cooperative Extension
URMP	Urban Runoff Management Program
WER	Water Effects Ratio
WLA	Waste Load Allocation
WMA	Watershed Management Area
WQO	Water Quality Objective
WURMP	Watershed Urban Runoff Management Program

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Executive Summary

Since January 2002, the County of San Diego, Port of San Diego, the San Diego County Regional Airport Authority (Airport Authority), and the cities of Chula Vista, Coronado, Imperial Beach, La Mesa, Lemon Grove, National City, and San Diego (San Diego Bay Copermittees) have been active in developing and implementing watershed-based programs in the San Diego Bay Watershed Management Area (WMA). This Annual Report represents the San Diego Bay Copermittees' efforts during Fiscal Year (FY) 2009-10 to meet the requirements of Section E of the Municipal Storm Water Permit Order Number 2007-0001 (Municipal Permit or Permit) and develop and implement the San Diego Bay Watershed Urban Runoff Management Program (WURMP).

The San Diego Bay Copermittees continue to improve watershed efforts in the San Diego Bay WMA, using innovative methods and new tools as they become available. The overarching goal for the San Diego Bay WURMP is to cooperatively and through collaborative strategic planning decrease the potential sources and reduce the discharge of pollutants from the Municipal Separate Storm Sewer System (MS4) that have been identified as causing high priority water quality problems. Using the Watershed Strategy developed in the 2008 San Diego Bay WURMP document for guidance, each Copermittee individually selected activities that were feasible to institute in their jurisdiction, and were appropriate for its relative contribution to the watershed's high priority water quality problems.

During this reporting period, the San Diego Bay Copermittees continued improvements on the water quality assessment for the San Diego Bay WMA as the result of additional monitoring efforts. The FY 2009-10 WURMP program assessment involved: 1) the evaluation of individual activities, 2) a comprehensive assessment at the hydrologic area (HA) level, and 3) a comprehensive assessment at the watershed level. An integrated assessment of activity effectiveness within each HA was conducted to determine the collective impact of the activities on the targeted high priority pollutants and/or pollutant sources. This evaluation revealed where Copermittee efforts were successful in addressing the high priority water quality problems and whether the activities were or were not effectively targeting identified pollutant sources in each HA.

The San Diego Bay Copermittees successfully completed the watershed-based requirements of the Municipal Permit and provided many opportunities for public participation and stakeholder input. The San Diego Bay Copermittees have worked to identify, implement, and assess watershed water quality, education, and public participation activities, as well as land use planning watershed-based mechanisms targeting high priority water quality problems and their sources. Assessment of individual activities indicated 13 of 17 water quality activities and nine of 13 educational activities met their assessment targets and were considered to be effective. The San Diego Bay Copermittees implemented seven trash and debris related water quality

activities focused on reducing the amount of trash entering the MS4. Five activities focused on implementing enhanced inspections to abate sources of high priority water quality problems associated with construction activities, large special events, or automotive facilities. In the effort to fill data gaps and improve the characterization of urban runoff and receiving water quality, the Copermittees implemented ten Monitoring/Source Identification activities. Data resulting from the monitoring activities will also enable the Copermittees to make more informed decisions on the best management practice (BMP) implementation that targets the high priority pollutants in the future. Copermittees implemented 13 education activities to supplement the educational activities occurring within the San Diego Bay WMA as part of the San Diego Bay Education Program which incorporates education activities implemented through existing Jurisdictional Urban Runoff Management Programs (JURMP), Regional Urban Runoff Management Programs (RURMP), or other Storm Water Programs. The Copermittees' assessments of the individual activities indicate nearly all the watershed activities were able to achieve the stated goals and were effective in obtaining outcome targets.

Pueblo Hydrologic Unit (908)

The Pueblo San Diego Hydrologic Unit (HU) is the smallest and most heavily urbanized of the three San Diego Bay HUs. Pueblo San Diego HU is comprised of the Point Loma (908.1), San Diego Mesa (908.2), and National City (908.3) HAs. Table ES-1 presents a comparison between baseline high priority water quality problems (HPWQPs) identified in the San Diego Bay WURMP Document for the Pueblo San Diego HU to the 2009-2010 monitoring results. HPWQPs were determined using data from only the San Diego County regional monitoring programs. Additional studies conducted by the San Diego Bay Copermittees were not used in the determination of priority constituents; however, results of these monitoring programs were used to either support or oppose baseline conditions as applicable. Data associated with monitoring efforts for Chollas Creek Diazinon and Dissolved Metals Total Maximum Daily Loads (TMDL) were also incorporated into the assessment of receiving water quality conditions.

During the 2009-2010 monitoring year, the HPWQPs in Pueblo San Diego HU were generally similar to previous years and correspond to the HPWQPs identified in the WURMP Document. There appear to be links between receiving water and urban runoff water quality results which may indicate a relationship between MS4 effluent and receiving water quality. However, it is unclear what effect MS4 effluent is having on receiving water quality compared to other sources, such as aerial deposition. Receiving water quality within Pueblo San Diego was primarily assessed in Chollas Creek (908.2 HA) which flows during storm events. Observed flow during ambient conditions within the creek is an indication of urban activities. The results of monitoring regarding pesticides remained similar to past reporting periods, with Diazinon and Malathion concentrations detected below the acute benchmarks, though synthetic pyrethroids have been identified as pollutants of concern.

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Table ES-1. Comparison of Pueblo San Diego HU 2009-2010 Monitoring Results and HPWQPs.

HA	Pollutant	2009-2010 Reporting Period			
		Wet Weather		Ambient Weather	
		RW	UR	RW	UR
908.1	Bacteria				Y
	Gross Pollutants				N
	Metals*		N		N
	Oil and Grease				N
	Pesticides				N
908.2	Bacteria	Y	N	Ym	Y
	Metals	Y		N	N
	Sediment	Y	N	N	N
	Trash				N
	Pesticides**	Y	Y	Y	Y
908.3	Bacteria		N		Y
	Sediment		Y		N
	Trash				N

Notes:

RW= Receiving Water; UR= Urban Runoff

Y = Monitoring results consistent with high priority rating; Ym= Monitoring results indicate a medium priority rating

N= Monitoring results do not indicate a high priority

■ Shading indicates no data from 2009-2010 reporting period

*Source of metals is likely due to anti-fouling boat hull paint located in San Diego Bay¹³

** Organophosphate pesticides detected infrequently

Copermittees were successful in implementing activities addressing the high priority water quality problems and reducing pollutant loads. In addition, the activities were also effective in targeting a variety of pollutant sources in this HU. Fourteen water quality activities in this HU resulted in source abatement or load reductions for bacteria, metals, sediment, and trash. In addition to education activities implemented through the JURMP and RURMP, Copermittees implemented eight educational activities as part of the WURMP to address the high priority pollutants. Ten additional monitoring studies were conducted in this HU during this reporting period that provided additional monitoring and source identification information.

The Copermittees, and other Named Dischargers, assessed the effectiveness of the BMP implementation plans for three adopted TMDLs: Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL (908.1 HA) and Chollas Creek Diazinon and Dissolved Metals TMDLs (908.2 HA). The SIYB Dissolved Copper TMDL Implementation and Monitoring Plan was in development during this reporting period. Named dischargers included the Port of San Diego, City of San Diego, marinas owners/operators, yacht clubs, and hull cleaners. During FY 2009-10, the named dischargers were involved in the development of the Implementation Plan, studies to identify non-copper alternative hull coatings, and monitoring activities to assess urban runoff water quality within the SIYB. Based on the monitoring results from the Chollas Creek Diazinon TMDL, the Chollas Creek Dischargers' efforts to address Diazinon through education and outreach programs are adequate for meeting the goals of the TMDL. During this reporting period, the Chollas Creek Dissolved Metals TMDL dischargers collaborated and completed the TMDL Implementation Plan. The Implementation Plan was submitted on October 21, 2009.

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The named dischargers, including the US Navy and Caltrans, identified and reported on 47 water quality, education, and on-going agency-wide activities which were or will be implemented as part of their comprehensive Storm Water Programs to collectively help meet TMDL requirements.

Sweetwater Hydrologic Unit (909)

The Sweetwater HU is the largest of the three HUs within the San Diego Bay WMA. This HU is comprised of the Lower Sweetwater (909.1), Middle Sweetwater (909.2), and Upper Sweetwater (909.3) HAs. Table ES-2 presents a comparison between the baseline HPWQPs identified in the San Diego Bay WURMP Document for the Sweetwater HU to the 2009-2010 monitoring results.

Table ES-2. Comparison of Sweetwater HU 2009-2010 Monitoring Results and HPWQPs.

HA	Pollutant	2009-2010 Reporting Period			
		Wet Weather		Ambient Weather	
		RW	UR	RW	UR
909.1	Bacteria	Ym	Y	Ym	Y
909.2	Pesticides*	Ym		N	N

Notes: RW= Receiving Water; UR= Urban Runoff

Y = Monitoring results consistent with high priority rating; Ym= Monitoring results indicate a medium priority rating

N= Monitoring results do not indicate a high priority

Shading indicates no data from the 2009-2010 reporting period

* Synthetic Pyrethroids (Bifenthrin)

There have not been any significant changes to the priority constituents of concern identified for the Sweetwater HU. Monitoring results are consistent with the priority ratings for bacteria in the Lower Sweetwater HA (909.1), but may not be supportive of the rating for pesticides in the Middle Sweetwater HA (909.2). Organophosphate pesticides including Chlorpyrifos, Malathion, and Diazinon have not been detected at the Sweetwater Mass Loading Station (MLS) since 2003.

Copermittees implemented five activities with the goal of reducing loads or abating sources of bacteria in this HU. These activities included the development of ordinances and policies, land acquisitions, and other source abatement measures that target pollutant sources and prevent pollutant generation and release. In addition to education activities implemented through the JURMP and RURMP, Copermittees implemented 11 educational activities in this HU as part of the WURMP to address the high priority pollutants. Educational efforts focused on a variety of audiences in FY 2009-10. Efforts included the collaborative I Love a Clean San Diego (ILACSD) school presentations focused on high school age children; outreach efforts such as booths and workshops addressing pet and livestock waste; and commercial businesses were addressed through questionnaires and educating restaurant owners and operators about the importance of proper grease waste management.

Otay Hydrologic Unit (910)

The Otay HU is comprised of the Coronado (910.1), Otay Valley (910.2), and Dulzura (910.3) HAs. The Otay HU continues to have a limited amount of data available from which to assess water quality. MLS monitoring data has not been collected in the Otay HU since 2001-2002 due to insufficient flow. However, improvements to monitoring efforts continue to occur.

Table ES-3 presents a comparison between the baseline HPWQPs identified in the San Diego Bay WURMP Document for the Otay HU to the 2009-2010 monitoring results. These results, which represent bacteria results for urban runoff during ambient weather, coincide with the baseline HPWQPs rating for bacteria in both Coronado (910.1) and Otay Valley (910.2) HAs. No wet weather results were collected during this reporting period.


Table ES-3. Comparison of Otay HU 2009-2010 Monitoring Results and HPWQPs.

HA	Pollutant	2009-2010 Reporting Period			
		Wet Weather		Ambient Weather	
		RW	UR	RW	UR
910.1	Bacteria				Y
	Gross Pollutants				N
910.2	Bacteria			N	Y

Notes: RW= Receiving Water; UR= Urban Runoff

Y = Monitoring results consistent with high priority rating; Ym= Monitoring results indicate a medium priority rating

N= Monitoring results do not indicate a high priority

 Shading indicates no data from the 2009-2010 reporting period

* Wet weather receiving water bacteria data was collected in 2009-2010; however, the data did not meet QA standards due to a holding time exceedance and is thus not included in the assessment.

Similar to efforts in the other San Diego Bay HUs, Copermittees have developed ordinances and policies, acquired land, and other source abatement measures that target pollutant sources and prevent pollutant generation and release. Copermittees identified and targeted a common source of bacteria by implementing the Pet Waste Bag Program in all of the San Diego Bay WMA HAs and implemented five water quality activities with the goal of reducing loads or abating sources of bacteria. All eight of the watershed education activities implemented in this HU effectively targeted bacteria and focused on a variety of audiences either through activities such as public service announcements (PSA) broadcasts or targeted outreach efforts addressing specific pollutant sources such as pet waste.

Watershed Assessment

The Copermittees WURMP program implementation efforts have contributed to water quality protection and improvement in the watershed, as evidenced by data collected during this reporting period which demonstrates positive changes in knowledge, behavior, pollutant load reductions and MS4 discharge quality. Activities such as public participation at cleanup events, the general public's use of household hazardous waste (HHW) collection facilities and pet waste

bags scaled multiple levels of assessment resulting in increases in awareness, behavior changes, and load reductions. An increase in knowledge and awareness were demonstrated through various education activities throughout the WMA to a variety of audiences (Level Two). Public participation in trash cleanups and collection events also indicate behavioral change (Level Three). Through inspection activities, Copermittees were able to demonstrate positive changes in behavior (Level Three) as well as abate specific pollutant sources (Level Four). The San Diego Bay Copermittees also achieved load reductions as well as source abatement (Level Four) through various programs that either targeted the pollutants of concern or the pollutant sources. Notably, 378.5 tons of trash and debris were collected throughout the WMA during cleanup events this reporting year. San Diego Bay Copermittees also actively supported legislation to reduce copper from automotive brake pads which is expected to result in long-term reductions from this particular source. In addition, land acquisition was identified as an effective mechanism to abate pollutant sources by averting development. Assessment of trash and debris related activities such as Pet Waste Bags, Enhanced Street Sweeping, and Cleanup Events resulted in a cross-programmatic watershed analysis of the effectiveness of these programs to address particular high priority pollutants originating from a variety of sources. Also of note, the long-term downward trend of Diazinon in stormwater is a positive indication that the concentration of this pesticide will continue to decrease (Level Five).

Utilizing the effectiveness assessment and monitoring data, Copermittees will continue to identify future collaborative watershed activities to address high priority water quality problems on a WMA and HA level. To this end, Copermittees will strive to gather additional water quality data suitable for assessments, as well as research the sources of pollutants of concern and their loading potential. Continuing to identify sources and their loading potential will enable the San Diego Bay Copermittees to modify WURMP program activities and devote resources to specifically target the most troublesome sources using the most efficient BMPs.

Section 1: Introduction

The NPDES Municipal Storm Water Permit, Order No. R9-2007-0001, referred to throughout this document as the “Permit” or “Municipal Permit,” requires the Copermittees sharing the San Diego Bay Watershed Management Area (WMA) to collaborate on the development and implementation of a Watershed Urban Runoff Management Program (WURMP). Since 2002, the San Diego Bay Watershed Copermittees have worked together to successfully implement the San Diego Bay WURMP, a collaborative effort to address high priority surface water quality issues throughout the San Diego Bay WMA. On March 24, 2008, the San Diego Bay Watershed Copermittees began implementation of the current San Diego Bay WURMP. The program includes identifying and addressing high priority water quality problems in the WMA, developing and implementing activities that include pollutant load reduction and abatement (Watershed Water Quality Activities), Watershed Education Activities, as well as public participation and collaborative land use planning.

This Annual Report highlights the efforts of the San Diego Bay Watershed Copermittees, referred to throughout this document as San Diego Bay Copermittees, during this reporting period from July 1, 2009, through June 30, 2010. This Annual Report is divided into five sections as presented below.

- Section 2 This section provides an update of water quality throughout the WMA, identifies high priority water quality problems in each hydrologic area (HA), and provides information about potential pollutant sources causing these problems.

- Section 3 This section describes the Watershed Water Quality and Watershed Education Activities that occurred during this reporting period, collaborative land use planning, and additional education and public participation activities that took place. This section also summarizes the TMDL-related activities implemented by named dischargers of TMDLs within the San Diego Bay WMA. Detailed information on the results and status of each Named Dischargers’ TMDL activities is located in Appendix E.

- Section 4 This section discusses WURMP effectiveness as a whole. The main goals of this section are to: 1) assess collaboration among San Diego Bay Copermittees; 2) determine whether watershed activities are focused on appropriate water quality problems; 3) assess whether targeted outcomes are being achieved; and 4) evaluate the collective impact of all WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale. This section includes an assessment of compliance with TMDLs in the San Diego Bay WMA and the effectiveness of activities implemented by the Named Dischargers.

Section 5 This section provides conclusions reached during FY 2009-10 as well as recommendations for future reporting periods.

In addition, this document functions as the primary reporting mechanism for all TMDL activities implemented for each approved TMDL in the San Diego Bay WMA. There are four approved TMDLs in the San Diego Bay WMA: Chollas Creek Diazinon TMDL, Chollas Creek Dissolved Metals TMDL, Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL, and the Baby Beach (Dana Point Harbor) and Shelter Island Shoreline Park (San Diego Bay) Indicator Bacteria TMDL. A number of the San Diego Bay Copermittees are Named Dischargers in one or more of these TMDLs. The Named Dischargers of the Chollas Creek Dissolved Metals TMDL, which include Caltrans and the United States Navy, took a holistic approach to planning, implementation, and assessment of targeted watershed activities identified in the Implementation Plan. The Implementation Plan fully integrates with existing watershed, regional, and jurisdictional programs (as well as agency-wide programs for state and federal Dischargers) under existing National Pollutant Discharge Elimination System (NPDES) permit requirements. The integration of these activities provides a comprehensive evaluation of watershed-wide efforts to address a particular TMDL. As a result, this document provides a logical platform for annual reporting of efforts to address TMDLs within the San Diego Bay WMA.

1.1 WURMP Copermittee Collaboration

WURMP development and implementation is a collaborative effort by all of the following San Diego Bay Copermittees:

- City of Chula Vista
- City of Coronado
- City of Imperial Beach
- City of La Mesa
- City of Lemon Grove
- City of National City
- City of San Diego
- County of San Diego
- Port of San Diego
- San Diego County Regional Airport Authority (Airport Authority)

The Port of San Diego is the lead Copermittee and continues to serve as both coordinator of collaborative efforts among San Diego Bay Copermittees and liaison between Copermittees and Regional Water Quality Control Board (RWQCB) staff.

The San Diego Bay Copermittees met 12 times during this reporting period. Appendix B provides a summary of the dates and general topics of discussion. The majority of the meetings focused on the implementation of the San Diego Bay WURMP.

During this reporting period, the San Diego Bay Copermittees continued to collaborate extensively on the development of the Watershed Strategy that guides WURMP activity selection. An extensive explanation of the San Diego Bay Watershed Strategy (Watershed Strategy) was presented in the San Diego Bay WURMP document. The *Water Quality Control Plan for the San Diego Basin* (SDRWQCB, 1994) defines the San Diego Bay WMA as being comprised of three watersheds, or hydrologic units (HUs). They are the Pueblo San Diego Watershed, the Sweetwater Watershed, and the Otay Watershed. These HUs are further divided into hydrologic areas (HAs). The San Diego Bay Copermittees developed a database of baseline information consisting of land use, water quality monitoring data, and other information on potential pollutant sources, and identified the high priority water quality problems on a HA level.

Collaboration on the Watershed Strategy also enabled the San Diego Bay Copermittees to identify data gaps by reviewing existing monitoring and land use data. Such data provided the basis for developing additional water quality monitoring and source identification activities such as the coordinated dry weather monitoring program being implemented by the City of San Diego, the Port of San Diego, and the Airport Authority. Section 3 provides specific detail on each program that was initiated or completed during the FY 2009-10 reporting period.

1.2 TMDL Named Dischargers Collaboration

Chollas Creek Dissolved Metals and Diazinon TMDLs

This reporting year represents the second year the Chollas Creek Dissolved Metals TMDL is in effect. It was approved by the State Board Office of Administrative Law on October 22, 2008. During the reporting period, the permitted MS4 dischargers named in the TMDL collaborated on a multi-pollutant strategy for addressing the TMDL as well as the development of the required Implementation Plan. The Implementation Plan was submitted on October 21, 2009, to the Regional Water Quality Control Board. The named dischargers include five watershed Copermittees, Cities of San Diego, La Mesa, Lemon Grove, County of San Diego, Port District, as well as the U.S. Navy and the California Department of Transportation (Caltrans). In addition to the collaborative Implementation Plan, each discharger developed their own list of activities they participated in or will participate in to address the TMDLs. Dischargers met 10 times during this reporting year: August 17, 2009, October 19, 2009, November 16, 2009, December 21, 2009, January 19, 2010, February 16, 2010, March 15, 2010, April 27, 2010, May 17, 2010, and June 21 2010. One stakeholder meeting was held on June 21, 2010. Further discussion on the efforts made by the dischargers during FY 2009-10 is provided in Sections 3.5.3 and 4.2.2.

Because the strategy for addressing this TMDL is multi-pollutant and watershed based, the reporting of activities under this TMDL incorporates those activities for the Chollas Creek

Diazinon TMDL as well. The named parties under the Diazinon TMDL include the same dischargers under the Chollas Creek Metals TMDL. Investigation Order R9-2004-0277 requires status reports of specific implementation elements. Further information on these specific elements is included in the Chollas Creek TMDL Compliance Monitoring Investigation Order R9-2004-0277 2009–2010 Water Quality Monitoring Report in Appendix C.

Shelter Island Yacht Basin Dissolved Copper TMDL

Named parties in the Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL began the process of cooperatively developing a strategy for addressing the TMDL during this reporting period. The named parties include two watershed Copermittees, the Port District and the City of San Diego, and all SIYB marinas and yacht clubs, and hull cleaners. The named parties collaborated during this reporting period to determine potential approaches for demonstrating compliance with loading reduction interim targets. The named parties met on 6 occasions during this reporting year: August 20, 2009, September 17, 2009, January 19, 2010, February 17, 2010, April 14, 2010, and June 16, 2010. One stakeholder meeting was held on October 20, 2009. Further discussion on the efforts made by the named parties is provided in Sections 3.5.3 and 4.2.2.

1.3 San Diego Bay Watershed Map Updates

There will be no San Diego Bay Watershed map updates included in the FY 2009-10 Annual Report.

Section 2: Water Quality and Pollutant Source Assessment

In accordance with Section J.3.b.2.c. of the Municipal Permit, this section provides an update of water quality throughout the San Diego Bay WMA with respect to high priority water quality problems (HPWQP) and pollutant sources. Water quality analyzed here is collected in accordance with the Receiving Waters and Urban Runoff Monitoring and Reporting Program of the Municipal Permit and is presented in the *2009-2010 San Diego County Municipal Copermittee Receiving Waters and Urban Runoff Monitoring Report* (Regional Monitoring Report). During 2009-2010, a new methodology was used for identifying priority constituents of concern presented in the Regional Monitoring Report and is described in the *Methodology for Annual and Long-Term Data Assessments for San Diego County Watershed Management Areas*, Final Draft-Version 1 (SDCRC, 2010). Where applicable, additional monitoring programs conducted by the San Diego Bay WMA Copermittees with respect to water quality and/or source identification studies are also incorporated into this analysis.

The San Diego Bay WMA consists of three major hydrologic units (HU) in the southern portion of San Diego County: Pueblo San Diego (908), Sweetwater (909), and Otay (910). Each HU varies in terms of size, population, and land use, and each has different water quality issues as a result. Each HU is therefore analyzed independently to provide a more accurate water quality assessment. Within each HU, high priority water quality problems and potential sources of pollutants are presented by hydrologic area (HA).

2.1 Water Quality Assessment

The San Diego Bay Copermittees identified HPWQPs in the San Diego Bay WURMP Document. In accordance with Municipal Permit requirements, monitoring data collected during each reporting period is compared to the established HPWQPs within the San Diego Bay WURMP Document for assessment purposes. A longer term assessment based on a larger five-year dataset is conducted as part of the Long-Term Evaluation Assessment (LTEA). The Baseline LTEA was created in 2005. LTEA ratings are anticipated to be revised based on data collected from 2005 – 2010 during 2011.

The San Diego Bay WURMP Document is structured to analyze receiving water and urban runoff quality to answer the five Core Management Questions presented in Section I.B of the Receiving Waters and Urban Runoff Monitoring and Reporting Program of the Municipal Permit:

- 1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?*
- 2. What is the extent and magnitude of the current or potential receiving water problems?*

3. *What is the relative urban runoff contribution to the receiving water problem(s)?*
4. *What are the sources of urban runoff that contribute to receiving water problem(s)?*
5. *Are conditions in receiving waters getting better or worse?*

Results of annual monitoring are analyzed to appropriately answer the questions. Answers to the Core Management Questions are presented within each HU's summary.

2.1.1 High Priority Water Quality Problems

The San Diego Bay WURMP Document presented a Baseline Watershed Evaluation (BWE) which utilized the Baseline LTEA water quality ratings, monitoring data, and source information to identify HPWQPs. Table 2-1 presents the HPWQPs by HA within the San Diego Bay WMA.

Table 2-1. San Diego Bay Baseline High Priority Water Quality Problems.

HA	Pollutant Categories						
	Bacteria	Gross Pollutants	Metals	Oil and Grease	Pesticides	Sediment	Trash
Pueblo San Diego HU							
908.1	X	X	X	X	X		
908.2	X		X		X	X	X
908.3	X					X	X
Sweetwater HU							
909.1	X						
909.2					X		
909.3							
Otay HU							
910.1	X	X					
910.2	X						
910.3							

Annual water quality assessments are evaluated in light of established HPWQPs to track improvements associated with watershed activities or determine increasing trends of pollutants which require specific management actions. When the revised LTEA becomes available, the information will be analyzed in conjunction with updated 303(d) listings, monitoring data and source information to reassess the watershed's HPWQPs.

2.1.2 303(d) Listings

Water bodies in the San Diego Bay WMA and constituents that have been placed on the State Water Resources Control Board (SWRCB) 2006 Section 303(d) list are presented in Table 2-2.

The table includes the water bodies having an adopted Total Maximum Daily Load (TMDL) or for which a TMDL is in development.

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Table 2-2. San Diego Bay WMA SWRCB 2006 Section 303(d) Listed Water Bodies and TMDL Status.

Water Body	HSA	Pollutant/Stressor	TMDL Status
Pueblo San Diego HU			
San Diego Bay Shoreline, near Sub-Base	908.10	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, Shelter Island Shoreline Park	908.10	Indicator bacteria	TMDL Adopted
San Diego Bay Shoreline, at Harbor Island (West Basin)	908.10	Copper	Not developed
Shelter Island Yacht Basin	908.10	Copper	TMDL adopted
San Diego Bay Shoreline, G Street Pier	908.21	Indicator bacteria	In development
San Diego Bay Shoreline, near Switzer Creek	908.21	Chlordane, Lindane/ Hexachlorocyclohexane, and PAHs	In development
San Diego Bay Shoreline, vicinity of B Street and Broadway Piers	908.21	Indicator bacteria, benthic community effects, and sediment toxicity	In development
San Diego Bay Shoreline, Downtown Anchorage	908.21	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, at Harbor Island (East Basin)	908.21	Copper	Not developed
San Diego Bay Shoreline, at Marriott Marina	908.21	Copper	Not developed
San Diego Bay Shoreline, at America's Cup Harbor	908.21	Copper	Not developed
Chollas Creek	908.22	Diazinon, indicator bacteria, and dissolved copper, lead, and zinc	TMDLs adopted*
Chollas Creek	908.22	Indicator Bacteria	In development
San Diego Bay Shoreline, near Chollas Creek	908.22	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, 32 nd Street Naval Station	908.22	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, between Sampson Street and 28 th Street	908.22	Copper, mercury, PAHs, PCBs, and zinc	In development
San Diego Bay Shoreline, Near Coronado Bridge	908.22	Benthic community effects and sediment toxicity	Not developed
San Diego Bay Shoreline, Seventh Street Channel	908.31	Benthic community effects and sediment toxicity	In development
San Diego Bay Shoreline, north of 24 th Street Marine Terminal	908.32	Benthic community effects and sediment toxicity	Not developed
Sweetwater HU			
San Diego Bay Shoreline, at Bayside Park (J Street)	909.11	Indicator bacteria	In development
San Diego Bay Shoreline, at Chula Vista Marina	909.12	Copper	Not developed
Sweetwater Reservoir	909.21	Dissolved oxygen	Not developed
Loveland Reservoir	909.31	Aluminum, manganese, and dissolved oxygen	Not developed
Otay HU			
Pacific Ocean Shoreline, Imperial Beach Pier	910.10	PCBs	Not developed
San Diego Bay	910.10	PCBs	Not developed
San Diego Bay Shoreline, at Coronado Cays	910.10	Copper	Not developed
San Diego Bay Shoreline, at Glorietta Bay	910.10	Copper	Not developed
Pogi Canyon Creek	910.20	DDT	Not developed
Otay Reservoir, Lower	910.31	Color, iron, manganese, nitrogen ammonia (total ammonia), and pH (high)	Not developed

HSA= Hydrologic Subarea

In November 2010, outside of the 2009-2010 reporting period, the Environmental Protection Agency (EPA) approved the State of California's 2010 Integrated Report, which includes an updated Clean Water Act Section 303(d) list of impaired waters. The updated 303(d) list will be considered in the upcoming regional LTEA and the 2010-2011 WURMP Annual Report.

2.1.3 2009-2010 Monitoring Activities

Table 2-3 provides a summary of monitoring activities conducted in the San Diego Bay WMA. As previously stated, most of the monitoring programs are conducted jointly by the San Diego County Copermittees in accordance with the Receiving Waters and Urban Runoff Monitoring and Reporting Program of the Municipal Permit. A comprehensive discussion of these monitoring programs within the San Diego Bay WMA is presented in Section 10 of the Regional Monitoring Report. Additional water quality monitoring and source identification studies which have been conducted by San Diego Bay WMA Copermittees are also presented in Table 2-3. Activity summary sheets describing additional monitoring programs noted in Table 2-3 can be found in Appendix D of this WURMP Annual Report.

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Table 2-3. 2009-2010 Monitoring Activities.

#	Program	Constituents Measured	HA						
			Pueblo			Sweetwater		Otay	
			908 .1	908 .2	908 .3	909 .1	909 .2	910 .1	910 .2
Receiving Water Quality Monitoring									
1	Mass Loading Stations (MLS) Ambient and Storm Monitoring	Chemistry, Toxicity, Bioassessment		X		X			
2	Temporary Watershed Assessment Stations (TWAS) Ambient and Storm Monitoring	Chemistry, Toxicity, Bioassessment					X		X
3	Post-Storm Event Synthetic Pyrethroid Monitoring	Grain size, Pesticides, Total Organic Carbon		X		X	X		X
4	Stormwater Monitoring Coalition (SMC) Regional Monitoring Participation	Chemistry, Toxicity, Bioassessment				X			
5	Chollas Creek TMDL Compliance Monitoring (SDB-019) †	Metals, Pesticides, Bacteria		X					
6	Chollas Creek TMDL Special Studies (Appendix C) †	Metals, Pesticides, Bacteria		X					
7	Chollas Creek Copper, Lead And Zinc Water-Effects Ratio Study (SDB-066) †	Metals		X					
Urban Runoff Monitoring									
8	Jurisdictional Dry Weather Monitoring (DWM) and Trash Assessment*	Chemistry, Metals, Bacteria, Pesticides Trash	X	X	X	X	X	X	X
9	Municipal Separate Storm Sewer (MS4) Outfall Monitoring Program	Bacteria, Metals, Chemistry, and Pesticides	X	X	X	X	X		X
10	Coastal Storm Drain Monitoring (CSDM)	Bacteria	X	X		X		X	
11	Enhanced Dry Weather Monitoring Program (SDB-020) †	Chemistry, Metals, Bacteria, Pesticides Trash		X					
12	BMP Effectiveness Monitoring Program (SDB-023) †	Metals		X					
13	Shelter Island Yacht Basin Urban Runoff Monitoring Study (SDB-053) †	Metals	X						
14	B Street/Broadway Piers, Downtown Anchorage and Mouth of Switzer Creek Characterization Study (SDB-064) †	Metals, Pesticides	X	X					
15	Chollas and Paleta Creeks Characterization Study (SDB-065) †	Metals, Pesticides		X	X				
16	Regional Source Identification Program	Chemistry, Metals, Bacteria, Pesticides	Conducted in single family residential land use drainages within the San Luis Rey and Los Peñasquitos WMAs.						

*Jurisdictional DWM exceedance frequencies were analyzed by HU, not HA, for the purposes of this report.

†Additional studies conducted by the San Diego Bay Copermitees; data from these studies is not included in the Regional Monitoring Report methodology to determine priority constituents of concern.

2.1.4 Pueblo San Diego HU

The Pueblo San Diego HU is the smallest of the three San Diego Bay HUs, and is comprised of the Point Loma, San Diego Mesa, and National City HAs. Chollas Creek, Switzer Creek, Paleta Creek, and the San Diego Bay are the major waterbodies found within the Pueblo San Diego HU.

2.1.4.1 Pueblo San Diego HU HPWQPs

Table 2-4 presents a comparison between baseline HPWQPs identified in the San Diego Bay WURMP Document for the Pueblo San Diego HU to the 2009-2010 monitoring results. HPWQPs were established using data from only the San Diego County Regional Monitoring Programs. Additional studies conducted by the San Diego Bay Copermittees were not used in the determination of priority constituents; however, results of these monitoring programs may be used to either support or oppose baseline conditions as applicable. Monitoring results are separated by wet and ambient dry weather monitoring, as well as receiving water and urban runoff monitoring programs. The monitoring program from which the constituents of concern were determined is also indicated.

Table 2-4. Comparison of Pueblo San Diego HU 2009-2010 Monitoring Results and HPWQPs.

HA	Pollutant	2009-2010 Reporting Period				Comments
		Wet Weather		Ambient Weather		
		RW	UR	RW	UR	
908.1	Bacteria				Y ^{8,9}	
	Gross Pollutants				N ^{8,9}	
	Metals		N ¹³		N ^{8,9}	Source of metals is likely due to anti-fouling boat hull paint located in San Diego Bay ¹³
	Oil and Grease				N ^{8,9}	
	Pesticides				N ^{8,9}	
908.2	Bacteria	Y ^{1,5,6}	N ⁹	Ym ¹	Y ^{8,9}	
	Metals	Y ^{1,5,6}		N ¹	N ^{8,9}	
	Sediment	Y ¹	N ⁹	N ¹	N ^{8,9}	
	Trash				N ⁸	
	Pesticides	Y ^{3,5,6}	Y ^{14,15}	Y ^{1,2}	Y ^{14,15}	Organophosphate pesticides detected infrequently ^{5,8,9}
908.3	Bacteria		N ⁹		Y ^{8,9}	
	Sediment		Y ⁹		N ^{8,9}	
	Trash				N ⁸	

Notes:

Superscript numbers correspond to monitoring activity number in Table 2-3.

RW= Receiving Water

UR= Urban Runoff

Y = Monitoring results consistent with high priority rating

Ym= Monitoring results indicate a medium priority rating

N= Monitoring results do not indicate a high priority

■ Shading indicates no data from 2009-2010 reporting period

The following constituents are not HPWQPs but were identified as potential constituents of concern based only on data from 2009-2010 monitoring programs: 908.2—high pH; 908.3—nutrients, pesticides, and metals. These constituents have been identified based on only one year of data and in some cases only one sample, so at this time it is premature to add them to the HPWQP list. Depending on results of future monitoring and the upcoming LTEA, these constituents may be added to the HPWQP list in the future.

2.1.4.2 Pueblo San Diego Core Management Questions

Table 2-5 summarizes receiving water quality and urban runoff quality data within the Pueblo San Diego HU during FY 2009-10. The table differentiates between data collected during wet and dry periods. Answers to the Core Management Questions are presented below.

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Table 2-5. 2009-2010 Pueblo San Diego Monitoring Results.

Assessment	Program*	Priority Constituents of Concern†	Toxicity Observed	Evidence of Benthic Impairment
Ambient Receiving Water	1, 3	<u>Regional Monitoring Program:</u> High: pH, <i>Enterococci</i> , Synthetic Pyrethroids <u>Additional San Diego Bay Copermittee Monitoring:</u> None	<i>C. dubia</i> reproduction, <i>S. capricornutum</i> growth	Yes
Ambient Urban Runoff	9, 14, 15	<u>Regional Monitoring Program:</u> High: Total Phosphorus, Total Nitrogen, <i>Enterococci</i> Medium: Fecal Coliform	NA	
		<u>Additional San Diego Bay Copermittee Monitoring:</u> Diss. Copper, Diss. Zinc, Synthetic Pyrethroids	NA	
Wet Weather Receiving Water	1, 4, 5, 6	<u>Regional Monitoring Program:</u> High: TSS, Turbidity, Diss. Copper, Fecal Coliform, Bifenthrin Medium: Diss. Lead, Diss. Zinc, Permethrin, MBAS, BOD, COD <u>Additional San Diego Bay Copermittee Monitoring:</u> Diss. Copper, Diss. Zinc, Synthetic Pyrethroids, Total Coliform, Fecal Coliform, and <i>Enterococci</i>	<i>H. Azteca</i> acute survival, <i>C. dubia</i> reproduction	
Wet Weather Urban Runoff	9, 13, 14, 15	<u>Regional Monitoring Program:</u> Medium: TSS <u>Additional San Diego Bay Copermittee Monitoring:</u> Diss. Copper, Diss. Zinc, Synthetic Pyrethroids	NA	

* Numbers correspond to monitoring activity number in Table 2-3

† Additional studies conducted by San Diego Bay Copermittees were not included to determine HPWQPs, however the constituents listed exceeded Water Quality Objectives.

NA = Not Assessed, Not Applicable, or Not Analyzed.

Core Management Question #1 – Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Core Management Question 1 was addressed through wet and ambient weather receiving water assessments at the Chollas Creek MLS and an upstream dry weather MLS site near 54th Street

(CC-NF@54). During wet weather, TSS, turbidity, dissolved copper, fecal coliform, and bifenthrin were identified as high priority constituents. Dissolved zinc, dissolved lead, permethrin, MBAS, BOD, and COD were identified as medium priority constituents. Nutrients and TDS were below benchmarks. During ambient conditions, chemistry constituents were primarily below ambient benchmarks with the exception of pH at the MLS (SD8(1)) during the first monitoring event. The MLS site (SD8(1)) was used as the ambient monitoring site during the first event, which occurred on January 6, 2010. This site is typically dry during non-storm events, and the site conditions (concrete channel) and ponded conditions may have influenced the pH results. This site was dry during the May 2010 ambient event, and monitoring was relocated upstream near 54th Street to coincide with bioassessment monitoring. All other chemical constituents were below the ambient benchmarks. For bacteria constituents, only *Enterococci* were identified as a high priority constituent at the upstream site CC-NF@54. There is no TDS benchmark for Chollas Creek; however, elevated TDS concentrations measured during ambient weather may have influenced the toxicity test organisms. These results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Bioassessment results from the CC-NF@54 site had an Index of Biotic Integrity (IBI) score of Very Poor. The observed to expected ratio (O/E) score also showed impaired conditions. The moderately rated physical habitat and high TDS are potential factors influencing depressed IBI scores. The bioassessment results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Toxicity was observed during ambient conditions to *C. dubia* reproduction and the freshwater algae *S. capricornutum* during the one monitoring event at CC@NF54 and the level of toxicity was slight. The CC-NF@54 site is influenced by groundwater baseflow and toxicity may be influenced by the high total dissolved solids (TDS) observed at the site. During wet weather (at the MLS), toxicity to *H. azteca* acute survival was identified as persistent. Toxicity to *H. azteca* acute survival at this site has been linked to detections of Synthetic Pyrethroids based on previously conducted toxicity identification evaluations (TIEs). Toxicity to *C. dubia* reproduction was also noted during the first storm event of the season, which occurred approximately 279 days after the last significant rainfall event.

Compliance monitoring conducted in accordance with the Chollas Creek Diazinon and Dissolved Metals TMDL (Order R9-2004-0277) occurred at two locations during three storm events within the Chollas Creek drainage area. Metals results, which are compared to the California Toxics Rule, indicated dissolved copper concentrations were greater than the chronic criteria (CCC) at site SD8(1), located in the north fork of Chollas Creek, and at site DPR2, located in the south fork of the creek, during all three monitoring events. Dissolved copper was also greater than the acute criteria (CMC) at both sites during the first two storm events. Dissolved lead was found to be above the CCC during the first and second storm events at both monitoring locations while dissolved zinc concentrations were greater than the CMC at site SD8(1) during the first two monitoring events. Diazinon and Malathion were detected during the monitoring season; however concentrations were generally low and below benchmarks. There

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was one instance of reproductive toxicity to *C. dubia* observed at SD8(1) during the first storm event. No acute or chronic survival toxicity was observed at either site during all three monitoring events.

Four special studies were conducted by the dischargers named in the Chollas Creek Diazinon and Dissolved Metals TMDL with regards to receiving water quality within the Chollas Creek drainage area. Specific details regarding each special study can be found in Appendix C of this Annual Report. A general summary of the three special studies regarding receiving water quality are presented in Table 2-6. The fourth special study focuses on urban runoff water quality and will be discussed in Section 2.2 of this Annual Report.

Table 2-6. Chollas Creek TMDL Special Studies in Receiving Waters.

Special Study	Purpose	Summary of Results
Jurisdictional Boundary Monitoring in the Upper Watershed	Evaluate and compare water quality in the north fork and south fork of Chollas Creek in the upper and lower drainages of the watershed during two wet weather storm events.	<ul style="list-style-type: none"> ▪ Diazinon and Chlorpyrifos were not detected above either acute or chronic waste load allocations ▪ Only one instance of toxicity occurred in regards to <i>C. dubia</i> reproduction ▪ Metals concentrations and exceedance ratios were higher in the north fork than in the south fork ▪ Dissolved copper had a higher detection rate and exceedance rate (compared to the acute and chronic WLAs) than lead and zinc. ▪ Dissolved lead was above the chronic WLA located in the upper watershed during the second storm event.
Synthetic Pyrethroid Assessment Monitoring	Assess Synthetic Pyrethroids in the north fork and south fork of Chollas Creek in the upper and lower drainages of the watershed during two wet weather storm events.	<ul style="list-style-type: none"> ▪ Eight of 13 Synthetic Pyrethroids pesticides were detected in both the north and south forks of Chollas Creek. ▪ Bifenthrin concentrations were greater than the acute LC50 literature values at all sites. ▪ Toxicity to <i>Hyalella azteca</i> was commonly observed
Bacteria Monitoring	Assess bacteria in the north fork and south fork of Chollas Creek in the upper and lower drainages of the watershed.	<ul style="list-style-type: none"> ▪ Fecal coliform exceeded the WLA at all sites.

Overall, the likelihood of conditions in receiving waters to be protective of beneficial uses may vary depending on wet or ambient conditions and the water body where monitoring was conducted. The results of receiving water quality monitoring indicate that Chollas Creek (908.22 HSA) may not be protective of beneficial uses during either ambient and wet weather conditions. Chollas Creek is currently listed in the Basin Plan for potential REC-1 and existing REC-2 beneficial uses as well as uses of water supportive of aquatic and terrestrial ecosystems. Indicator bacteria, including fecal coliform, have been measured above the Basin Plan benchmarks during both wet and ambient conditions indicating possible impairment of the

recreational uses in this HSA. The presence of Synthetic Pyrethroids detected in Chollas Creek storm water samples and sediments are suspected to be the primary cause of toxicity observed to freshwater invertebrates further indicating impairment of beneficial uses within the Chollas Creek.

Core Management Question #2 – What is the extent and magnitude of the current or potential receiving water problems?

Core Management Question 2 was addressed through analysis of regional monitoring data collected by the San Diego County Copermittees as well as compliance monitoring and special studies conducted by the dischargers named in the Chollas Creek Diazinon and Dissolved Metals TMDL. Data collected during the 2009–2010 Monitoring Season reflected generally understood patterns for the Chollas Creek Watershed (908.22 HSA). Dissolved copper, lead and zinc concentrations were generally greater in the north fork (SD8(1)) than in the south fork (DPR2), and were greatest during the first-flush storm event of the season. Dissolved lead concentrations were less than the acute WLA, but results above the chronic WLA were noted. Malathion and Diazinon were the only organophosphorus pesticides detected. Diazinon was below the acute and chronic WLA. Malathion was detected in both forks above the chronic benchmark during second storm event. PAHs and chlorinated pesticides were detected in similar concentrations in both forks of the creek. However, PCB congeners were only detected in the south fork (DPR2) during the February 6, 2010 monitoring event.

As mentioned above, the bioassessment score was Very Poor at site CC-NF@54 and results were similar to other sites in the San Diego Bay WMA. Similarly, O/E results suggested impaired conditions and were in general agreement with IBI score. The California Rapid Assessment Method (CRAM) score was in the moderate range.

During wet weather monitoring, there was only one instance of reproductive toxicity to *C. dubia* noted at site SD8(1). This was the first storm event following approximately 279 dry days without significant rainfall. Toxicity was observed to be a persistent wet weather concern for *H. azteca*. The sample results confirmed Synthetic Pyrethroids (bifenthrin and permethrin) were above the LC₅₀ and confirm previous TIE results conducted at the SD8(1) location. During ambient weather, the monitoring site location was moved upstream in the north fork near 54th Street due to dry conditions at the downstream location, and toxicity to *S. capricornutum* growth and *C. dubia* reproduction was observed during one event. Chemistry results yielded elevated TDS concentrations.

Core Management Question #3 – What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 was partially answered through a comparison of MS4 Outfall Monitoring Program¹ results to receiving water monitoring program results presented in Table 2-5. It should also be noted that it is not known to what extent pollutants from sources outside of the Copermittee's ability to legally control (such as, direct aerial deposition into receiving waters and Phase II dischargers) are affecting receiving water quality. During wet weather, only two wet weather MS4 outfall samples were collected within the Pueblo San Diego HU. Both sites were not located within the drainage area of the Chollas Creek MLS; therefore, a direct relationship between urban runoff and receiving water quality cannot be made. Results show that only TSS was identified as a medium priority constituent. No high priority constituents were identified. During ambient weather, MS4 results show that *Enterococci* and total phosphorus were identified as high priority constituents in the Chollas HSA. Fecal coliform and total nitrogen were identified as medium priority constituents. Dissolved metals were below the benchmarks at all locations in the Pueblo San Diego HU during ambient conditions. The CSDM program undertaken by those Copermittees located within the Pueblo San Diego HU only observed exceedances of storm drain action levels for bacteria on two occasions during dry conditions. Paired receiving water samples did not indicate exceedances of bacteria. The results of these regional monitoring programs indicates that the contribution of the MS4 to receiving water problems is likely for some constituents within specific water bodies. During dry weather, bacteria found in urban runoff may be contributing to elevated concentrations of bacteria found in receiving waters. This question may be answered with a higher level of confidence with the five year assessment required by the MS4 Outfall Monitoring Workplan.

In addition to the regional MS4 monitoring programs undertaken by the San Diego County Copermittees, the dischargers named in the Chollas Creek Diazinon and Dissolved Metals TMDL participated a special study that targeted urban runoff quality. Eighteen MS4 outfalls were monitored during first-flush wet conditions to prioritize sources of metals and TSS throughout the Chollas Creek Watershed. Results were normalized by comparing dissolved copper, lead, and zinc concentrations at each site to the mean receiving water metals concentration at the two MLS locations in Chollas Creek (SD8(1) and DPR2). Six sites throughout the watershed exhibited dissolved copper concentrations greater than 1 standard deviation of the mean. Four sites recorded dissolved zinc concentrations greater than 1 standard deviation of the mean. Two sites in the south fork of Chollas Creek had dissolved lead greater than 3 standard deviations of the mean. These results indicate that concentrations of metals found within urban runoff may contribute to receiving water quality problems within the Chollas Creek HSA.

¹ The analytes sampled in the MS4 Outfall Monitoring Program may not correspond with the analytes sampled within the receiving water monitoring programs. Therefore, in some cases, a direct relationship between the results of both monitoring programs may not be applicable.

The City of San Diego also conducted various MS4 monitoring programs to assess the connection between urban runoff and receiving water quality. The Chollas and Paleta Creeks Characterization Study (Activity Summary Sheet SDB-63) and the B Street/Broadway Piers, Downtown Anchorage and Mouth of Switzer Creek Characterization Studies (Activity Summary Sheet SDB-064) analyzed MS4 concentrations of dissolved metals and pesticides during both wet and dry conditions. Both studies revealed that ambient weather MS4 urban runoff contained concentrations of dissolved zinc and copper above the California Toxics Rule Water Quality Objectives (WQO). Both dry and wet conditions demonstrated high concentrations of Synthetic Pyrethroids (sediment and water) throughout the Chollas and Paleta Creeks study areas as well as in the B Street study area. The high concentrations of dissolved copper, zinc, and Synthetic Pyrethroids can result in toxicity to aquatic life in the receiving waters and add to receiving water loads.

Lastly, the City of San Diego conducted MS4 monitoring during wet conditions to determine loads of copper which drain to the Shelter Island Yacht Basin (SIYB) located in north San Diego Bay (Activity Summary Sheet SDB-053). Results of monitoring during FY 2009-10 indicate that dissolved copper loading from the MS4 into the SIYB account for less than 1% of the total load. The predominate source of copper loading within the SIYB emanates from copper-based boat-hull paints.

Core Management Question #4 – What are the sources of urban runoff that contribute to receiving water problems(s)?

Core Management Question #4 may be answered through those monitoring programs which provide information in regards to sources of urban runoff including the Jurisdiction DWM program, the CSDM program, and trash assessments conducted within receiving waters. A more detailed discussion of urban runoff sources can be found in each Copermittee's Jurisdictional Urban Runoff Monitoring Program (JURMP) Annual Report and in the CSDM Program Annual Report, which is found in Appendix N of the Regional Monitoring Report. A separate discussion of source identification studies which took place within the San Diego Bay WMA will be presented in Section 2.2 of this Annual Report.

Core Management Question #5 – Are conditions in receiving waters getting better or worse?

Core Management Question 5 was addressed through trend analysis of constituent concentrations from wet weather monitoring over time at the Chollas Creek MLS. Increasing trends were observed for total coliform, TKN, turbidity, total copper, total zinc, and nitrate. Decreasing trends were observed for Malathion.

Compliance monitoring conducted by the dischargers named in the Chollas Creek Diazinon and Dissolved Metals TMDL indicate significantly increasing trends for total and dissolved copper and zinc in the north fork of Chollas Creek. Significantly increasing trends are apparent for total copper and zinc in the south fork of Chollas Creek as well. Diazinon and Malathion were

detected during FY 09-10, however concentrations were low. The USEPA ban on Diazinon is noted as the primary cause for the reduction in detections of Diazinon within the watershed. Synthetic pyrethroid pesticides appear to have increased since the ban on Diazinon took place.

The bioassessment ratings at the Chollas Creek MLS have been Very Poor in nearly all assessments conducted from 2002 to 2010 and there are no apparent trends in the benthic community.

Toxicity has frequently been observed in samples collected from the Chollas Creek MLS. Between 2001 and 2010, toxicity to *C. dubia* was observed in approximately 30% of samples since 2001–2002 and toxicity to *H. azteca* was observed in 54% of samples. During the 2009–2010 Monitoring Season, toxicity to *H. azteca* survival and *C. dubia* reproduction was also observed; however no trends in the data set were apparent.

2.1.5 Sweetwater HU

The Sweetwater HU (909.00) is the largest of the three HUs within the San Diego Bay WMA. This HU is comprised of the Lower Sweetwater, Middle Sweetwater, and Upper Sweetwater HAs. The Sweetwater River, Sweetwater Reservoir, Loveland Reservoir, and San Diego Bay are the major waterbodies found within Sweetwater HU.

2.1.5.1 Sweetwater HU HPWQPs

Table 2-7 presents a comparison between baseline HPWQPs identified in the San Diego Bay WURMP Document for the Sweetwater HU to the 2009-2010 monitoring results. Monitoring results are separated by wet and ambient weather monitoring, as well as receiving water and urban runoff monitoring programs. The monitoring program from which the constituents of concern were determined is also indicated.

Table 2-7. Comparison of Sweetwater HU 2009-2010 Monitoring Results and HPWQPs.

HA	Pollutant	2009-2010 Reporting Period				Comments
		Wet Weather		Ambient Weather		
		RW	UR	RW	UR	
909.1	Bacteria	Ym ¹	Y ⁹	Ym ¹	Y ⁹	
909.2	Pesticides	Ym ³		N ²	N ⁹	Synthetic Pyrethroids (Bifenthrin) ³

Notes:

Superscript numbers correspond to monitoring activity number in Table 2-3.

RW= Receiving Water

UR= Urban Runoff

Y = Monitoring results consistent with high priority rating

Ym= Monitoring results indicate a medium priority rating

N= Monitoring results do not indicate a high priority

Shading indicates no data from the 2009-2010 reporting period

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The following constituents are not HPWQPs but were identified as potential constituents of concern based only on data from 2009-2010 monitoring programs: 909.1—metals, nutrients, sediment, total dissolved solids (TDS), and chloride; 909.2—bacteria, TDS, and nutrients. These constituents have been identified based on only one year of data and in some cases only one sample, so at this time it is premature to add them to the HPWQP list. Depending on results of future monitoring and the upcoming LTEA, these constituents may be added to the HPWQP list in the future.

2.1.5.2 Sweetwater HU Core Management Questions

Table 2-8 summarizes receiving water and urban runoff quality data within the Sweetwater HU during FY 09-10. The table differentiates between data collected during wet and dry periods. Answers to the Core Management Questions are presented below.

Table 2-8. 2009-2010 Sweetwater Monitoring Results.

Assessment	Program*	Priority Constituents of Concern†	Persistent Toxicity Observed	Evidence of Benthic Impairment
Ambient Receiving Water	1, 2, 3	<u>Regional Monitoring Program:</u> High: TDS, Chloride, <i>Enterococci</i> , Total Nitrogen (SMC Sites) Medium: Total Phosphorus, Diss. Phosphorus <u>Additional San Diego Bay Copermittee Monitoring:</u> None	<i>C. dubia</i> acute and chronic survival and reproduction, <i>S. capricornutum</i> growth	Yes
Ambient Urban Runoff	9	<u>Regional Monitoring Program:</u> High: Total Phosphorus, Total Nitrogen, TDS, <i>Enterococci</i> Medium: Fecal Coliform <u>Additional San Diego Bay Copermittee Monitoring:</u> None	NA	
Wet Weather Receiving Water	1, 2, 4	<u>Regional Monitoring Program:</u> Medium: TSS, Turbidity, Bifenthrin, TDS, Fecal Coliform <u>Additional San Diego Bay Copermittee Monitoring:</u> None	<i>C. dubia</i> reproduction, <i>S. capricornutum</i> growth	
Wet Weather Urban Runoff	9	<u>Regional Monitoring Program:</u> High: Fecal Coliform <u>Additional San Diego Bay Copermittee Monitoring:</u> None	NA	

* Numbers correspond to monitoring activity number in Table 2-3

† Additional studies conducted by San Diego Bay Copermittees were not included to determine HPWQPs, however the constituents listed support exceedances of WQO.

NA = Not assessed, Not Applicable, or Not Analyzed.

Core Management Question #1 – Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Core Management Question 1 was addressed through wet and ambient weather receiving water data. Results were evaluated at the MLS in the Lower Sweetwater HA (909.10) and the TWAS in the Middle Sweetwater HA (909.20). The MLS and TWAS are separated by the dam in the Lower Sweetwater Reservoir. During wet weather monitoring in the Lower Sweetwater HA (909.10), there were no high priority constituents identified. Medium priority constituents were identified for TSS, turbidity, bifenthrin, TDS, and fecal coliform. In the Middle Sweetwater HA (909.20), high priority constituents were identified only for fecal coliform. Medium priority constituents were identified for bifenthrin and TDS. During dry weather monitoring, TDS was identified as a high priority constituent and *enterococci* was identified as a medium priority constituent in both the Lower and Middle Sweetwater HAs. Dissolved and total phosphorus were also identified as medium priority constituents in the Lower Sweetwater HA (909.10). Ambient monitoring results at four SMC sites (all in the Lower Sweetwater HA (909.10)) identified chloride and TDS above the benchmark. Total nitrogen was above the benchmarks at the three uppermost SMC sites while total phosphorus was above the benchmarks at the two upper SMC sites. These results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Stream bioassessment results indicate evidence of benthic community impairment in the Sweetwater HU, with Very Poor IBI ratings at all sites. O/E scores also showed impaired conditions. The low ratings may be influenced by a number of factors, including poor in-stream physical habitat, and high TDS. The bioassessment results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Persistent toxicity was not observed for the Sweetwater HU during wet weather. Toxicity to the freshwater algae *S. capricornutum* was observed at both the MLS and TWAS sites during one event. Toxicity to *C. dubia* was also observed during one event at the MLS site. Both instances of toxicity occurred during the first storm event, which yielded less than a quarter inch of rain. Results were similar to the ambient monitoring event conducted in January and May and may be a function of the low gradient nature of this waterbody, the relatively low flow observed on the hydrograph, and the elevated TDS noted during the first wet weather monitoring event. Elevated TDS is a common issue throughout the San Diego Region and may contribute to observed toxicity. Several aquatic organisms (e.g., *C. dubia*) have low tolerance to elevated TDS and ion imbalance (Mount et al., 1997). Additionally, TIEs conducted previously at the MLS site for *S. capricornutum* suggested TDS as a likely contributor to the observed toxicity in 2006 (SDCRC, 2007). During ambient weather, toxicity to the freshwater algae *S. capricornutum* was identified as a persistent concern at both the MLS (Lower Sweetwater HA (909.10)) and TWAS (Middle Sweetwater HA (909.20)) sites. Toxicity to *C. dubia* was also observed to be a concern at all SMC sites and at the MLS site. At the SMC sites, toxicity was observed to the acute and chronic survival endpoints and the reproductive endpoint. The toxicity at the MLS was observed only to the reproductive endpoint and did not warrant conducting a TIE on the sample. These

results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Core Management Question #2 – What is the extent and magnitude of the current or potential receiving water problems?

Core Management Question 2 was addressed through spatial analysis of results and the frequency of the results above benchmarks. Receiving water spatial patterns in the Sweetwater HU varied by constituent. During wet weather, priority constituents that were common amongst both sites included TDS, bifenthrin, and fecal coliform. The only high priority constituent identified was fecal coliform in the Middle Sweetwater HA (909.20). Nutrients were below the benchmarks. During ambient conditions, *enterococci* was identified as a medium priority constituent in both the Lower and Middle Sweetwater HAs. Dissolved and total phosphorus were identified as medium priority constituents in the Lower Sweetwater HA (909.10). Total nitrogen was above the benchmarks at the three upper SMC sites while total phosphorus was above the benchmarks at two upper SMC sites (all in the Lower Sweetwater HA (909.10)). TDS was also identified as a high priority at all sites during ambient weather.

As mentioned above, bioassessment IBI scores were rated Very Poor at all monitoring stations in the HA. The consistent rating of Very Poor in the Lower Sweetwater HA and Middle Sweetwater HA suggests that the extent of the impairment on the benthic community is not isolated to one area.

During wet weather, toxicity was not identified as persistent and varied by site. Toxicity to the freshwater algae *S. capricornutum* was observed in both the Lower and Middle Sweetwater HAs. Toxicity to *C. dubia* was also observed in the Lower Sweetwater HA (909.10). During ambient weather, toxicity also varied by site. Toxicity was observed to *S. capricornutum* in both the Lower and Middle Sweetwater HAs. Toxicity to *C. dubia* was also observed at all sites in the Lower Sweetwater HA during ambient conditions.

Core Management Question #3 – What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 was partially answered through a comparison of the MS4 Outfall Monitoring Program results to receiving water monitoring program results presented in Table 2-8. It should also be noted that it is not known to what extent pollutants from sources outside of the Copermittee's ability to legally control (such as, direct aerial deposition into receiving waters and Phase II dischargers) are affecting receiving water quality. During wet weather monitoring, MS4 results show that fecal coliform was identified as a high priority constituent in the Lower Sweetwater HA, which corresponds with elevated concentrations of fecal coliform observed at the Sweetwater MLS. There were no wet weather urban runoff samples collected in the Middle Sweetwater HA or Upper Sweetwater HA. These results indicate that there is a possible relationship between MS4 urban runoff and receiving water quality during wet weather in the Lower Sweetwater HA.

During ambient weather monitoring, MS4 results indicate that total phosphorus, total nitrogen, TDS, and *enterococci* were identified as high priority constituents, whereas fecal coliform was identified as a medium priority constituent in the Lower Sweetwater HA. Elevated concentrations were also observed for total nitrogen, total phosphorus, and *enterococci* at the Sweetwater MLS. Total phosphorus and *enterococci* were detected above benchmarks in only one sample collected in the Middle Sweetwater HA. These results indicate that there is a possible relationship between urban runoff and receiving water quality in the Lower Sweetwater HU. This question may be answered with a higher level of confidence with the five year assessment required by the MS4 Outfall Monitoring Workplan.

Core Management Question #4 – What are the sources of urban runoff that contribute to receiving water problems(s)?

Core Management Question #4 may be answered through those monitoring programs which provide information in regards to sources of urban runoff including the Jurisdiction DWM program, the CSDM program, and trash assessments conducted within receiving waters. A more detailed discussion of urban runoff sources can be found in each Copermittee's JURMP Annual Report and in the CSDM Program Annual Report, which is found in Appendix N of the Regional Monitoring Report. A separate discussion of source identification studies which took place within the San Diego Bay WMA will be presented in Section 2.2 of this Annual Report.

Core Management Question #5 – Are conditions in receiving waters getting better or worse?

Core Management Question 5 was addressed through trend analysis of constituent concentrations from wet weather monitoring from 2001-2010 at the Sweetwater River MLS. Based on the trend analysis, total arsenic and dissolved phosphorus is increasing over time at this site, while total lead is decreasing over time.

There are no apparent trends in the benthic community. The MLS site has historically been rated Very Poor for the monitoring period since 2001. The results of the 2010 survey were also Very Poor at all locations.

Toxicity has been observed occasionally in samples collected from the Sweetwater River MLS. During the 2009-2010 Monitoring Season, toxicity to *S. capricornutum* and *C. dubia* was observed during ambient and wet weather at the MLS. Since 2001, toxicity to *C. dubia* reproduction has been identified in 38% of samples, and toxicity *S. capricornutum* growth has been observed in 43% of samples. No toxicity to *H. azteca* has been observed since 2001. No trends in the data set are apparent.

2.1.6 Otay HU

The Otay HU is comprised of the Coronado, Otay Valley, and Dulzura HAs. Upper and Lower Otay Reservoirs, Otay River, and San Diego Bay are the major waterbodies found within the Otay HU, whereas the principal aquifer in the watershed is the San Diego Formation.

2.1.6.1 Otay HU HPWQPs

Table 2-9 presents a comparison between baseline HPWQPs identified in the San Diego Bay WURMP Document for the Otay HU to the 2009-2010 monitoring results. Monitoring results are separated by wet and ambient weather monitoring, as well as receiving water and urban runoff monitoring programs. The monitoring program from which the constituents of concern were determined is also indicated.

Table 2-9. Comparison of Otay HU 2009-2010 Monitoring Results and HPWQPs.

HA	Pollutant	2009-2010 Reporting Period				Comments
		Wet Weather		Ambient Weather		
		RW	UR	RW	UR	
910.1	Bacteria				Y ^{8,9}	
	Gross Pollutants				N ⁸	
910.2	Bacteria			N ²	Y ^{8,9}	Wet weather receiving water bacteria data was collected in 2009-2010; however, the data did not meet QA standards due to a holding time exceedance and is thus not included in the assessment. ²

Notes:

Superscript numbers correspond to monitoring activity number in Table 2-3.


RW= Receiving Water

UR= Urban Runoff

Y = Monitoring results consistent with high priority rating

Ym= Monitoring results indicate a medium priority rating

N= Monitoring results do not indicate a high priority

 Shading indicates no data from the 2009-2010 reporting period

The following constituents are not HPWQPs but were identified as potential constituents of concern based only on data from 2009-2010 monitoring programs: 910.2—TDS, chromium, nutrients, and pesticides; 910.3—nutrients. These constituents have been identified based on only one year of data and in some cases only one sample, so at this time it is premature to add them to the HPWQP list. Depending on results of future monitoring and the upcoming LTEA, these constituents may be added to the HPWQP list in the future.

2.1.6.2 Otay HU Core Management Questions

Table 2-10 summarizes receiving water and urban runoff quality data within the Otay HU during FY 09-10. The table differentiates between data collected during wet and dry periods. Answers to the Core Management Questions are presented below.

Table 2-10. 2009-2010 Otay Monitoring Results.

Assessment	Program*	Priority Constituents of Concern†	Persistent Toxicity Observed	Evidence of Benthic Impairment
Ambient Receiving Water	1, 2, 3	<u>Regional Monitoring Program:</u> High: TDS, Total Phosphorus, Diss. Phosphorus, Bifenthrin <u>Additional San Diego Bay Copermittee Monitoring:</u> None	<i>S. capricornutum</i> growth	Yes
Ambient Urban Runoff	9	<u>Regional Monitoring Program:</u> High: <i>Enterococci</i> , Fecal Coliform <u>Additional San Diego Bay Copermittee Monitoring:</u> None	NA	
Wet Weather Receiving Water	1, 2, 4	<u>Regional Monitoring Program:</u> High: Bifenthrin, Medium: L-cyhalothrin, MBAS, TSS, Turbidity, Diss. Chromium, TDS, Fecal Coliform <u>Additional San Diego Bay Copermittee Monitoring:</u> None	<i>S. capricornutum</i> growth	
Wet Weather Urban Runoff	9	<u>Regional Monitoring Program:</u> None <u>Additional San Diego Bay Copermittee Monitoring:</u> None	NA	

* Numbers correspond to monitoring activity number in Table 2-3

† Additional studies conducted by San Diego Bay Copermittees were not included to determine HPWQPs, however the constituents listed support exceedances of WQO.

NA = Not assessed, Not Applicable, or Not Analyzed.

Core Management Question #1 – Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Core Management Question 1 was addressed through wet and ambient weather receiving water assessments at the TWAS monitoring site. During wet weather monitoring, bifenthrin was

identified as a high priority constituent. Medium priority constituents were identified as L-cyhalothrin, MBAS, TSS, turbidity, dissolved chromium, and TDS. During weather monitoring, high priority constituents were identified for TDS, total phosphorus, and dissolved phosphorus. These results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Bioassessment IBI scores were rated Very Poor. O/E scores also showed impaired conditions. Physical habitat scores were moderate, and combined with the high TDS, are potential factors influencing depressed biology scores. The bioassessment results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Reproductive toxicity to *C. dubia* was observed during both ambient weather monitoring events. Toxicity was also observed for the *C. dubia* acute and chronic survival endpoints during the first ambient event. The level of reproductive toxicity at the OR-TWAS-1 did not warrant conducting a TIE on the sample. Toxicity was not observed during wet weather. This suggests that conditions in receiving waters may not be protective of all assigned beneficial uses.

Core Management Question #2 – What is the extent and magnitude of the current or potential receiving water problems?

Core Management Question 2 was addressed through spatial analysis of results and the frequency of the results above benchmarks. There was only one monitoring site in the Otay HU, therefore a spatial analysis could not be completed. During wet weather, there was only one high priority constituent identified (bifenthrin). However, no toxicity was observed during either wet weather event.

The bioassessment score was rated Very Poor and is consistent with other results throughout the San Diego Bay WMA.

Core Management Question #3 – What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 was partially answered through a comparison of the MS4 Outfall Monitoring Program results to receiving water monitoring program results presented in Table 2-10. It should also be noted that it is not known to what extent pollutants from sources outside of the Copermittee's ability to legally control (such as, direct aerial deposition into receiving waters and Phase II dischargers) are affecting receiving water quality. There were no wet weather MS4 outfall samples collected in the Otay WMA. During dry weather, only one MS4 outfall was monitored. Fecal coliform and *enterococci* were identified as high priority MS4 outfall constituents within the Otay HU. There were no medium priority constituents identified. Due to the limited dataset, it is difficult to establish a relationship between urban runoff and receiving water quality conditions. This question may be answered with a higher level of confidence with the five year assessment required by the MS4 Outfall Monitoring Workplan.

Core Management Question #4 – What are the sources of urban runoff that contribute to receiving water problems(s)?

Core Management Question #4 may be answered through those monitoring programs which provide information in regards to sources of urban runoff including the Jurisdiction DWM program, the CSDM program, and trash assessments conducted within receiving waters. A more detailed discussion of urban runoff sources can be found in each Copermittee's JURMP Annual Report and in the CSDM Program Annual Report, which is found in Appendix N of the Regional Monitoring Report. A separate discussion of source identification studies which took place within the San Diego Bay WMA will be presented in Section 2.2 of this Annual Report.

Core Management Question #5 – Are conditions in receiving waters getting better or worse?

Core Management Question 5 cannot be addressed for the Otay TWAS because only one year of data is available for this site.

2.2 Pollutant Source Identification

The San Diego Bay WURMP Document Section 3.3. discusses potential sources of the baseline HPQWPs that may impact water quality throughout the San Diego Bay WMA. Since the development of the WURMP document, the San Diego Bay Watershed Copermittees have conducted additional source identification programs to help refine that information. The findings of additional pollutant source identification studies conducted during the 2009-2010 reporting period are presented below. The San Diego Bay Copermittees will continue compiling information from monitoring and source identification studies in order to effectively select and implement source appropriate activities to reduce pollutant discharges.

2.2.1 Chollas Creek TMDL Special Studies - Activity Assessment Grab Samples for Metals

The dischargers named in the Diazinon and Dissolved Metals TMDL participated in this special study to prioritize source areas of dissolved copper, lead, zinc, as well as TSS concentrations within the Chollas Creek Watershed. First-flush samples were collected from 18 municipal MS4 outfalls located in targeted land use drainage basins. Source areas determined to be the "highest" priority emanated from commercial, transportation, and residential land uses. Specific sources within these areas include runoff from automotive facilities, buildings with metals roofs, and uncovered outdoor metal storage areas. It was determined that the transportation land use contributed dissolved copper, dissolved zinc, and TSS likely associated with brake pad dust and tires. The residential area contributed a very high TSS concentration; however, metals concentrations were relatively low. High TSS observed in the residential area is most likely due to sediment erosion from vegetated areas.

2.2.2 Chollas and Paleta Creeks Characterization Study (SDB-065) and B Street/Broadway Piers, Downtown Anchorage and Mouth of Switzer Creek Characterization Study (SDB-064)

The City of San Diego conducted these studies to characterize urban runoff discharges during wet and ambient conditions. A source identification component was integrated within each study. Both studies identified that activities originating in industrial areas are significant sources of copper and zinc. In addition, Synthetic Pyrethroids were found throughout each study area. The studies concluded that private and commercial application of synthetic pyrethroid pesticides were the primary sources for this class of pollutant.

2.2.3 Regional Source Identification Program

A Regional Source Identification Program was conducted in single family residential land use drainages within the jurisdictions of the City of Oceanside and the City of Del Mar. A detailed presentation of this study is presented in Section 12 of the Regional Monitoring Report. Results suggest that single family residential land uses are likely contributors of the following constituents during wet weather events:

- Sediment (TSS, turbidity)
- Metals (Dissolved Copper) – only in Del Mar
- Pyrethroid Pesticides (Bifenthrin, Cyfluthrin, L-Cyhalothrin, Permethrin)
- Bacteria (Fecal Coliforms)

The findings of this program can be used as a metric for understanding the potential extent and magnitude of these constituents within the San Diego Bay WMA. Single family residential land uses comprise approximately 29 percent of the Pueblo San Diego HA. Both the upper portions of the Sweetwater and Otay HUs contain primarily open space and undeveloped land uses. Twelve percent and 5 percent of land uses are comprised of single family residential uses within the Sweetwater and Otay HUs, respectively. Single family residential uses are more common within the lower portions of each HU. Within the Lower Sweetwater HA, 39 percent of land uses are comprised of single family residential uses. Fifteen percent exists within the lower Otay HAs. Constituent concentrations may vary depending on a variety of characteristics found within single family residential drainage areas. Factors which should be considered when applying the metric found in the regional source identification study include: age of neighborhood, size of properties, location of other land use types, etc.

Section 3: Implementation of Watershed Activities

This Annual Report follows the standardized format developed by the San Diego Regional Copermittees to provide the necessary information required by sections E, H, I.2 and 4, and J.3.b of the Permit. Watershed Activity Implementation Summary Sheets for all watershed activities implemented during this reporting period, including activities implemented in compliance with a TMDL, are located in Appendix D of this Annual Report. The format of the activity summary template utilized by the San Diego Bay Copermittees is presented in the 2008 San Diego Bay WURMP document.

3.1 Watershed Water Quality Activities

The San Diego Bay Copermittees relied on the Watershed Strategy to guide the selection of watershed water quality activities. Each Copermittee has individually decided which activities are feasible to institute within its jurisdiction, and has selected watershed water quality activities for implementation that are appropriate for its relative contribution to the watershed's high priority water quality problems.

Table 3-1 presents the water quality activities implemented in FY 2009-10. The progress of each activity has been described in activity summary sheets, located in Appendix D. The Copermittees have identified what was accomplished during the reporting period for these activities and how the activity addresses high priority water quality problems in particular HAs. During this reporting period, the San Diego Bay Copermittees implemented seven trash and debris related water quality activities focused on reducing the amount of trash and debris entering the MS4. Five enhanced inspection activities were implemented to abate sources of high priority water quality problems associated with construction activities, large special events, or automotive facilities. Two targeted special studies were implemented during this reporting period. In addition, Copermittees implemented five other water quality activities to either abate sources or reduce loading of high priority pollutants. Five water quality activities and their associated assessment mechanisms were completed during this reporting period and will no longer be evaluated in future WURMP annual report assessments.

Copermittees named in the Chollas Creek Dissolved Metals TMDL implemented a number of watershed activities which specifically addressed the TMDL. Those watershed activities listed in the TMDL Implementation Plan are included in Table 3-1 and will be discussed further in their respective activity summary sheets. Results and updates on the water quality activities implemented by all named dischargers in the TMDL during this reporting period are located in Appendix E.

The Watershed Strategy indicates that where there are data gaps that must be filled before successful implementation of a load reduction activity can occur, monitoring and/or source identification activities are necessary. With this in mind, ten monitoring and source identification

activities were implemented during this reporting period. While the San Diego Bay Copermittees recognize that these types of activities are not considered for credit toward Permit compliance, the importance of the monitoring information to the overall success of the Watershed Strategy and the Copermittees' ability to address high priority water quality problems cannot be overlooked. Monitoring information will support future management decisions regarding the planning, implementation, and assessment of watershed activities.

The Copermittees have continued to collaborate on the reporting of four common jurisdictional water quality activities at a watershed level. These activities include: Pet Waste Bags, Storm Drain Litter Control Techniques, Enhanced Street Sweeping and Cleanup Events. This collaborative approach was utilized because these activities were identified as being beneficial in addressing high priority water quality problems and can be applied within different locations and at different scales of implementation as determined appropriate by each Copermittee. The benefit of this approach is that it allows an assessment of the activity at both the jurisdictional level as well as at a HA or watershed level.

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Section 3 – Implementation of Watershed Activities

Table 3-1. San Diego Bay WURMP Water Quality Activities in FY 2009-10.

San Diego Bay Watershed	Hydrologic Area									High Priority Pollutant Categories										
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash	
LOAD REDUCTION AND SOURCE ABATEMENT ACTIVITIES																				
Trash and Debris Related Activities																				
Pet Waste Bag Collaborative Watershed Activities (SDB-001)	X	X		X			X	X	X	•				•						
Pet Waste Bag Dispenser Program in County Parks (SDB – 001a)				X	X	X			X	•				•						
Pet Waste Bag Dispenser Program Phase II (SDB-001b) (In Planning)		X								•				•						
Storm Drain Litter Control Techniques Collaborative Watershed Activity – El Cajon Boulevard Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project (SDB-002b)* (In Planning)		X	X	X														•	•	
Enhanced Street Sweeping Collaborative Watershed Activities (SDB-003)*	X	X	X	X			X						•					•	•	
Median Sweeping Pilot Study (SDB-003a)*		X											•							
Sweeper Speed Efficiency Study (SDB-003b)* (In Planning)		X											•							
Collaborative Cleanup Events (SDB-004)*		X	X	X			X	X											•	
Clean Community Program (SDB-005)			X							•		•							•	
Chollas Creek Family Stream Team Initiative Partnership (SDB-051)*		X										•	•						•	
Enhanced Inspection Activities																				
Additional Dry Season Construction Inspections (SDB-007)			X	X															•	•
San Diego Bay Watershed Targeted Facility Inspections – Automotive (SDB-008)*		X											•							
Enhanced Construction Oversight (SDB-009)		X																	•	
Large Sp. Events (Education, Inspections, and Cleanup) (SDB-047)							X			•										
Outdoor Special Event Oversight (SDB-048)		X																	•	
Targeted Special Studies																				
Municipal Rain Barrel Installation and Downspout Disconnects (SDB-012)*		X								•			•							
Dalbergia "Green Mall" Infiltration Retrofit (SDB-013)* (In Planning)		X								•			•							

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San Diego Bay Watershed	Hydrologic Area									High Priority Pollutant Categories									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
Southcrest Park Green Lot Infiltration Project (SDB-014)* (In Planning)		X								•			•						
Memorial Park "Green Lot" Infiltration Retrofit Activity (SDB-015)* (In Planning)		X								•			•						
43 rd and Logan Biofiltration Project (SDB-037)* (In Planning)		X								•			•						
Maple Canyon Water Quality Improvement (SDB-049)* (In Planning)		X								•								•	•
Chollas Creek Runoff Reduction and Groundwater Recharge Project (SDB-050)* (In Planning)		X											•						
Treatment Control BMP Pilot Projects (SDB-034)		X											•						
Beta Alley Green Street Filtration (SDB-058) (In Planning)		X								•		•	•		•		•	•	•
Other Water Quality Activities																			
Update Recycling and Solid Waste Ordinance (SDB-035)				X				X	X	•				•					•
City of San Diego Strategic Plan Implementation (SDB-038)	X	X	X	X				X		•	•	•	•	•	•	•	•	•	•
Land Acquisitions – San Diego Bay Watershed (SDB-046)				X	X	X		X		•	•	•	•	•	•	•	•	•	•
Stormwater Quality Master Plans for Special Drainage Fee Areas (SDB-056)		X			X	X		X	X	•	•	•	•	•	•	•	•	•	•
Commercial BMP Self Certification Pilot Program (SDB-059) (In Planning)		X								•			•	•			•	•	
Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials (SDB-060)*	X	X	X	X	X	X	X	X	X				•						
Chula Vista Wildlife Reserve Restoration and Enhancement Project (SDB-061) (In Planning)										•								•	
Residential Rain Barrel Subsidies & Distributions (SDB-062) (In Planning)		X			X	X		X	X	•	•	•	•	•	•	•	•	•	•
ADDITIONAL MONITORING AND SOURCE IDENTIFICATION ACTIVITIES																			
Chollas Creek Diazinon TMDL (SDB-018)	X	X																•	
Enhanced Dry Weather Monitoring Program (SDB-020)		X								•	•	•	•	•	•	•	•	•	•
Coordinated Dry Weather Monitoring Programs (SDB-021)	X	X								•			•	•		•	•	•	•
La Mesa Additional Water Quality Monitoring Program (SDB-022)*		X								•	•	•	•	•	•	•	•	•	
BMP Effectiveness Monitoring Program (SDB-023)		X										•	•		•			•	

San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report
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San Diego Bay Watershed	Hydrologic Area					High Priority Pollutant Categories													
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
Regional Harbor Monitoring Program (SDB-025)	X	X	X	X			X				•	•	•	•	•	•	•	•	
Shelter Island Yacht Basin Urban Runoff Monitoring Study (SDB-053)	X												•						
B Street/Broadway Piers, Downtown Anchorage and Mouth of Switzer Creek Characterization Study (SDB-063)	X											•				•			
Chollas and Paleta Creeks Characterization Study (SDB-064)*		X	X										•				•		
Chollas Creek Copper, Lead And Zinc Water-Effects Ratio Study (SDB-065)*		X											•						

* Indicates the watershed activities also listed in the Chollas Creek Dissolved Metals TMDL Implementation Plan or added by reference within the tables in Appendix E.

3.2 Watershed Education Activities

The San Diego Bay Watershed Copermittees recognize the value of educational programs as an essential element towards ensuring future watershed protection efforts. The main focus of the San Diego Bay watershed education program is to make the public aware of the sources of water pollution in order to encourage positive behavioral change. Thirteen watershed education activities were implemented in the San Diego Bay WMA during this reporting period (Table 3-2). Activity summary sheets for these activities are located in Appendix D. In addition to these identified watershed educational activities, the Copermittees have continued to implement other educational and outreach activities that contribute to the increase in knowledge and behavior change among residents. This section of the report provides a watershed-wide tabulation of all education and public participation activities the Copermittees implemented during the reporting period, including jurisdictional activities that occurred in the watershed. This information will be utilized to obtain a comprehensive evaluation of education efforts occurring within the San Diego Bay WMA and aid in the development and/or modification of future watershed education activities.

San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report
Section 3 – Implementation of Watershed Activities

Table 3-2. Implemented San Diego Bay WURMP Education Activities in FY 2009-10.

San Diego Bay Watershed	Hydrologic Area									High Priority Pollutant Categories									
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment	Trash
La Mesa Business Inspection Supplemental Watershed Questionnaire (SDB-010)*			X	X						•			•				•		
Storm Drain Stenciling (SDB-028)				X				X	X	•	•	•	•	•	•	•	•	•	•
Public Service Announcements: Karma/Karma Second Chance (SDB-029)	X	X	X	X				X	X	•		•							•
Community Based Social Marketing Outreach Pilot Project—Chollas Creek Community SDB-032)	X	X	X	X				X	X	•		•	•						•
Provide Homeowner's Association Education About Pet Waste Disposal (SDB-039)				X				X	X	•									
Storm Water Education Booth at Annual Pet Festival & Doggy Dash (SDB-040)				X				X	X	•									
Fats, Oils, and Grease (FOG) Program (SDB-041)				X				X	X	•					•				
La Mesa Park Kiosk (SDB-042)*		X								•			•				•		
ILACSD High School Watershed Presentations (SDB-045)*		X	X	X				X		•	•	•	•	•	•	•	•	•	•
San Diego Bay Watershed Brochure (SDB-055)	X	X	X	X				X	X	•	•	•	•	•	•	•	•	•	•
Focused Outreach to Equestrian Community (SDB-066)				X	X	X		X	X	•				•				•	
Intergenerational Games (SDB-067)*		X		X						•			•		•		•		•
Stream Team Stewards (SDB-068)*		X								•			•	•	•	•	•	•	•

* Indicates the watershed activities also listed in the Chollas Creek Dissolved Metals TMDL Implementation Plan or added by reference within the tables in Appendix E.

3.2.1 San Diego Bay Education Program

The San Diego Bay Education Program is outlined in the San Diego Bay WURMP document. The focus of the education program is to provide useful information to the public about the San Diego Bay WMA and the high priority water quality problems within the watershed. The San Diego Bay Copermittees have committed to implementing several short and long-term educational activities that address watershed concepts and watershed pollutants. These tasks also overlap several programs that are required for NPDES Permit compliance on jurisdictional, watershed, or regional levels.

In addition to the watershed education activities listed in Table 3-2, each jurisdiction also implemented targeted education programs within the San Diego Bay WMA that were part of other existing storm water or environmental programs. The education programs implemented by the San Diego Bay Copermittees are further summarized and described in the following sections of this report because they contribute to the overall increase in knowledge and behavior change within the WMA. Table 3-3 below provides a summary of all the education activities implemented during the reporting period broken down into the following subcategories: Watershed Public Presentation and Media, School Programs, Integrated Pest Management, Project Clean Water Website, and Partners in Clean Water. Appendix F provides a complete tabulation by jurisdiction of the watershed education and public participation activities that were implemented during the reporting period.

San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report
Section 3 – Implementation of Watershed Activities

Table 3-3. Summary of Education Activities for FY 2009-10.

Tasks from the WURMP Education Action Plan	Target Audience	Program Elements	Number of Events	Jurisdictional, Watershed, or Regional Program	Participating Jurisdictions	Concepts/Constituents of Concern Addressed					
						Watershed concepts	General Surface Water concepts	Copper/Zinc	Pesticides	Bacteria	Sediment
Public Presentations and Media - Watershed Element	General Public, Residential, Commercial/ Industrial, Construction, Municipal	Festivals/Community Events	91	J, W, R	Airport Authority, Chula Vista, Coronado, Imperial Beach, La Mesa, National City, Port of San Diego, San Diego, County of San Diego, Lemon Grove	x	x	x	x	x	x
		Presentations	216	J, W	Airport Authority, Chula Vista, Coronado, Imperial Beach, La Mesa, National City, Port of San Diego, San Diego, County of San Diego	x	x	x	x	x	x
		Print Media	40	J, W	Airport Authority, Chula Vista, Coronado, Imperial Beach, La Mesa, County of San Diego, City of San Diego	x	x	x	x	x	X
		Public Service Announcements	2	W, R	County of San Diego, Imperial Beach, City of San Diego	x	x				
		Municipal Staff Training	22	J, W	Airport, Chula Vista, Imperial Beach, La Mesa, National City	x	x	x	x	x	x

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Table 3-3. Summary of Education Activities for FY 2009-10.

Tasks from the WURMP Education Action Plan	Target Audience	Program Elements	Number of Events	Jurisdictional, Watershed, or Regional Program	Participating Jurisdictions	Concepts/Constituents of Concern Addressed					
						Watershed concepts	General Surface Water concepts	Copper/Zinc	Pesticides	Bacteria	Sediment
		Workshops	4	J, W	La Mesa, Port of San Diego, County of San Diego	x	x	x	x	x	x
School Programs	K - 12 children	Field Trips	9	J, W	Airport Authority, Port of San Diego, County of San Diego	x	x		x	x	
		Project SWELL	*	W, R	Port of San Diego, Airport Authority, City of San Diego	x	x				
Integrated Pest Management	General Public, Residential, Commercial/Industrial, Municipal	IPM Seminars/Events	2	J, W, R	Port of San Diego, County of San Diego, City of San Diego	x	x		x		
Project Clean Water Watershed Website	General Public	Website with information related to surface water quality issues, watersheds, and pollutants	N/A	W, R	All	x	x	x	x	x	x

San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report
Section 3 – Implementation of Watershed Activities

Table 3-3. Summary of Education Activities for FY 2009-10.

Tasks from the WURMP Education Action Plan	Target Audience	Program Elements	Number of Events	Jurisdictional, Watershed, or Regional Program	Participating Jurisdictions	Concepts/Constituents of Concern Addressed					
						Watershed concepts	General Surface Water concepts	Copper/Zinc	Pesticides	Bacteria	Sediment
Partners in Clean Water	General Public	Cleanup Events	30	J, W	Chula Vista, Coronado, Imperial Beach, La Mesa, National City, Port of San Diego, San Diego, County of San Diego, Lemon Grove	x	x	x	x	x	x
		Citizen Monitoring/ Training	1	J, W	Port of San Diego	x	x	x	x	x	x
		Waste Collection Recycling Events	19	J, W, R	Airport Authority, Chula Vista, Imperial Beach, La Mesa, National City, Port of San Diego, County of San Diego	X	X	X	X	X	X
		Storm Water Stenciling Events	1	J, W	Airport Authority	X	X	X	X	X	X

* Project Swell is reported as the number of students reached and is discussed further in Section 3.2.1.2.

3.2.1.1 Watershed Public Presentations and Media

The Public Presentations and Media Watershed Elements of the San Diego Bay Education Program were designed to incorporate general watershed, receiving water, and storm water pollution prevention concepts and principles into existing and planned public presentation and media opportunities at the jurisdictional level. The San Diego Bay Copermittees used a variety of means to meet this objective and will continue to evaluate and improve their effectiveness. For purposes of this Annual Report, the Public Presentation and Media element of the Education Action Plan has been subcategorized under four sub-headings as shown in Table 3-3 and described below. Further detail on these activities by jurisdiction is provided in Appendix F.

Festivals/Community Events- These events are generally hosted by local community groups or jurisdictions and provide an opportunity to host a booth and to share educational materials. Community events, such as the San Diego County Fair, provide another venue for public outreach and education. The San Diego Bay Copermittees were involved in 91 different events this reporting period that reached an estimated 1,680,126 persons.

Presentations - This category includes presentations with visual aides given to community organizations or to school children, at their regular meeting or event. Staff from the jurisdictions in the San Diego Bay WMA made a number of presentations for groups throughout the watershed. During these presentations which addressed students at all levels from elementary school to adult education classes, staff emphasized watershed issues, recycling, and the general storm water pollutants of concern. Overall, the San Diego Bay Copermittees conducted 216 different presentations this reporting period which was estimated to reach approximately 39,702 persons.

An education activity (Activity Summary Sheet SDB-044) highlights the collaborative effort among the San Diego Bay Copermittees. Five of the Copermittees collaborated with I Love A Clean San Diego (ILACSD) to provide information on high priority water quality problems and general storm water issues through presentations to 495 students at six different high schools. In addition, the Stream Team Stewards (Activity Summary Sheet SDB-068) and Intergenerational Games (SDB-067) provided education to students and nearby residents on storm water pollution prevention. Their increased awareness of priority pollutants within the watershed will empower them to implement good housekeeping measures and applicable best management practices to prevent pollutants from entering the storm drain system within the watershed

Print Media – Several of the San Diego Bay Copermittees have made efforts to attract media attention. The Cities of Chula Vista, Coronado, Imperial Beach, La Mesa, and San Diego, as well as the Port of San Diego and the Airport Authority have been successful at gaining print media coverage for their watershed and storm water management efforts and the results of their programs. Articles in the EDCO Environmental Newsletter, Coronado Currents, South Bay Star News, La Mesa FOCUS, and the San Diego Union Tribune were printed during this reporting

period. In addition, Copermittees have presented watershed concepts through pamphlets, brochures, and displays or kiosks in public areas. Notably, the Think Blue program messages were advertised on transit shelters and billboards, and thought multiple media outlets in both English and Spanish. Additional information for these activities can be found in the activity summary sheets in Appendix D or in the tabulation of education activities by jurisdictions in Appendix F. The San Diego Bay Copermittees continue to explore opportunities at making coordinated efforts to garner print media coverage as an outreach and education mechanism. The San Diego Bay Copermittees distributed 40 different forms of watershed related print material during this reporting period.

Public Service Announcements (PSAs) – The Think Blue media campaign continues to be a mechanism for conducting watershed and storm water pollution prevention education and outreach throughout the San Diego Bay WMA and the entire region. This reporting period represents the ninth straight year that Think Blue has been in operation. Think Blue provides outreach to the general public through public service announcements in both English and Spanish. The City of San Diego produced and broadcasted the *Karma*, *Karma Second Chance*, and *Karma Tourist* PSAs (Activity Summary Sheet SDB-029) throughout the watershed during last reporting period and continued to broadcast the PSAs through this reporting year.

Watershed Education for Municipal Staff - The San Diego Bay Copermittees continue to provide storm water education to municipal staff, especially to those staff dealing directly with pollutants of concern in the watershed. Watershed training for municipal staff can be focused on more general concepts or on specific pollutants, depending on the audience. Incorporating watershed education into the required municipal staff training of the Jurisdictional Urban Runoff Management Plan (JURMP) helps the Copermittees address the high priority water quality problems in San Diego Bay. The San Diego Bay Copermittees conducted in 22 different Municipal Training Events during this reporting period. For more information on municipal staff training, please refer to each of the San Diego Bay Copermittee's individual JURMP.

Workshops – Several San Diego Bay Copermittees conducted educational workshops addressing storm water issues. These workshops targeted representative from businesses and the general public. Some of the topics included auto facility BMP implementation and water conservation. During the workshops, those in attendance were given opportunities to ask questions about the recommended BMPs and about more general storm water issues. One educational activity targeted the equestrian community and other owners of small animals and livestock in the unincorporated area, such as within the Sweetwater HU (Activity Summary Sheet SDB-066) and provided focused water quality outreach. The objective of the activity was to increase local watershed awareness, manure management, and composting. A presentation and outreach materials were provided that identified BMPs and resources available to equestrians. On July 28, 2010, 25 people participated in a workshop held in the Sweetwater HU. Key elements included how proper manure management relates to horse health, water quality, and maintenance of positive relationships with neighbors.

3.2.1.2 School Programs: San Diego Bay WMA

School children are a primary focus of the San Diego Bay Education Program. The San Diego Bay Copermittees continue to focus on efforts to effectively promote watershed awareness and to initiate positive behavioral changes in children. The San Diego Bay Watershed Education Program (presented in Table 3-3) shows the four main sub-categories used to describe the education and outreach efforts directed at school children during this reporting period.

Field Trips – The San Diego Bay Copermittees provided field trips to the Chula Vista Nature Center, Wildcoast Sea Turtle Education, the Maritime Museum, Ocean Discovery Institute, and others, as an effective hands-on means of increasing watershed and water quality awareness in their students. Attendance at these field trips was more than 15,000 students.

Project SWELL – Project SWELL is a collaborative effort between San Diego City Schools, the City of San Diego, the Port of San Diego, Airport Authority, other municipalities, and non-profit organizations to establish comprehensive water quality and pollution prevention curricula in City schools. Started in May 2003, Project SWELL seeks to educate local school children about our region's watersheds while also fostering a sense of stewardship in these future leaders that will provide long-term solutions to the region's water quality problems. Project SWELL is estimated to have reached more than 40,000 school children in the SDUSD during the reporting period.

3.2.1.3 Integrated Pest Management (IPM)

The San Diego Bay Copermittees believe that public education about IPM is an effective way to protect receiving waters from the impacts of Diazinon and other pesticides. IPM promotes the use of integrated, ecologically sound pest management programs. IPM seminars and special events are the two main methods used to increase knowledge on IPM. The San Diego Bay Copermittees participated in two IPM Seminars/Events during this reporting period.

3.2.1.4 Project Clean Water Watershed Website

As in previous years, the Project Clean Water (PCW) website (www.projectcleanwater.org) provided a venue for public education and outreach about the San Diego Bay WMA. In addition, the San Diego Bay Copermittees continue to link their individual jurisdictional websites to PCW. Each of these websites presents another mechanism for educating the public about watershed issues. These websites also function as public participation mechanisms. Please refer to the Public Participation section of this Annual Report (Section 3.3) for more information on this aspect of the PCW website for the San Diego Bay WMA.

3.2.1.5 Partners in Clean Water

The San Diego Bay Copermittees continue to nurture new and existing partnerships with individuals and groups within our communities that share our concern for the environment and our watershed. Table 3-3 shows the four main sub-categories as listed below to describe the

education and outreach efforts directed at these types of community partnerships during this reporting period.

Cleanup Events – In addition to the obvious public participation aspects of a cleanup event, these events provided an opportunity to conduct education and outreach about watershed issues and general storm water pollutants of concern. These events usually involve trash removal from inland and coastal areas.

All the San Diego Bay Copermittees collectively sponsored the Creek to Bay Cleanup for the sixth year in a row. San Diego Bay Copermittees worked together to help fund and staff cleanup sites within the San Diego Bay WMA. Several of the San Diego Bay Copermittees also participated in Coastal Cleanup Day, as well as a number of smaller, jurisdiction-specific cleanup events. The San Diego Bay Copermittees participated in 30 Clean-up Events during this reporting period. A summary of the number of persons reached is included in Table 3-5. Additional information on watershed cleanup events is provided in Activity Summary Sheet SDB-004 in Appendix D.

Citizen Monitoring/Training – Citizen Monitoring Training and Citizen Monitoring events provide an opportunity for community members to learn how water quality testing is performed, as well as make a connection to the water bodies in their neighborhoods. The Port of San Diego sponsored two programs with Citizen Monitoring components during this reporting period. The Chollas Creek Family Stream Team Initiative Partnership (SDB-051) and the Zoological Society of San Diego's Stream Team Stewards program (SDB-068) provided training to citizens within the Chollas Creek watershed (908.2 HA). Further details on these programs are provided in Appendices D-1 and E.

Storm Drain Stenciling Events – These events are an effective means for increasing watershed and water quality awareness in the community. The City of Chula Vista continued to participate in events during the reporting period through inlet labeling affixed with storm water related placards or stenciled graphics (SDB-028). The Chula Vista installed 150 thermoplastic storm drain markers permanently affixed to storm drain inlets with the prohibitive “No Dumping – Drains to Bay” message during the reporting year. Notably, nearly all storm drain structures in Chula Vista are identified with stenciling, plastic markers, or permanent concrete stamping. Storm drain stenciling was also done as part of the Stream Team Stewards watershed education activity (SDB-068) by students at 50 storm drain locations in and around the Chollas Creek watershed community (908.22 HSA).

Waste Collection/Recycling Events – These include special organized events where citizens can properly dispose of their HHW or E-Waste. This does not include regular collection at HHW facilities. The San Diego Bay Copermittees participated in 19 Waste Collection/Recycling Events during this reporting period with a summary of persons reached included in Table 3-5.

3.3 Public Participation Activities

Public participation during the development and implementation of the San Diego Bay WURMP has been, and continues to be, encouraged to ensure that stakeholder interests and creative solutions are considered. Broad participation is critical to further development and implementation of the watershed program. While participating jurisdictions aim to improve coordination among their own agencies, the watershed approach calls upon these agencies to engage diverse stakeholders in this process. Further, the participating municipalities recognize that no single agency has the capacity to address water quality issues on its own and that broad partnerships are essential to positively affect the water resources in the watershed. It is only through a collaborative approach that we will develop a better understanding of these issues and processes affecting water quality in our watersheds.

Effective public participation is driven by ensuring that the stakeholders are engaged at the appropriate level of decision-making. Public input into any decision-making process can be as simple as providing public notification that an initiative will occur, or a complex process that requires them to be intrinsically involved and responsible for the final decision-based outcome, or any level in between. The proper identification of the role of the public is crucial to ensuring the success of any initiative for which public input is sought. Table 3-4 provides a description of the possible levels of public participation, ranging from simple notifications to empowerment of full decision-making.

Table 3-4. Levels of Public Participation.

Public Participation Objectives				
INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities, and/or solutions.	To obtain public feedback on analysis, alternatives, and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.

An opportunity for assessing public participation is available through the identification of the appropriate level at which to involve stakeholders in decision-making. Prior to embarking on a public participation opportunity, San Diego Bay Copermittees established an objective defining the level at which the public is invited to be involved. The effectiveness of public participation in decisions affecting the San Diego Bay WMA were assessed by understanding the numbers of stakeholders reached through each decision-making opportunity (where applicable), and by providing summaries describing how stakeholders participated in each opportunity.

The following section summarizes the activities and efforts made by the San Diego Bay Copermittees to encourage public participation during this reporting period. A complete list of public participation activities conducted within the watershed is included in Appendix F. Please note that this section only discusses the activities that were identified in the Public Participation section of the WURMP and relate to the San Diego Bay WMA. The San Diego Bay Copermittees have also conducted a number of regional programs and events involving the public in general water quality issues. Many municipalities have worked with stakeholders on efforts such as grant applications and water quality data collection.

3.3.1 Storm Water Copermittee Collaboration and Community Workshops

Stakeholder participation is vital to the success of watershed activities. The San Diego Bay Copermittees provided several forums during the year that allowed various stakeholder groups to participate in WURMP activities. Community workshops and activities that enhanced collaboration among San Diego Bay Copermittees are discussed below.

San Diego Bay WURMP Meetings

San Diego Bay WURMP meetings were held regularly to enhance communication among San Diego Bay Copermittees and other interested stakeholders. These meetings provided a venue to inform, consult, and involve Copermittees and other stakeholders on local watershed efforts. Appendix B presents a summary of the meetings held by the workgroup during the reporting period, including an outline of the principal agenda items.

Workshops and Conferences

San Diego Bay Copermittees conducted educational workshops addressing storm water issues to inform and involve the public. These workshops targeted representatives from businesses, the construction industry, and the general public. The topics ranged from simple BMP implementation to Stormwater Pollution Prevention Plan (SWPPP) preparation, and many were tailored to specific audiences. During the workshops, those in attendance were given opportunities to ask questions about the recommended BMPs and about more general storm water issues. The San Diego Bay Copermittees also targeted specific groups by setting up booths at various conferences and city festivals. Educational materials were distributed and personnel at the booths answered questions. The San Diego Bay Copermittees conducted or participated in four different watershed related workshops and conferences during this reporting period.

Presentations

The San Diego Bay Copermittees conducted a variety of informational presentations during the reporting period, targeting many different types of audiences including schools, community groups, and tour groups. These educational presentations provided educational media as well as a venue for questions about storm water issues to be discussed. Individuals who have a greater awareness and understanding of storm water issues will likely also be more active in taking measures to protect storm water quality and influencing others around them to do the same. The total number of persons attending presentations is estimated at 39,702.

Community Events

During this reporting period, the San Diego Bay Copermittees participated in 91 watershed related community special events. Collectively, the community events met all five public participation objectives presented in Table 3-4 and many of these events addressed regional water quality issues that spanned several watersheds. The San Diego Bay Copermittees feel such broad based activities play an important role in engaging the public on important water quality issues and that such public participation does positively impact water quality both in the San Diego region as a whole and in San Diego Bay.

Cleanup Events and Waste Collection

Cleanup events give the public a chance to actively participate in improving the water bodies in their neighborhoods. In addition to the obvious benefits to water quality, such events also give residents a tangible understanding of the link between their actions and receiving water impacts. Active, hands-on experience tends to foster a sense of ownership and deepen participants' sense of responsibility for their local water bodies. As a result, the cleanup events and waste collection events were effective in achieving all of the public participation objectives.

Though the San Diego Bay Copermittees have identified trash as a constituent of concern for the Pueblo HU, the Copermittees continued to implement a variety of activities to address this issue where applicable and, as a proactive measure, throughout the entire San Diego Bay WMA. Cleanup events are an effective means of not only involving the community in protecting water quality, but also specifically removing trash from water bodies in urban settings. During cleanup events, participants are provided with educational material regarding watershed concepts and have the opportunity to discuss storm water issues with city staff and knowledgeable volunteers. Additional information on watershed cleanup events is provided in Activity Summary Sheet SDB-004 in Appendix D.

Notably, the Chollas Creek Stream Team Initiative Partnership (SDB-0051) addressed illegal dumping and non-point source trash accumulation within Chollas Creek (908.2 HA) by organizing refuse collection events and community education and outreach efforts. The Initiative successfully implemented public participation elements to inform, involve and empower citizens to participate in proper refuse disposal in order to reduce illegal dumping and trash within the Chollas Creek community.

Free collection of household hazardous waste (HHW), electronic, and universal waste has occurred during FY 2009-10. Often residents illegally dump these materials due to a combination of economic pressures, inconvenience, and/or lack of knowledge regarding where to go to dispose of the items. Waste collection events provide an avenue for the public to properly dispose of used oil, appliances, and other items for which they might otherwise have had to pay fees or transport for long distances.

Table 3-5 below details the number of workshops, conferences, presentations, field trips, community events, cleanup events, waste collection events, print media, and municipal staff trainings that were held and the number of people reached through these events. Overall, 431 events reached more than 1.8 million people. Note that an exact numeric attendance was not possible for all events. For a more detailed description of the events that occurred in each one of these categories, refer to Appendix F.

Table 3-5. Summary of Activities.

Type of Activity	Number of Events	Number of People Reached*
Workshops/Conferences	4	67
Presentations	216	39,702
Field Trips	9	15,019
Community Events	91	1,685,576
Cleanup Events	30	10,106
Waste Collection Events	19	8,017
Print Media	40	128,082
Municipal Staff Training	22	719
TOTALS	431	1,887,288

* These totals do not include the numbers for some events for which attendance was not recorded.

3.3.2 Websites

The Project Clean Water (PCW) website successfully provides a means of public participation by informing and involving the public on San Diego Bay water quality issues. Each of the three HUs which drain to San Diego Bay—Otay, Pueblo, and Sweetwater—have pages devoted to them that are available for both the San Diego Bay Copermittees and public viewing. The San Diego Bay WURMP page includes downloadable WURMP and WURMP Annual Report documents, as well as land use and MS4 maps. The page specifically states that the San Diego Bay Copermittees are seeking public comment on the program and provides mail, email, and telephone contact information for the Lead Copermittee. The San Diego Bay WURMP had 977 hits in FY 2009-10

During the reporting period, 5,257 hits were recorded for the four main PCW web pages related to San Diego Bay WMA, which is comparable to the number of hits during the last reporting period. The Pueblo Watershed received 1,535 hits, Sweetwater Watershed received 1,896 hits, and the Otay Watershed link received 1,826 hits.

In addition to the PCW website, several other websites with San Diego Bay WMA content have been developed. The City of San Diego worked with San Diego State University and San Diego Coastkeeper continue to provide the San Diego Bay Watershed’s Common Ground website (<http://www.sdbay.sdsu.edu>), which has interactive water quality maps, access to a variety of water quality data collected within the watershed, a watershed tour feature, and a variety of other watershed specific educational content. The Port of San Diego continues to display the Project ORCA (Online Research Coastal Academy) site, which provides interactive, San Diego Bay focused, environmental education targeted at children. The Copermittees’ regional website (www.thinkblueregion.org) also serves as a web portal that provides storm water educational information and links to each member agency’s website.

3.3.3 Direct Interaction

In addition to the specific activities and programs described above, the San Diego Bay Copermittees' staff also interacts with the public on a daily basis. Municipal employees receive storm water training on an ongoing basis, as described in each JURMP. Staff with program implementation responsibilities receives the most intensive training, but other employees are educated about storm water issues as well. Municipal employees interact with the public in their jurisdictions through a variety of avenues, such as the discretionary permit review process, building permit process, building inspections, public presentations, and outreach campaigns. These activities allow municipal staff to receive public comments about storm water issues and regulations, as well as answer questions and provide guidance. This day-to-day personal interaction is an important component of the San Diego Bay Copermittees public participation activities.

3.4 Collaborative Land-Use Planning Efforts

In recent years water quality management efforts have become increasingly watershed-focused, and the San Diego Bay Copermittees are working to integrate watershed management concepts into programs that can be implemented across jurisdictional boundaries. In general, this effort includes participation in watershed management plans, utilizing regional guidance documents, and increasing public participation. Long-term planning ensures the protection of beneficial uses, preservation of open space lands, and a balance of land uses when planning future development. Several planning activities have been initiated.

During the reporting period, San Diego Bay Copermittees and other stakeholders in the San Diego Bay WMA continued to develop land-use plans intended to improve the water quality in San Diego Bay, including the following:

- Otay River Watershed Management Plan (ORWMP)
- Otay River Special Area Management Plan (SAMP)

Stakeholders in the areas in which these plans focus have attended regular meetings and providing valuable input on plan direction. By consulting and collaborating with various stakeholders, Copermittees' efforts have empowered the public to be more involved in addressing water quality issues.

Links to pages discussing the ORWMP and the Otay River SAMP are included on the Project Clean Water website. The sites include a variety of plan-related documents for public review and announcements of public meetings.

The ORWMP has been approved by the Port, the County of San Diego, Imperial Beach and the City of San Diego. The City of Chula Vista has yet to determine whether to approve the ORWMP. Therefore, there are no new action items to report for this reporting period. An interim Watershed Council will be established once the ORWMP has been approved.

In regards to the SAMP, meetings were held to gather project information for the Draft Regional General Permits these meetings included 1) An Interdepartmental meeting within the County of San Diego and 2) Working Group Meeting with our SAMP Partners and other interested stakeholders. The County (through their consultant team) has prepared the technical background information that is necessary to complete the 404(b)(1) process of the Clean Water Act. The draft Regional General Permits (RGPs) for the Otay River watershed and drafts of chapters 1, 2 and 3 of the SAMP document have been completed. In addition, URS Corporation prepared the Draft Baseline Conditions Report that will become part of the Environmental Impact Statement (EIS). The rest of the EIS will be underway shortly after the SAMP document is completed.

3.5 Updated Five-Year San Diego Bay WURMP Strategic Plan

3.5.1 New Activities

The San Diego Bay Copermittees added new watershed activities to the San Diego Bay WURMP Strategic Plan during FY 2009-10. Copermittees incorporated three new educational activities (Activity Summary Sheets SDB-066, SDB-067, and SDB-068). Two new trash and debris related activities (Activity Summary Sheets SDB-003a and SDB-003b), one new targeted special studies (Activity Summary Sheet SDB-058), four new water quality activities (Activity Summary Sheets SDB-059, SDB-060, SDB-061, and SDB-062) and three new monitoring activities (Activity Summary Sheets SDB-063, SDB-064, and SDB-065) were also included. The activity summary sheets for these activities are presented in Appendix D.

3.5.2 Updated 5-Year San Diego Bay WURMP Strategic Plan

The San Diego Bay WURMP's Strategic Plan is assessed on an annual basis and may be updated to reflect the current status of watershed activities and any modifications to previous versions of the Strategic Plan. During this reporting period, the San Diego Bay Copermittees have been committed to implementing the watershed water quality and education activities presented in Sections 3.1 through 3.4 of this Annual Report. The updated Implementation Plan Schedule of San Diego Bay WURMP is presented in Table 3-6 and is intended to supercede the previous version presented in the 2008 San Diego Bay WURMP document. In addition, the Copermittees are progressing towards making a more efficient and effective watershed program through modifications to the San Diego Bay WURMP and through their involvement in the dialogue between the San Diego Regional Copermittees and the RWQCB regarding WURMP permit language.

3.5.3 Updates to TMDL Implementation Plan Activities

Currently, there are four adopted TMDLs in the San Diego Bay WMA (Table 2-2): the Chollas Creek Diazinon TMDL, the Chollas Creek Dissolved Metals TMDL, SIYB Dissolved Copper TMDL, and the Baby Beach (Dana Point Harbor) and Shelter Island Shoreline Park (San Diego Bay) Indicator Bacteria TMDL. The named dischargers of the Chollas Creek Diazinon and

Dissolved Metals TMDLs have developed an Implementation Plan defining the approach to planning, implementing, and assessing the effectiveness of best management practices (BMPs) with the goals of attaining the wasteload allocations (WLAs) for dissolved metals and restoring the beneficial uses of the Chollas Creek Watershed. The named dischargers of the SIYB Dissolved Copper TMDL initiated the development of an Implementation Plan during this reporting period as well. Since the Baby Beach (Dana Point Harbor) and Shelter Island Shoreline Park (San Diego Bay) Indicator Bacteria TMDL was approved by the Office of Administrative Law (OAL) on September 15, 2009, an update will be provided in the following reporting period. An assessment of the efforts to address TMDL compliance during this reporting period is presented in Section 4.2 of this Annual Report.

Chollas Creek Dissolved Metals TMDL Implementation Plan Activities

The seven named dischargers developed an Implementation Plan which presents the strategy, framework, and activities for the first five years under the TMDL using a multi-pollutant approach. The first five years, considered Phase I, involve the implementation a range of BMPs designed to address identified priority water quality problems from a range of community, structural, and watershed-level activities. Phase I also includes effectiveness assessments to measure the performance of specific BMPs to assess contributions to the long-term performance of the program, and to identify existing pollutant source or BMP design data gaps. The goal is to maximize the effectiveness of specific activities to guide the BMP priority rankings and implementation in subsequent phases with the ultimate goal of achieving TMDL compliance.

The Implementation Plan was submitted in October 2009, and the dischargers have begun implementing activities as part of their comprehensive Storm Water Programs that will help in meeting TMDL compliance for both the Metals TMDL and the Diazinon TMDL. Of special note, several dischargers worked diligently in support of Sustainable Conservation's efforts on the "Brake Pad Partnership" to pass SB 346. This bill addresses a significant source of dissolved copper in the watershed by requiring the reduction of copper in brake pads sold in California from up to 10% by weight to 0.5% by 2025.

The dischargers also have a number of activities planned over the next few years. Specific activities that the dischargers are implementing are included in tabular format in Appendix E. Forty-six activities, including water quality, education, and ongoing agency-wide activities, were in implementation in FY 2009-10. Many of these are planned to be implemented or continue into FY 2009-10, including two Municipal Code review and modification projects. Four collaborative special monitoring studies were implemented in FY 2009-10, one of them continues into FY 2010-11. Activities are further described in the tables included in Appendix E.

While activities implemented to address the Chollas Creek Diazinon TMDL are referenced in the discussion above, the dischargers that are responsible under the Diazinon TMDL must report on specific implementation elements. These updates are included in Appendix C, as part of the

annual response to monitoring report. However, specific activities referenced as part of the implementation elements discussion in Appendix C are also included in the Metals TMDL dischargers' tables in Appendix E, demonstrating the multi-pollutant approach to the Metals TMDL.

SIYB Dissolved Copper TMDL Implementation Plan Activities

The named parties, the Port of San Diego, the City of San Diego, and all SIYB marinas and yacht clubs, and hull cleaners continued the development of the TMDL Implementation Plan and TMDL compliance monitoring plan during this reporting period. The Implementation Plan incorporates a collaborative approach among the named parties to planning, implementing, and assessing BMPs to achieve reductions in copper loading into SIYB. The Implementation Plan will utilize a solutions-oriented strategy of establishing BMPs that help realize the objective of reducing copper loading into the basin in order to preserve and restore the beneficial uses, while simultaneously achieving compliance with the SIYB interim and final dissolved copper loading thresholds. Loading reductions will be achieved through conversion of vessels to non-copper-based paints, reductions of inputs via hull cleaning, and control of upstream inputs. Therefore, the named parties identified BMPs and other activities that can be best implemented within their given facility/operations in order to collectively achieve compliance with TMDL loading targets for the entire basin.

During this reporting period, the named parties also began to develop vessel tracking standards, a vessel tracking database template and to collect vessel data on hull paints. Long-term tracking of vessel conversion is necessary to determine whether TMDL compliance has been attained. The draft monitoring plan and vessel tracking data base worksheet was presented to the SIYB TMDL named parties for review. The implementation and monitoring plans will be finalized in FY 2009-10.

San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report
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Table 3-6. Updated Implementation Plan Schedule.

San Diego Bay Watershed	Hydrologic Area									Pollutants									FY 07-08	FY 08-09	FY 09-10	FY 10-11		
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment					Trash	
LOAD REDUCTION AND SOURCE ABATEMENT ACTIVITIES																								
Trash and Debris Related Activities																								
Pet Waste Bag Collaborative Watershed Activity (SDB-001)	X	X		X			X	X	X	•				•					•	•	I	I	I	I
Storm Drain Litter Control Techniques Collaborative Watershed Activity (SDB-002a)		X	X	X															•	•	I			Completed
Storm Drain Litter Control Techniques Collaborative Watershed Activity – El Cajon Boulevard Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project (SDB-002b)		X	X	X															•	•	P	P	I	I
Enhanced Street Sweeping Collaborative Watershed Activities (SDB-003)	X	X	X	X			X						•						•	•	I	I	I	I
Median Sweeping Pilot Study (SDB-003a)		X											•								-	P		I/Completed
Sweeper Speed Efficiency Study (SDB-003b)		X											•								-	-	P	I
San Diego Bay Cleanup Events Collaborative Activity (SDB-004)		X	X	X			X	X												•	I	I	I	I
Clean Community Program (SDB-005)			X								•	•								•	I	I	I	I
Trash Containment Boom Cleaning Agreement with US Navy (SDB-006)		X	X								•									•	I			I/Completed
Chollas Creek Family Stream Team Initiative Partnership (SDB-051)		X											•							•	P	I		I/Completed
Enhanced Inspection Activities																								
Additional Dry Season Construction Inspections (SDB-007)			X	X															•	•	I	I	I	I
San Diego Bay Watershed Targeted Facility Inspections – Automotive (SDB-008)		X											•							•	P	I	I	Completed
Enhanced Construction Oversight (SDB-009)		X																		•	I	I	I	I
Targeted Municipal Facility Inspections (SDB-036)		X									•		•	•							I			Discontinued
Large Special Event Inspection and Clean-Up (SDB-047)							X				•										I	I	A	I
Outdoor Special Event Oversight (SDB-048)		X																		•	I	I	I	I
Targeted Special Studies																								
Chollas Creek Water Quality Protection & Habitat Enhancement Project (SDB-011)		X									•	•	•	•	•	•	•	•	•	•	I			Completed
Municipal Rain Barrel Installation and Downspout Disconnects (SDB-012)	X	X	X	X				X			•			•	•				•	•	P	I	I/A	Completed
Dalbergia "Green Mall" Infiltration Retrofit Project (SDB-013)		X									•			•							P	P	P	P
Southcrest Park "Green Lot" Infiltration Project (SDB-014)		X									•			•							P	P	P	P
Memorial Park "Green Lot" Infiltration Retrofit Activity (SDB-015)		X									•			•							P	P	P	I
43 rd and Logan Biofiltration Project for Chollas Creek Watershed Protection (SDB-037)		X									•			•							P	P	P	I
Maple Canyon Water Quality Improvement (SDB-049)		X									•									•	P	P	P	P
Chollas Creek Runoff Reduction and Groundwater Recharge Project (SDB-050)		X											•								P	I	A	I/A
Treatment Control BMP Pilot Projects (SDB-034)		X											•								P	I	A	Completed
Beta Alley Green Street Filtration (SDB-058)		X									•	•	•		•	•	•	•	•	•	-	-	P	P
Other Water Quality Activities																								
Shelter Island Yacht Basin Dissolved Copper TMDL (SDB-016)	X												•											
Chollas - Switzer - Paleta Creek Mouths TMDL (SDB-017)	X	X											•			•								
Chollas Creek Diazinon TMDL (SDB-018)	X	X																	•					
Chollas Creek Dissolved Metals TMDL (SDB-019)		X											•											
Update Recycling and Solid Waste Planning Manual (SDB-035)				X				X	X		•			•						•	P	I	I	I
City of San Diego Strategic Plan Implementation (SDB-038)	X	X	X	X				X			•	•	•	•	•	•	•	•	•	•	I	I	I	I
Land Acquisitions – San Diego Bay Watershed (SDB-046)				X	X	X			X		•	•	•	•	•	•	•	•	•	•	I	I	I	I
Palm Avenue Stormwater Diverter (SDB-052)							X				•		•	•					•	•	P	I		No longer reporting on this activity
Stormwater Quality Master Plans for Special Drainage Fee Areas (SDB-056)		X			X	X		X	X		•	•	•	•	•	•	•	•	•	•	P	P	I	I
Commercial BMP Self Certification Pilot Program (SDB-059)		X									•		•	•					•	•	-	-	P	I
Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials (SDB-060)	X	X	X	X	X	X	X	X	X				•								-	P	P	P
Chula Vista Wildlife Reserve Restoration and Enhancement Project (SDB-061)				X				X			•								•	•	-	P	P	P
Residential Rain Barrel Subsidies & Distributions (SDB-062)		X			X	X		X	X		•	•	•	•	•	•	•	•	•	•	-	-	P	I

Activity Summary sheets will no longer be submitted for TMDL efforts will now be discussed in Sections 3 and 4.

San Diego Bay Watershed Urban Runoff Management Program 2009-2010 Annual Report
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Table 3-6. Updated Implementation Plan Schedule.

San Diego Bay Watershed	Hydrologic Area									Pollutants									FY 07-08	FY 08-09	FY 09-10	FY 10-11		
	908.1	908.2	908.3	909.1	909.2	909.3	910.1	910.2	910.3	Bacteria	Dissolved Minerals	Gross Pollutants	Metals	Nutrients	Oil & Grease	Organics	Pesticides	Sediment					Trash	
ADDITIONAL MONITORING AND SOURCE IDENTIFICATION ACTIVITIES																								
Enhanced Dry Weather Monitoring Program (SDB-020)		X								•	•	•	•	•	•	•	•	•	•	•	I	I	I	I
Coordinated Dry Weather Monitoring Programs (SDB-021)	X	X								•	•	•	•	•	•	•	•	•	•	•	I	I	I	I
La Mesa Additional Water Quality Monitoring Program (SDB-022)		X								•	•	•	•	•	•	•	•	•	•	•	I	I	A	A
BMP Effectiveness Monitoring Program (SDB-023)		X								•	•	•	•	•	•	•	•	•	•	•	I	I	I	I
Dry Weather Aerial Deposition Study – Phase I (SDB-024a)		X								•	•	•	•	•	•	•	•	•	•	•	I		Completed	
Dry Weather Aerial Deposition Study – Phase II (SDB-024b)		X								•	•	•	•	•	•	•	•	•	•	•	P		I/Completed	
Dry Weather Aerial Deposition Study – Phase III (SDB-024c)		X								•	•	•	•	•	•	•	•	•	•	•	P		I/Completed	
Regional Harbor Monitoring Program (SDB-025)	X	X	X	X				X		•	•	•	•	•	•	•	•	•	•	•	I	I	I	I
Chollas Creek Design Storm Study and Sediment and Bacteria Relationship Source Study (SDB-026)		X								•	•	•	•	•	•	•	•	•	•	•	I		Completed	
Chollas Creek Beneficial Use Designation Attainability Study and Mouth of Chollas Creek Bacteria Source ID Study (SDB-027)		X								•	•	•	•	•	•	•	•	•	•	•	I		I/Completed	
Shelter Island TMDL Urban Runoff Monitoring Study (SDB-053)	X									•	•	•	•	•	•	•	•	•	•	•	P	I	I	I
Switzer Creek Pesticide Source Monitoring Study (SDB-054)		X								•	•	•	•	•	•	•	•	•	•	•	P		I/Completed	
Water Quality Monitoring at Additional Mass Loading Stations (SDB-057)					X	X			X	•	•	•	•	•	•	•	•	•	•	•	P		I/Completed	
B Street/Broadway Piers, Downtown Anchorage and Mouth of Switzer Creek Characterization Study (SDB-063)		X								•	•	•	•	•	•	•	•	•	•	•	-	-	P/I	Completed
Chollas and Paleta Creeks Characterization Study (SDB-064)		X	X							•	•	•	•	•	•	•	•	•	•	•	-	-	P/I	Completed
Chollas Creek Copper, Lead And Zinc Water-Effects Ratio Study (SDB-065)		X								•	•	•	•	•	•	•	•	•	•	•	-	-	P/I	I
Educational Activities																								
La Mesa Business Inspection Supplemental Watershed Questionnaire (SDB-010)			X	X						•	•	•	•	•	•	•	•	•	•	•	I	I	A	A
Storm Drain Stenciling (SDB-028)				X				X	X	•	•	•	•	•	•	•	•	•	•	•	P	I/A	I/A	I/A
Public Service Announcements: Karma/Karma Second Chance (SDB-029)	X	X	X	X				X	X	•	•	•	•	•	•	•	•	•	•	•	P/I	I	No longer reporting on this activity	
Outdoor Transit Shelters and Billboards Advertisements (SDB-030)	X	X	X	X				X	X	•	•	•	•	•	•	•	•	•	•	•	P/I		I/Completed	
Mobile Advertising (SDB-031)	X	X	X	X				X	X	•	•	•	•	•	•	•	•	•	•	•	P/I	I/A	Discontinued	
Community Based Social Marketing Outreach Pilot Project—Chollas Creek Community SDB-032)	X	X	X	X				X	X	•	•	•	•	•	•	•	•	•	•	•	P	I	I	I
City of Coronado Fire Department Open House (SDB-033)								X		•	•	•	•	•	•	•	•	•	•	•	I	I	No longer reporting on this activity	
Provide Homeowner's Association Education About Pet Waste Disposal (SDB-039)				X				X	X	•	•	•	•	•	•	•	•	•	•	•	P	I	I	I
Storm Water Education Booth at Annual Pet Festival & Doggy Dash (SDB-040)				X				X	X	•	•	•	•	•	•	•	•	•	•	•	P	I	I	I/A
Fats, Oils, and Grease (FOG) Program (SDB-041)				X				X	X	•	•	•	•	•	•	•	•	•	•	•	P	I	A	A
La Mesa Park Kiosk (SDB-042)		X								•	•	•	•	•	•	•	•	•	•	•	I	I	I	I
LID and Watershed Planning Education for Community Planning and Sponsor Groups (SDB-043)				X	X	X			X	•	•	•	•	•	•	•	•	•	•	•	P		I/Completed	
ILACSD Elementary School Watershed Presentations (SDB-044)		X	X	X				X		•	•	•	•	•	•	•	•	•	•	•	P		I/Completed	
ILACSD High School Watershed Presentations (SDB-045)		X	X	X				X		•	•	•	•	•	•	•	•	•	•	•	-	P	I	I/A
San Diego Bay Watershed Brochure (SDB-055)	X	X	X	X				X	X	•	•	•	•	•	•	•	•	•	•	•	-	P	P	I
Focused Outreach to Equestrian Community (SDB-066)				X	X	X		X	X	•	•	•	•	•	•	•	•	•	•	•	-	P	I	I
Intergenerational Games (SDB-067)		X		X						•	•	•	•	•	•	•	•	•	•	•	I	I	I	I
Stream Team Stewards (SDB-068)		X								•	•	•	•	•	•	•	•	•	•	•	-	I	I/Completed	

P: Planning; I: Implementation; A: Assessment

Section 4: Effectiveness Assessment

An effectiveness assessment is an integral part of WURMP implementation because it helps determine whether receiving water quality improvements can be associated with WURMP activities. It also enhances program planning by providing feedback on activities and strategies, and by identifying program areas needing improvement. The following section presents the mechanisms used by the San Diego Bay Copermittees to assess the effectiveness of the WURMP as required by Section J.1.b. of the Municipal Permit and describes the results of this assessment.

4.1 Assessment of Overall WURMP Effectiveness

Effective implementation of the WURMP is dependent on the establishment of comprehensive and program-wide goals as well as objectives and tasks. Programmatic assessment provides a mechanism to verify the Copermittees have achieved compliance with the Permit and are continuing to work towards attaining the long-term goal of decreasing the sources and reducing the discharge of pollutants from the MS4. The following sections summarize WURMP activities and evaluate progress of the San Diego Bay WURMP toward meeting Target Outcome Levels One through Six.

4.1.1 Integrated WURMP Activities Assessment

In accordance with the San Diego Bay WURMP document, Copermittees selected activities and the associated effectiveness assessment mechanisms to implement in their individual jurisdictions while working within the collective goals of the WURMP. The activities and their assessments vary from one activity to another based on the identified targeted outcomes applicable to each activity, the pollutant(s), pollutant source addressed, and the HA in which it is located. The goals and objectives of the individual activities ensure individual accountability, provide direction, and allow for meaningful assessment. In this section, the San Diego Bay Copermittees assess whether they were able to maximize the effectiveness of these individual activities on a watershed level.

The Copermittees measured the effectiveness of the watershed activities as a whole by compiling the data and detailed information from each individual activity's assessment, or at a programmatic level to present a comprehensive assessment of activities. By thoroughly evaluating the activities, their relevance to each other and to the high priority water quality problems and their sources, the Copermittees were able to assess if activities are effectively targeting high priority pollutants and/or sources, or if modifications are necessary. The Copermittees not only evaluated the effectiveness of each individual activity implemented during the reporting period, but also evaluated how the activities contributed to the success of the overall program effectiveness.

The process provides the San Diego Bay Copermittees with a valuable resource and a list of effective, efficient BMPs and activities. By compiling this data in one place, the Copermittees have the opportunity to access multiple activities and their potential applicability for watershed-wide implementation. This resource can then be shared with other watersheds and jurisdictions to improve programming on a regional basis and further increase the list of BMPs. Sharing the evaluation methods will also help watershed workgroups and jurisdictions improve and enhance their programs. The collaborative and group assessment of the activities also encourages Targeted Special Studies and comprehensive thinking when planning future cooperative activities.

The San Diego Bay Copermittees have been successful in implementing the WURMP in compliance with the Municipal Permit. Specifically, the San Diego Bay Copermittees implemented watershed water quality and education activities that resulted in increased awareness and change in behavior, reduced discharge loads, abatement of potential sources, and other quantifiable benefits to receiving water quality during this reporting period. As discussed in Section 3.1 and 3.2, each Copermittee determined the appropriate assessment mechanisms for each of its implemented activities and determined if the effectiveness of the activities have been maximized when possible. Table 4-1 presents each individual watershed activity's effectiveness assessment mechanisms, if assessment for the activity was completed during the reporting period, and identifies if activities were effective in meeting the goals of the overall program. The Copermittees' assessments of the individual activities indicate nearly all of the water quality activities were able to achieve the stated goals and were effective in obtaining changes in awareness/behavior and/or load reduction/source abatement. Assessment data was provided for 27 activities, however, it should be noted that some activities are still in implementation phase and have not yet completed their overall assessment, while other activities are implemented and assessed each reporting year. Overall evaluation of Table 4-1 shows that the San Diego Bay Watershed Copermittees are able to effectively address high priority water quality problems through implementation of their water quality activities.

As noted above, there were watershed activities implemented that did not have all of the listed assessment mechanisms completed during this reporting period, and effectiveness has not yet been determined. Though considerable resources may be directed to these activities, effectiveness assessments are not yet available for a number of reasons, such as delays in planning/development of an activity or since the activity is still in progress. For example, the Rain Barrel Subsidies and Distribution activity (SDB-062) was in active planning phase and no assessment data was collected during this reporting period. In addition, assessment was not completed during this reporting period for activity categories in trash and debris as well as education (SDB-002b, SDB-029, and SDB-039) because the activities were either in planning/design stage or the assessment may be in progress. Please refer to the activity summary sheets in Appendix D for detailed analysis of progress to date for these activities.

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Section 4 – Effectiveness Assessment

Table 4-1. San Diego Bay WURMP Annual FY 2009-10 Watershed Water Quality Activity Assessment Table.

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
Trash and Debris Related Activities					
SDB-001	Pet Waste Bag Programs	3 and 4	<ul style="list-style-type: none"> Quantity of bags removed New dispensers added 	Yes	<ul style="list-style-type: none"> ~ 346,934 pet waste bags Seven new dispensers added in Chula Vista County of San Diego estimated 11,214 lbs. removed in their jurisdiction Airport Authority estimated 183.25 lbs. removed in their jurisdiction
SDB-003	Enhanced Street Sweeping	4	<ul style="list-style-type: none"> Amount of debris collected above JURMP requirements Curb miles covered above JURMP requirements 	Yes	<ul style="list-style-type: none"> 1,094 tons of additional material (and an additional 107 cy at the Airport) An additional 22,963 curb miles (2,850 broom miles for the City of San Diego)
SDB--003a	Median Sweeping	4	<ul style="list-style-type: none"> Amount of Debris Removed Debris Sampling 	Yes	<ul style="list-style-type: none"> 16,580 lbs of debris over 12.8 miles Average of 560 lbs of debris per mile swept Debris sampling confirmed the presence of and removal of heavy metals, nutrients and hydrocarbons.
SDB-004	Cleanup Activities	3 and 4	<ul style="list-style-type: none"> Amount of trash Number of people participating 	Yes	<ul style="list-style-type: none"> ~ 378.5 tons of trash 7,235 people
SDB-005	Clean Community Program	4	<ul style="list-style-type: none"> Amount of trash collected Number of participants Number of cleanup visits Number of outreach materials distributed 	Yes	<ul style="list-style-type: none"> Three large item collection events totaled 696 tons of bulky trash from 1, 579 vehicle loads. Twice monthly cleanup of Paradise Creek A total of 3,800 Storm Water Program 2010 calendars were distributed to school children, residences, industrial and commercial businesses, and municipal staff.
SDB-051	Family Stream Team Initiative	2,3, and 4	<ul style="list-style-type: none"> Amount of trash and non-native vegetation collected Number of participants involved Number of flyers distributed 	Yes	<ul style="list-style-type: none"> ~115 tons trash and debris ~12.6 tons vegetation removed 95 refuse collection/survey participants 534 Number of participants in trash Abatement and Creek Cleanup Activities and “Come Dump on Us” events ~ 2,000 flyers distributed

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Section 4 – Effectiveness Assessment

Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
Enhanced Inspection Activities					
SDB-007	Additional Dry Season Construction Inspections	3	<ul style="list-style-type: none"> Increased inspection frequencies beyond Permit requirements 	Yes	<ul style="list-style-type: none"> Completed 9 inspections, which exceeds Permit requirements. Helped contractors stay vigilant about implementing BMPs, especially near the end of the dry season.
SDB-008	San Diego Bay Watershed Targeted Facility Inspections - Automotive	3 and 4	Achieve greater BMP implementation rates from optimized inspection rates: <ul style="list-style-type: none"> Inspections Quantification Tabulation Reporting 	Yes	<ul style="list-style-type: none"> 276 total inspections 274 sites needing corrective action 4 sites immediately implemented corrective action with source abatement 125 sites need follow-up to verify corrective actions/BMPs were implemented 4 IC/IDs sites observed and eliminated
SDB-009	Enhanced Construction Oversight	3 and 4	<ul style="list-style-type: none"> Track number of meetings attended Number of site inspections conducted in excess of the minimum number required by the Municipal Permit Number of sediment source control BMP issues identified during inspections Estimate the annual sediment pollutant load abated 	Yes	<ul style="list-style-type: none"> Authority staff attended 179 meetings Performed 111 more inspections than required by the permit 10 inspections identified erosion & sediment source control BMP issues The Authority was able to estimate annual sediment pollutant load reduction as approximately 57 tons .
SDB-047	Large Special Events Inspections and Clean up	1,2,3, and 4	<ul style="list-style-type: none"> Amount of trash Education efforts Enforcement actions Survey 	Yes	<ul style="list-style-type: none"> 1320 pounds of recyclables collected 930 pounds of cardboard recycled BMP information provided to street vendors and follow up inspections verified BMP implementation. 69% of individuals could correctly identify the difference between the storm drain and sanitary sewer

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Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
SDB-048	Outdoor Special Event Oversight	3 and 4	<ul style="list-style-type: none"> Track the number of outdoor special events, Track the number of pre-event meetings attended, Track the number of pre- and post-event site inspections conducted Track the number of trash source control BMP issues identified during the inspections Estimate the annual trash pollutant load abated 	Yes	<ul style="list-style-type: none"> 1 outdoor special event, 0 pre event meetings were attended, 1 pre event inspection was conducted, 1 post event inspection was conducted, 0 trash source control BMP issues were identified. Since no trash source control issues were identified, no estimate of pollutant load reduction or increase could be completed, although it would still be reasonable to assume that there was no increase in pollutant load of trash.
Other Water Quality Activities					
SDB-012	Municipal Rain Barrel Installation and Downspout Disconnect	4	<ul style="list-style-type: none"> Monitoring 	Yes	<ul style="list-style-type: none"> Activity attenuated storm flows (515.4 cu ft of rainwater measured over two monitored storm events). Resulted in a measurable pollutant load reduction.

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Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
SDB-034	Treatment Control BMP Pilot Projects	2, 3 and 4	<ul style="list-style-type: none"> • Calculate the one-time pollutant load reductions created by the Treatment Control BMP Pilot Projects by comparing before and after heavy metal concentrations in roof runoff and runway runoff. • Estimate the cost-effectiveness of the pilot-scale treatment control BMPs. 	No	<p>Project 1 - Down Spout Filters –</p> <ul style="list-style-type: none"> • Analytical results suggested that the filters did not remove heavy metals (Cu, Zn) as efficiently as expected. • The water quality benefits provided by both technologies appeared to be minimal. • In light of the results, the Authority determined that the filters were not an effective BMP, so no pollutant load reductions or cost-effectiveness calculations were made. • The study was discontinued in FY 2009-10. <p>Project 2 - Runway pavement modification -</p> <ul style="list-style-type: none"> • It was determined that porous concrete and synthetic turf is the focus of the pilot study. • The next steps in the pilot study are to conduct a geo technical investigation of the proposed project site, proceed with the design of the candidate BMPs, and to identify a funding source for implementation at the pilot scale. • The runway pavement pilot study remains in the FY 2010-11 budgets, but is currently on hold as an Airport Authority-wide cost control measure. • Because no implementation has begun on this project, no pollutant load reductions or cost-effectiveness calculations have been made. <p>For this activity we are currently achieving a Level 2 Outcome.</p>

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Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
SDB-035	Update Recycling and Solid Waste Ordinance	3 and 4	<ul style="list-style-type: none"> Number of projects and trash enclosures built that had to comply with these requirements Estimated amount of bacteria load reduction 	No	<ul style="list-style-type: none"> 20 projects were reviewed that had to meet this ordinance requirement Assessment will be conducted in Year 5 of the Permit Cycle
SDB-046	Land Acquisition San Diego Bay	1 and 4	<ul style="list-style-type: none"> Number of acres acquired; Load Reductions could be determined 	Yes	<ul style="list-style-type: none"> 1,095.49 acres of land acquired this FY.
SDB-056	Commercial BMP Self Certification	2 and 3	<ul style="list-style-type: none"> Amount of source control BMP Water quality monitoring data collected for the subject site. 	No	<ul style="list-style-type: none"> Water quality and source control BMP data obtained.
Watershed Education Activities					
SDB-010	Business Supplemental Watershed Questionnaire	2	<ul style="list-style-type: none"> Compare how the level of storm water awareness and BMP implementation of business owner/operators changes overtime with increased education and outreach. 	Yes	<ul style="list-style-type: none"> 7% of respondents in 2009/2010 did not know where storm water runoff goes 7% thought that the water was directed to a treatment facility. 22% percent of all respondents in 2009/2010 could correctly identify that their site was located within the San Diego Bay Watershed.
SDB-028	Storm Drain Stenciling	2	<ul style="list-style-type: none"> Number of pedestrians who pass these stencils Number installed during reporting period 	Yes	<ul style="list-style-type: none"> 150 stencils installed Over 500 installed since activity implementation in FY 2007-08 Thousands of pedestrians pass these stencils on an annual basis
SDB-039	Provide Homeowner's Association Education About Pollution Prevention	2	<ul style="list-style-type: none"> Number of homeowners and HOAs reached through education efforts 	No	<ul style="list-style-type: none"> Contributed an article to HOA magazine with the circulation of 20,000 Educational flyer was distributed to 620 residents through HOA bill Assessment will be conducted in Year 5 of the Permit Cycle

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Number	Activity Name	Outcome Levels	Assessment Mechanisms	Completed	Effectiveness Assessment Information
SDB-040	Storm Water Education Booth at Annual Pet Festival and Doggy Dash	3	<ul style="list-style-type: none"> • Surveyed pet owners who pick up after their pets 	Yes	<ul style="list-style-type: none"> • 152 surveys completed • Found that over 90% of surveyed pet owners use BMPs for pet waste
SDB-041	Fats, Oils and Grease (FOG) Program	1	<ul style="list-style-type: none"> • Number of restaurants surveyed 	Yes	<ul style="list-style-type: none"> • Working on the development of a FOG ordinance • 216 restaurant surveys completed
SDB-042	Park Kiosk	2	<ul style="list-style-type: none"> • Increased awareness of watershed problems and pollution prevention methods. 	Yes	<ul style="list-style-type: none"> • Kiosk was maintained and kept with up to date information. • No other assessment data is available.
SDB-045	ILACSD High School Watershed Presentations	2 and 3	<ul style="list-style-type: none"> • Pre- and post-test • Teacher surveys 	Yes	<ul style="list-style-type: none"> • 495 students completed pre- and post-tests • Post-test showed an increase in knowledge after the presentations
SDB-066	Focused Outreach to the Equestrian Community	1 and 2	<ul style="list-style-type: none"> • Number of Events • Number of Participants • Pre & Post Testing • Surveys 	Yes	<ul style="list-style-type: none"> • 3 events the SD Bay (Sweetwater) WMA. • 85 people participated • Surveys showed positive correlation to increased knowledge and awareness.
SDB-067	Intergenerational Games	2	<ul style="list-style-type: none"> • Increased awareness of watershed problems and pollution prevention methods. • Number of watershed handouts and impressions made. 	Yes	<ul style="list-style-type: none"> • Approximately 100 impressions made • Approximately 100 storm water handouts distributed.
SDB-068	Stream Team Stewards	2 and 3	<ul style="list-style-type: none"> • Pre- and post-test • Number of students/schools • Amount of trash collected • Amount of vegetation planted • Number storm drain stencils installed during reporting period 	Yes	<ul style="list-style-type: none"> • Pre and post-tests indicated that the program was effective in increasing knowledge about water quality issues and actions the students could take • 578 students / 6 schools • 250 plants planted at two sites in Chollas Creek • 50 storm drain stenciled • ~75 lbs. trash collected

4.1.2 HA Assessment

The San Diego Bay Copermittees assessed how well the activities targeted the high priority water quality problems and their sources on a HA level. The Copermittees assessed activities occurring within each HA in order to determine the collective impact the activities have on the targeted high priority pollutants and/or pollutant sources. Table 4-2 presents the water quality activities occurring in each HA and the pollutants each activity addresses. This evaluation reveals whether the San Diego Bay Copermittee efforts were successful in addressing the high priority water quality problems and whether the activities were or were not effectively targeting potential pollutant sources in each HA during this reporting period.

Evaluation at an HA level also provides an assessment of the effectiveness of the San Diego Bay Copermittees' collective efforts for a number of the activities that were implemented across several HAs. These activities presented universal solutions to address high priority water quality problems common to multiple HAs and the common sources of the pollutants of concern, allowing for greater flexibility for each of the Copermittees to participate in coordinated watershed activities. The San Diego Bay Copermittees have implemented different approaches or activities which resulted in addressing the same pollutant of concern and/or pollutant sources in a HA. In particular, Copermittees addressed bacteria on a watershed scale by implementing activities targeting various pollutant sources in several HAs. Each of these activities collected similar data to show how these programs were effective at both the HA and WMA level. The Copermittees continued the implementation of Pet Waste Bags (SDB-001), Enhanced Street Sweeping (SDB-003), and Cleanups (SDB-004) during FY 2009-1009-10.

The combined effect results in a greater impact on the targeted high priority water quality problems and positively influences the effectiveness and efficiency of the San Diego Bay WURMP. Also, as required by the RWQCB 13267 Order Investigative Order Enforcement Letter for Trash, the San Diego Bay Copermittees are addressing trash through activities such as the Enhanced Street Sweeping (SDB-003), Cleanup Events (SDB-004), and Family Stream Team Initiative (SDB-051). These activities will contribute to efforts by cities along Chollas and Paleta Creeks to implement trash cleanup measures and programs to address trash and other pollutants that may be associated with trash within these creeks.

4.1.2.1 Pueblo San Diego HU (908)

The Pueblo San Diego Watershed is the smallest HU in San Diego County, encompassing approximately 60 square miles of predominantly urban landscape. The watershed drainage consists of a group of relatively small local creeks and pipe conveyances, many of which are concrete-lined and drain directly into San Diego Bay. The creeks in the watershed are highly impacted by urban runoff, with two TMDLs adopted (Dissolved Metals and Diazinon) for Chollas Creek in particular. A third TMDL, the SIYB Dissolved Copper TMDL, was also adopted within 908.1 HA.

4.1.2.1.1 Point Loma HA (908.1)

The Point Loma HS is heavily urbanized and is not characterized by any Hydrologic Subareas (HSAs). The high priority water quality problems in the Point Loma HA are bacteria, gross pollutants, metals, oil and grease, and pesticides. Activities were implemented that effectively targeted a variety of sources of many of the identified high priority pollutants. Potential pollutant sources in the Point Loma HA include those related to residential areas, streets and roadways, or commercial business, schools, and public facilities.

Copermittees implemented two water quality activities in the Point Loma HA during FY 2009-10 that effectively addressed high priority water quality problems. The Pet Waste Bag Collaborative Watershed Activity (SDB-001) targeted a specific source of bacteria within residential and park areas and is believed to be effective in abating this source. Enhanced Street Sweeping (SDB-003) in this HA was also implemented to address load reductions of gross pollutants, metals, and oil and grease into the MS4 from streets and roadways. A variety of other pollutants that are known to be associated with sediment, such as bacteria, may also be reduced. Load reductions have been assessed through the quantification of the weight of debris collected during sweeping and/or the amount of area (curb miles) covered by street sweeping vehicles. Copermittees implemented five monitoring and source identification studies in this HA to supplement MS4 and CSDM monitoring including the following; Coordinated Dry Weather Monitoring (SDB-021), SIYB Urban Runoff Monitoring Study (SDB-053), and the B Street/Broadway Piers Downtown Anchorage and Mouth of Switzer Creek Study (SDB-063) to evaluate receiving water quality and provide additional information on sources of high priority water quality problems.

4.1.2.1.2 San Diego Mesa HA (908.2):

The San Diego Mesa HA is a heavily urbanized watershed, and includes two Hydrologic Subareas: Lindbergh (908.21) and Chollas Creek HSA (908.22). The high priority water quality problems in the San Diego Mesa HA are bacteria, metals, sediment, trash, and pesticides. Prominent land uses which may contribute to high priority water quality problems in the HA include residential, streets and roadways, and commercial/industrial businesses. Other land uses in the HA include schools, parks, and public facilities. Copermittees have implemented a number of activities that effectively target sources of high priority water quality problems in the HA during this reporting year. Many of these activities have also been identified to be applicable in addressing the Chollas Creek Dissolved Metals and Diazinon TMDLs.

Copermittees implemented several load reduction and source abatement activities in this HA that effectively addressed the high priority pollutants. Pet Waste Bags (SDB-001), Cleanups (SDB-004), and Family Stream Team Initiative (SDB-051) are activities implemented during the reporting period that provided load reductions of bacteria and trash in the HA. The Pet Waste Bag Activity (SDB-001) was effective in targeting and reducing a source of bacteria within areas such as residential areas and parks. Cleanup events and similar trash related activities aided in the removal of a quantifiable amount of trash from the watershed. Because the accumulation of

trash and debris may result in a number of negative impacts that contribute to increased pollution, such as elevated numbers of bacteria in the water, such impairments may be indirectly reduced through the cleanups, though this has not been quantified. Enhanced Inspection activities such as Targeted Automotive Inspections (SDB-008), Outdoor Special Event Oversight (SDB-048), and Enhanced Construction Oversight (SDB-009) have been identified as effective in reducing the sources of metals, trash, and sediment, respectively, in this HA. The activities identified specific sources of metals, trash, or sediment and ensured proper BMP implementation in order to effectively reduce loading of these pollutants into the MS4 (Level Four Outcome). Heightened awareness of proper BMP implementation increases the likelihood of BMP effectiveness, which in turn helps to abate the amount of pollutant loading to San Diego Bay.

As noted in Section 2.2, water quality data was collected primarily within the San Diego Mesa HA in the Chollas Creek HSA (908.22). Following management actions identified in the San Diego Bay WURMP Watershed Strategy, Copermittees planned and/or implemented eight urban monitoring and source identification studies in this HU in addition to the regional Receiving Waters and Urban Runoff Monitoring Program. These activities are necessary to fill data gaps, facilitate in the before implementation of load reduction activities and identify the appropriate focus of resources. Data resulting from this monitoring will enable the Copermittees to make more informed management decisions on implementing BMPs that target high priority pollutants.

In addition to the load reduction and source abatement activities implemented in this HA, the Copermittees also implemented education activities in this HA that were found to be effective in increasing awareness and knowledge. Stream Team Stewards provided watershed education to over 560 students at six schools. Students were involved in cleanups, storm drain stenciling, and tree planting. The ILACSD School Presentations (SDB-044) provided watershed focused pollution prevention information to six high schools in the San Diego Bay WMA during this reporting year, including one high school in this HA. Assessment of the activity indicated an average increase of 22% change in knowledge and attitude as a result of the presentations.

A number of activities have been identified by Copermittees to address the Chollas Creek Dissolved Metals and Diazinon TMDLs, as discussed in Section 3.5.3 and Section 4.2. In the 908.22 HSA, Named Dischargers implemented 47 activities, including water quality, education, and ongoing agency-wide activities in FY 2009-10 to address the identified high priority water quality problems. A comprehensive assessment of the activities identified in the TMDL Implementation Plan will be discussed in Section 4.2.1.

4.1.2.1.3 National City HA (908.3)

The National City HA is highly urbanized and consists of two HSAs: El Toyon (908.31) and Paradise (908.32). The high priority water quality problems in the HA are bacteria, sediment and trash. Activities were implemented that effectively targeted a variety of sources of bacteria, sediment and trash from prominent land uses such as residential, streets and roadways, open

space and parks, and commercial/industrial businesses. Copermittees implemented six effective water quality activities in the National City HA during FY 2009-10.

Copermittees implemented three load reduction/source abatement activities to address trash in this HA. Because trash and debris may result in a number of negative impacts that contribute to increased contamination, such as elevated numbers of bacteria in the water, it may be assumed that these activities also result in bacteria load reductions. The Copermittees also effectively addressed two different sources of sediment (construction and streets and roadways) during this reporting year. Copermittees participating in the Enhanced Street Sweeping Activity (SDB-003) increased the frequency of sweeping relative to JURMP requirements, effectively reducing the loading of sediment into the MS4. In addition, Additional Dry Season Construction Inspections (SDB-007) reduced sediment and trash runoff by promoting proper BMP implementation at construction sites during the dry season and helping construction sites prepare for the upcoming wet season. It was determined that most of these inspections helped contractors stay vigilant about implementing BMPs during the dry season and helpful toward the end of the dry season, when responsible parties are reminded of applicable wet season requirements.

4.1.2.2 Sweetwater HU (909)

Water quality assessment of the Sweetwater HU indicated there have not been any significant changes to the COCs identified for HU during this reporting year. Though monitoring results are consistent with the BLTEA priority ratings for bacteria in the Lower Sweetwater HA (909.1), the results are not supportive of the A rating for pesticides in the Middle Sweetwater HA (909.2). Copermittees implemented activities to address a variety of the high priority pollutant sources, as well as monitoring to help guide the selection and implementation of future watershed activities in this HU as part of the San Diego Bay WURMP.

4.1.2.2.1 Lower Sweetwater HA (909.1)

The Lower Sweetwater HA is the most urbanized area of the Sweetwater HU and land use consist primarily of residential, streets and roadways, open space, with the remaining area consisting of a mixture of commercial/industrial businesses, schools and undeveloped land use. The high priority water quality problem in the Lower Sweetwater HA is bacteria. Residential sources of bacteria include sanitary sewer overflows, septic system failures, landscape maintenance, various washing activities, trash, and pet waste. Copermittees implemented eleven effective water quality activities in the Lower Sweetwater HA during FY 2009-10. The Pet Waste Bag Activity (SDB-001) was effective in targeting and abating a source of bacteria within areas such as residential areas and parks. Copermittees implemented Cleanup Events (SDB-004) to address trash from a number of areas in this HA. Trash and debris may result in a number of negative impacts that contribute to increased contamination, which may increase bacteria levels. Although monitoring to quantify the expected reductions has not been performed, it may be assumed that these activities also result in bacteria load reductions.

Copermittees effectively targeted a variety of audiences by implementing eleven watershed education activities in the Lower Sweetwater HA. The Storm Water Education Booth at the Pet Fest and Doggy Dash (SDB-040) activity provided education about proper pet waste disposal to pet owners. A part of the activity was to survey pet owners about pet waste disposal. The majority of surveyed festival attendees responded that they knew how to properly dispose of their pet's waste. To encourage BMP implementation, all respondents received a dog waste bag dispenser. The Focused Outreach to the Equestrian Community Activity (SDB-066) provided workshops on manure management and watershed protection. Pre- and post-test results from workshop attendees showed that there was an increase in knowledge after the workshop presentation.

4.1.2.2 Middle Sweetwater HA (909.2)

Unincorporated rural and suburban communities characterize the Middle Sweetwater HA. The Middle Sweetwater HA consists primarily of open space and undeveloped land, approximately 63% of the land use, while the rest of the HA is mostly residential use and commercial/industrial and streets/roadway land use. The high priority water quality problem in the Middle Sweetwater HA is pesticides. There were four water quality activities implemented in this HA during FY 09-10. The Land Acquisition Activity (SDB-046) precludes development from occurring and allows land to retain its natural perviousness. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed. The Storm Water Quality Master Plans for Special Drainage Fee Areas (SDB-056) activity aims to improve drainage structures and will recommend regional BMP structures or devices intended to improve watershed water quality.

4.1.2.3 Upper Sweetwater HA (909.3)

The Upper Sweetwater HA contains large undeveloped areas within the Cleveland National Forest and Cuyamaca Rancho State Park, the unincorporated communities of Pine Valley, Descanso, and Alpine, and the Viejas Indian Reservation. The Upper Sweetwater HA consists primarily of open space and undeveloped land, approximately 82% of the land use, while the rest of the HA is mostly residential use and agriculture. Although no pollutant category was classified as high priority in this HA, three water quality activities were implemented in this HA, which addressed a variety of pollutant categories. The Land Acquisition Activity (SDB-046), implemented in the Upper Sweetwater HA, directly addresses the prominent land use in this HA.

4.1.2.3 Otay HU (910)

The *Basin Plan* identifies the Otay HU as the second largest of the three HUs in the San Diego Bay WMA and is one of the least populated watersheds in the San Diego County. As stated in Section 2.5.3, elevated concentrations of indicator bacteria have been detected within MS4 during urban runoff monitoring from various locations in the Coronado HA and Otay Valley HA. This result supports the BLTEA high priority (A) rating for bacteria in the two HAs.

4.1.2.3.1 Coronado HA (910.1)

Land use in Coronado HA consists primarily of residential, streets and roadways, commercial/industrial, and parks. The high priority water quality problems in this HA are bacteria and gross pollutants. There were six water quality activities implemented this HA during the reporting period that addressed a variety of pollutant categories, including bacteria and gross pollutants. The Pet Waste Bag Activity (SDB-001) was effective in targeting and reducing a source of bacteria within residential areas and parks. Cleanup events (SDB-004) occurred in this HA throughout the reporting period that removed trash and potentially reduced the amount of bacteria in waterways. The Large Special Event Activity (SDB-047) was effective in enhancing recycling efforts and verifying the implementation of BMPs by vendors through inspections, potentially leading to lower levels of bacteria and trash reaching the MS4.

4.1.2.3.2 Otay HA (910.2)

Land use in Otay HA consists primarily of open space and undeveloped land, or approximately 49% of the land use, while residential, streets and roadways and commercial uses. The high priority water quality problem this HA is bacteria. There were seven water quality activities implemented in the Otay HA during FY 2009-1009-10 which effectively addressed a variety of pollutants, including bacteria. The Pet Waste Bag Activity (SDB-001) was effective in targeting and reducing a source of bacteria within residential areas, as well as open spaces. Cleanup events (SDB-004), such as the Home Front Cleanup and the Beautify Chula Vista Cleanup, occurred in this HA during this reporting period. The Updating the Recycling and Solid Waste Ordinance activity (SDB-035) targets residential and commercial pollutant sources. The ordinance requires that all new multi-family residential and commercial trash enclosures be built with a solid roof top enclosure in order to minimize the contact of storm water with trash areas. The roof enclosure will prevent rain water from entering the trash areas, as well as eliminate pollutant runoff from these areas. As a result of this ordinance change, there were 20 projects under review during the reporting period that had to meet this requirement. In addition, the Median Sweeping Pilot Study (SDB-003a) was implemented in this HA to include non-traditionally swept thoroughfares, such as medians. Specifically, the pilot study tested an expansion of sweeping operations to include these areas that are adjacent to high traffic roadways and showed sweeping medians reduced debris, metals, nutrients, and hydrocarbons.

Nine education activities were implemented in this HA during this reporting year, which effectively targeted a variety of audiences. The ILACSD Watershed Presentations (SDB-045) activity provided focused watershed education to several high schools within the San Diego Bay Watershed, including two in the Otay HU. Assessment indicated an increase knowledge, with an average pre-test score of 44.2% correct and a post-test average score of 66.3%. The Focused Outreach to the Equestrian Community (SDB-066) activity is aimed at the equestrian community is focused on manure management, composting, and erosion control. Pre- and post-tests given at workshops resulted in an increase in knowledge and awareness, showing that workshop attendees were connecting their behaviors with water quality.

4.1.2.3.3 Dulzura HA (910.3)

The Dulzura HA consists primarily of open space and undeveloped land, or approximately 85% of the land use, while residential and commercial uses comprise nearly 15%. Although no pollutant category was classified as high priority in this HA, there were four water quality activities implemented during FY 2009-10 which effectively addressed potential sources within these land uses. The Land Acquisition Activity (SDB-046) precludes development from occurring and allows land to retain its natural perviousness. The Storm Water Quality Master Plans for Special Drainage Fee Areas (SDB-056) activity aims to improve drainage structures and will recommend regional BMP structures or devices intended to improve watershed water quality.

There were eight education activities in implementation or under development in this HA during this reporting year. The Public Service Announcements (SDB-029) activity continued as an effective means for educating the public about pollution prevention via the radio. The San Diego Bay Watershed Brochure (SDB-055), which was in development, will be a new educational tool to enhance the general public's understanding of watershed concepts and to educate them on BMPs related to the high priority water quality problems in the watershed.

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Table 4-2. San Diego Bay Watershed Activities by HA in FY 2009-10.

HA	High Priority Water Quality Problem(s)	Watershed Strategy Management Action	Additional Monitoring/ Source ID Activities	Load Reduction/ Source Abatement Activities	Education Activities
908.1	Bacteria	Additional Monitoring	<ul style="list-style-type: none"> Coordinated Dry Weather Monitoring 	<ul style="list-style-type: none"> Pet Waste Bags City of San Diego Strategic Plan Implementation 	<ul style="list-style-type: none"> Public Service Announcements: Karma/Karma Second Chance San Diego Bay Watershed Brochure
	Gross Pollutants		<ul style="list-style-type: none"> Coordinated Dry Weather Monitoring B Street/Broadway Piers, Downtown Anchorage, and Mouth of Switzer Creek Characterization Study 	<ul style="list-style-type: none"> City of San Diego Strategic Plan Implementation 	<ul style="list-style-type: none"> Public Service Announcements: Karma/Karma Second Chance San Diego Bay Watershed Brochure
	Metals		<ul style="list-style-type: none"> Coordinated Dry Weather Monitoring SIYB Urban Runoff Monitoring 	<ul style="list-style-type: none"> Source of Copper Water Pollutants, SB 346: Motor Vehicle Brake Friction Materials Enhanced Street Sweeping Collaborative Activity City of San Diego Strategic Plan Implementation 	<ul style="list-style-type: none"> San Diego Bay Watershed Brochure
	Oil and Grease			<ul style="list-style-type: none"> City of San Diego Strategic Plan Implementation 	<ul style="list-style-type: none"> San Diego Bay Watershed Brochure
	Pesticides		<ul style="list-style-type: none"> Coordinated Dry Weather Monitoring Chollas Creek Diazinon TMDL 	<ul style="list-style-type: none"> City of San Diego Strategic Plan Implementation 	<ul style="list-style-type: none"> San Diego Bay Watershed Brochure
908.2	Bacteria	Load Reduction	<ul style="list-style-type: none"> Enhanced Dry Weather Monitoring Coordinated Dry Weather Monitoring La Mesa Additional Water Quality Monitoring Program Chollas Creek Beneficial Use Designation Attainability Study and Mouth of Chollas Creek Bacteria Source ID Study 	<ul style="list-style-type: none"> Pet Waste Bags Pet Waste Bag Dispenser Program Phase II Municipal Rain Barrel Installation and Downspout Disconnects City of San Diego Strategic Plan Implementation Storm Water Quality Master Plans for Special Drainage Fee Areas Commercial BMP Self Certification Pilot Program 	<ul style="list-style-type: none"> Public Service Announcements: Karma/Karma Second Chance Community Based Social Marketing Outreach Pilot Project – Chollas Creek Community La Mesa Park Kiosk ILACSD School Presentations San Diego Bay Watershed Brochure Intergenerational Games Stream Team Stewards
	Metals		<ul style="list-style-type: none"> Enhanced Dry Weather Monitoring Coordinated Dry Weather Monitoring La Mesa Additional Water Quality Monitoring Program BMP Effectiveness Monitoring Program Chollas and Paleta Creeks Characterization Study Chollas Creek Copper, Lead, and Zinc Water-Effects Ratio Study 	<ul style="list-style-type: none"> Enhanced Street Sweeping Chollas Creek Family Stream Team Initiative Partnership Sweeper Speed Efficiency Study San Diego Bay Watershed Targeted Facility Inspections – Automotive Municipal Rain Barrel Installation and Downspout Disconnects Chollas Creek Runoff Reduction and Groundwater Recharge Project Treatment Control BMP Pilot Projects Beta Alley Green Street Filtration City of San Diego Strategic Plan Implementation Storm Water Quality Master Plans for Special Drainage Fee Areas Commercial BMP Self Certification Pilot Program Source of Copper Water Pollutants, SB 346: Motor Vehicle Brake Friction Materials 	<ul style="list-style-type: none"> Community Based Social Marketing Outreach Pilot Project – Chollas Creek Community La Mesa Park Kiosk ILACSD School Presentations San Diego Bay Watershed Brochure Intergenerational Games Stream Team Stewards
	Trash		<ul style="list-style-type: none"> Enhanced Dry Weather Monitoring Coordinated Dry Weather Monitoring 	<ul style="list-style-type: none"> Enhanced Street Sweeping Storm Drain Litter Control Techniques Collaborative Cleanup Events Trash Containment Boom with US Navy Outdoor Special Event Oversight City of San Diego Strategic Plan Implementation Storm Water Quality Master Plans for Special Drainage Fee Areas 	<ul style="list-style-type: none"> Public Service Announcements: Karma/Karma Second Chance Community Based Social Marketing Outreach Pilot Project – Chollas Creek Community ILACSD School Presentations San Diego Bay Watershed Brochure Intergenerational Games Stream Team Stewards

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HA	High Priority Water Quality Problem(s)	Watershed Strategy Management Action	Additional Monitoring/ Source ID Activities	Load Reduction/ Source Abatement Activities	Education Activities
	Sediment	Source ID	<ul style="list-style-type: none"> Enhanced Dry Weather Monitoring Coordinated Dry Weather Monitoring La Mesa Additional Water Quality Monitoring Program BMP Effectiveness Monitoring Program 	<ul style="list-style-type: none"> Enhanced Street Sweeping Enhanced Construction Oversight City of San Diego Strategic Plan Implementation Storm Water Quality Master Plans for Special Drainage Fee Areas Commercial BMP Self Certification Pilot Program 	<ul style="list-style-type: none"> ILACSD School Presentations San Diego Bay Watershed Brochure Stream Team Stewards
	Pesticides		<ul style="list-style-type: none"> Enhanced Dry Weather Monitoring Coordinated Dry Weather Monitoring La Mesa Additional Water Quality Monitoring Program Switzer Creek Pesticide Source Monitoring Study Chollas and Paleta Creeks Characterization Study 	<ul style="list-style-type: none"> City of San Diego Strategic Plan Implementation Storm Water Quality Master Plans for Special Drainage Fee Areas Commercial BMP Self Certification Pilot Program 	<ul style="list-style-type: none"> La Mesa Park Kiosk ILACSD School Presentations San Diego Bay Watershed Brochure Intergenerational Games Stream Team Stewards
908.3	Bacteria	Load Reduction		<ul style="list-style-type: none"> Clean Community Program (Cleanup Events) La Mesa Business Inspection Supplemental Watershed Questionnaire City of San Diego Strategic Plan Implementation 	<ul style="list-style-type: none"> Public Service Announcements: Karma/ Karma Second Chance ILACSD School Presentations San Diego Bay Watershed Brochure
	Trash			<ul style="list-style-type: none"> Storm Drain Litter Control Techniques – El Cajon Boulevard Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project Enhanced Street Sweeping Cleanup Events Clean Community Program (Cleanup Events) Trash Containment Boom Cleaning Agreement with US Navy Additional Dry Season Construction Inspections City of San Diego Strategic Plan Implementation 	<ul style="list-style-type: none"> Public Service Announcements: Karma/ Karma Second Chance ILACSD School Presentations San Diego Bay Watershed Brochure Clean Community Program (Calendar Distribution)
	Sediment	Source ID	<ul style="list-style-type: none"> Storm Drain Litter Control Techniques – El Cajon Boulevard Storm Drain Inlet Retrofit for Chollas Creek Watershed Protection Project Enhanced Street Sweeping Additional Dry Season Construction Inspections City of San Diego Strategic Plan Implementation 	<ul style="list-style-type: none"> ILACSD School Presentations San Diego Bay Watershed Brochure 	
909.1	Bacteria	Load Reduction		<ul style="list-style-type: none"> Pet Waste Bag Pet Waste Bag Dispenser Program in County Parks La Mesa Business Inspection Supplemental Watershed Questionnaire Update Recycling and Solid Waste Ordinance City of San Diego Strategic Plan Implementation Land Acquisitions – SD Bay Watershed 	<ul style="list-style-type: none"> La Mesa Business Inspection Supplemental Watershed Questionnaire Storm Drain Stenciling Public Service Announcements: Karma/Karma Second Chance Provide HOA Education About Pet Waste Disposal Storm Water Education Booth at the Pet Fest and Dog Dash FOG Program ILACSD School Presentations San Diego Bay Watershed Brochure Focused Outreach to the Equestrian Community Intergenerational Games

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HA	High Priority Water Quality Problem(s)	Watershed Strategy Management Action	Additional Monitoring/ Source ID Activities	Load Reduction/ Source Abatement Activities	Education Activities
909.2	Pesticides	Additional Monitoring		<ul style="list-style-type: none"> Land Acquisitions – SD Bay Watershed Storm Water Quality Plans for Special Drainage Areas Residential Rain Barrel Subsidies and Distributions 	
910.1	Bacteria	Load Reduction		<ul style="list-style-type: none"> Pet Waste Bags Large Special Events (Education, Inspections, and Cleanup) 	
	Gross Pollutants	Source ID			
910.2	Bacteria	Source ID		<ul style="list-style-type: none"> Pet Waste Bags Update Recycling and Solid Waste Ordinance City of San Diego Strategic Plan Implementation Storm Water Quality Master Plans for Special Drainage Fee Areas Residential Rain Barrel Subsidies and Distributions 	<ul style="list-style-type: none"> Storm Drain Stenciling Public Service Announcements: Karma/Karma Second Chance Provide HOA Education About Pet Waste Disposal Storm Water Education Booth at the Pet Fest and Dog Dash FOG Program ILACSD School Presentations San Diego Bay Watershed Brochure Focused Outreach to the Equestrian Community

4.1.3 Targeted Outcome Assessment

In the following sections, the San Diego Bay Copermittees will present an assessment of their ability to meet Permit requirements during this reporting period. A comprehensive evaluation of the San Diego Bay WURMP program enabled the Copermittees to determine if the targeted outcome levels were met.

4.1.3.1 Level One Outcome – Compliance with Activity-Based Permit Requirements

A Level One assessment addresses the fundamental requirements prescribed in the Permit, including programs and activities that are intended to benefit water quality. Table 4-3 lists how the San Diego Bay Copermittees have met Level One objectives and maintained compliance with the Permit requirements.

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Table 4-3. Permit Component Compliance (Level One Outcome).

Targeted Outcome	Confirmation	Report Section/Appendix
Update any watershed maps.	Completed.	1.3
Update assessments and analyses of the WMA's current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed's water quality problems and high priority water quality problem(s) during the reporting period.	Completed.	2.1-2.4
Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.	Completed.	2.1-2.4
Identify and describe the Watershed Water Quality Activities implemented by Copermittees during the reporting period.	Completed.	3.1
Update list of potential Watershed Water Quality Activities.	Completed.	3.5.1
Identify and describe the Watershed Education Activities implemented by Copermittees during the reporting period.	Completed.	3.2
Update list of potential Watershed Education Activities.	Completed.	3.5.1
Describe the public participation mechanisms used during the reporting period.	Completed.	3.3
A description of Copermittee collaboration efforts including meeting as the San Diego Bay WMA WURMP Workgroup.	Completed.	1.2
Describe the efforts implemented to encourage collaborative, watershed-based, land use planning.	Completed.	3.4
Describe all TMDL activities implemented for each approved TMDL in the watershed. The description shall include: any additional source identification information; the number, type, location, and other relevant information about BMP implementation; updates in the BMP implementation prioritization and schedule; an assessment of the effectiveness of the BMP Implementation Plan; and a discussion of the progress to date, incorporating the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.	Completed.	3.5.3 and 4.2 Appendix E

As shown in the Table 4-1, the San Diego Bay WURMP Copermittees were in compliance with all Level One WURMP related Municipal Permit requirements during FY 2009-10.

4.1.3.2 Level Two Outcome – Changes in Knowledge/Awareness and Level Three Outcome – Behavioral Change/BMP Implementation

The Permit states that Watershed Education Activities are in active implementation phase when “changes in attitudes, knowledge, awareness, or behavior can be reasonably established in target audiences.” This definition corresponds with Level Two and Three Outcomes discussed in the 2008 San Diego Bay WURMP document. In order to assess education activities, the San

Diego Bay Copermittees have established and used several means, such as conducting surveys, for evaluating education program effectiveness. Data collected during this reporting year includes the amount of trash picked up at cleanup events, the number of participants, and pre- and post-tests and surveys. Through activities such as the CBSM Pilot Study in Chollas Creek (SDB-032), the ILACSD High School Presentations Activity (SDB-045), and the Stream Team Stewards (SDB-068), Copermittees effectively demonstrated a Level Two Outcome during this reporting period. An additional one-page supplement to the standard industrial and commercial inspection form (SDB-010) that has been used for the last three years in La Mesa also demonstrated a Level Two Outcome. The City of La Mesa intends to continue gathering information regarding the level of storm water awareness of business owners/operators in order to compare how the level of storm water awareness and BMP implementation of business owner/operators changes overtime with increased education and outreach. In addition, Copermittees provided storm water educational materials (i.e. brochures, fliers, and various giveaways) at many events such as the Pet Fest and Doggie Dash event in Chula Vista, the Coronado Fire Services Department Annual Open House, and various cleanups. Copermittees were also involved in supplemental educational activities that provided watershed information such as PSAs or posting ads on transit shelters and billboards.

In addition to the watershed education activities in Table 4-2, Copermittees collected assessment data for education activities implemented as part of other urban runoff management programs (Table 4-4) during this reporting period. The assessment information can be used by the San Diego Bay Copermittees to develop a comprehensive watershed-wide evaluation of education activities which can be used as a tool for planning future education activities and events that are able to reach Level Two and Three Outcomes. Overall, the collected data shows that education activities are positively impacting the public and leading to changes in knowledge about storm water. Notably, the San Diego Bay Copermittees showed significant success in promoting positive behavior change in school children through school programs and outreach.

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Table 4-4. Assessment of the San Diego Bay Education Program FY 2009-10.

Program	Number of Events	Number of Participants	Events with Assessment Data	General Results of Assessment Data*
Presentations and Media	375	1,863,715	11	These programs were assessed via surveys and pre- and post-tests. Overall, results show positive behavior changes and an increase in knowledge. Refer to Appendix D for more information.
School Programs and Outreach	9	15,019	5	Pre- and post-tests indicated an increase in knowledge for all events. Refer to Appendix D for more information.
Partners in Clean Water	51	18,843	16	Amounts of waste collected – 882 tons of trash, recyclables, and construction debris; 117 tons of E-waste; 4 tons of U-waste
				Pre and post-tests show an increase in knowledge.
Integrated Pest Management	2	178	1	Survey results indicate that the seminar was useful and that protecting water quality is important
Project Clean Water Website	N/A	5,257 web hits for San Diego Bay	N/A	N/A

* For events where data was available

Several water quality activities also demonstrated a Level Three Outcome during this reporting period. Several San Diego Bay Copermittees have enhanced their inspection programs to address and abate specific watershed concerns, such as sediment, bacteria or metals. Through the Enhanced Inspection Activities, the San Diego Bay Copermittees were able to use the inspection data to ascertain if the activity was effective in ensuring the proper BMP implementation in their jurisdictions. Routine inspections of industrial, commercial, and construction sites by the Copermittees provide a tool for assessing behavioral changes and ensuring the proper implementation of appropriate BMPs by businesses and construction site managers. Positive changes in behavior and improved BMP implementation were noted from the following activities: Additional Dry Season Construction Inspections (SDB-007), Targeted Auto Facility Inspections (SDB-008), and Enhanced Construction Oversight (SDB-009). Additional information on these inspection activities is presented in Section 3.1 and Appendix D of this Annual Report.

Public participation in the trash and debris related activities such as the San Diego Bay WURMP sponsored Creek to Bay Cleanup event, indicate not only a change in awareness within the community of how to properly dispose of trash by the individuals involved but a change in

behavior that will continue into the future. Approximately 7,235 people participated in cleanups throughout the San Diego Bay WMA in FY 2009-10. Participation in collection events associated with the Clean Community Program (SDB-005) and the Family Stream Team Initiative (SDB-051) also provided evidence that there has been an increase in public awareness on proper disposal and options that may be available to properly dispose of trash. These efforts may assist in reducing the occurrence of illegal dumping in these areas. In addition, the number of people using publicly available HHW collection facilities located within the San Diego Bay WMA and the amount of waste collected at these facilities provides another tool to assess behavioral change and proper BMP implementation. The amount of HHW collected represents a quantity of potential storm water pollutants from residential areas that have been captured and removed from the waste stream. Data collected from San Diego Bay Copermittees shows that approximately 7,967 individuals made use of HHW collection facilities in the San Diego Bay WMA and disposed of approximately 361.4 tons of HHW during FY 2009-10¹.

The Pet Waste Bag activity was also successful at meeting a Level Three Outcome. The increased use of pet waste bags by pet owners is another example of positive behavioral change and the implementation of appropriate BMPs. The San Diego Bay Copermittees provided pet waste bags at various public locations, typically parks and public walkways. By providing pet waste bags, the San Diego Bay Copermittees have been able to increase public awareness of pet waste as a source of bacteria and increase the implementation and use of this BMP by the general public. A survey distributed at the Stormwater Education Booth at an Annual Pet Festival and Doggy Dash (SDB-040) revealed 92% of pet owners surveyed use bags to pick up after their pets. This indicates efforts to provide pet waste bags at public locations and to educate the public on the use of pet waste bags helps reduce pet waste from entering the MS4. An assessment in Chula Vista, as discussed in Activity Summary SDB-001, indicated that in parks where pet waste bags stations were used noted that less pet waste was left on the ground compared to those without stations. It was also noted that signage presented on the pet waste stations describing the environmental benefits of the activity and any laws pertaining to the pet waste encourages pet owners to pick up after their pet(s).

The equestrian community and other owners of small animals and livestock in the unincorporated area of the Sweetwater HU were also addressed during this reporting period (SDB-066). The County of San Diego implemented focused water quality outreach and education to provide information on BMPs that will improve horse health, protect properties from erosion, and prevent polluted runoff discharges. Survey results indicated a positive increase in knowledge and awareness about how equestrian activities can affect water quality and how more equestrians were able to identify positive behavioral changes, or Level Three Outcomes, following the workshops.

¹ HHW is collected as part of JURMP programs and not all Copermittees are able to currently estimate collection by WMA.

It should be noted that many of the activities focused on load reduction/source abatement also contribute to improvements in knowledge and positive behavior changes, though these improvements may not be directly measured. However, it is important to consider this when evaluating the overall effectiveness of the program. Outreach provided through display ads, signage, press releases, or email blasts for activities such as Enhanced Street Sweeping (SDB-003), present opportunities to further disseminate information on watershed water quality issues to the public even though no assessment was completed to measure the contribution of these particular outreach efforts.

The San Diego Bay Copermittees feel that they are making strides towards implementing education activities that result in Level Two and Level Three Outcomes. The San Diego Bay Copermittees will continue to evaluate their education programs in order to improve public knowledge and awareness.

4.1.3.3 *Level Four Outcome – Load Reduction/Source Abatement*

In order to determine whether an activity reached a Level Four Outcome, the San Diego Bay Copermittees collected information that measured load reductions resulting from changes in behavior or BMP implementation. The San Diego Bay Copermittees have implemented water quality activities that allow for a quantification of high priority pollutants that are intercepted or prevented from entering the MS4 or receiving water in order to provide a measure of load reduction. Overall, the San Diego Bay Copermittees accomplished the goals set forth in the majority of load reduction /source abatement activities.

The San Diego Bay Copermittees were involved in source abatement activities during this reporting period. The objective of the source abatement (source control and pollution prevention) activities was to reduce pollutant sources and prevent pollutant pathways to receiving waters. These measures can be more effective when targeting sources and activities with the greatest loading potential for the constituents of concern. Several of the Copermittees provided sponsorship to the Sustainable Conservation's Break Pad Partnership to address a major source of copper through a legislative process (SDB-060). The goal of Senate Bill 346: Motor Vehicle Brake Friction Materials is to reduce the amount of copper released into the environment from automotive brake pads. SB 346 calls for reductions of copper down to 5% by weight by 2021 and 0.05% by 2025. This effort is expected to result in long-term reductions of copper from automotive brake pads to the environment.

Land acquisition (SDB-046) is a pollution prevention activity that occurred within the San Diego Bay. This activity eliminates the possibility of future sources in need of abatement or future pollutant loads in need of reduction by averting development. Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed. The County of San Diego continues to acquire lands through its implementation of the Multiple Species Conservation Program (MSCP) in FY 2009-10 (SDB-046), acquiring 1,095.49 acres of property located in the Otay HU.

Data was collected to show reductions of high priority pollutant loads for Enhanced Street Sweeping, Storm Drain Litter Control Techniques, Trash Cleanup, Pet Waste Bag, and Inspection activities. The Enhanced Street Sweeping Activities significantly reduced the amount of high priority pollutants associated with roads and parking lots entering the storm water conveyance systems throughout the WMA. During this reporting period, the San Diego Bay Copermittees removed an additional 1,094 tons of material (and an additional 107 cy at the Airport) and covered an additional 22,963 curb miles (2,850 broom miles for the City of San Diego) by increasing the frequency of street sweeping beyond jurisdictional requirements (SDB-003). The goal of the Targeted Aggressive Street Sweeping Pilot Project (SDB-003) was to evaluate the effectiveness of new street sweeping equipment and different sweeping frequencies which may result in more efficient pollutant removal. A total of 74.5 tons of debris was removed by the different sweeper types during the two-year study in the San Diego Bay WMA, over a total of 2,850 miles swept. The activity resulted in a measurable pollutant load reduction during this reporting period, with an average of 58 lbs of debris removed per mile swept. The Median Street Sweeping Study (SDB-003a) was implemented during this reporting period to investigate whether sweeping medians improves the effectiveness of current street sweeping activities. The study results indicate that median sweeping has the potential to remove significant amounts of street debris from high-traffic roadways. Along the 12.8 miles along Palm and Coronado Avenues in the Otay HU of the San Diego Bay WMA, a total of 8.49 tons of debris was removed.

Individual or group-sponsored cleanup events represent another activity that significantly reduced pollutant loads within the WMA. Cleanup activities conducted throughout the San Diego Bay WMA during FY 2009-10 removed approximately 378.5 tons of trash and debris from the watershed's main tributaries, tidelands, and the San Diego Bay. Approximately 23 tons of trash was collected by 1,438 volunteers during the 2010 Creek to Bay Cleanup. This was the sixth year in a row in which the San Diego Bay Copermittees co-sponsored this cleanup event. In addition to resulting in a significant load reduction, these cleanup activities also provided an important outreach opportunity to citizens within the WMA. The San Diego Bay Copermittees will continue to conduct cleanup events in all jurisdictions.

In addition to cleanup events, Copermittees implemented activities to encourage the public with an opportunity to properly dispose of items that might otherwise have been illegally dumped. The Clean Community Program (SDB-005) effectively reduced trash and debris during three events in 908.3 HA in which 696 tons of bulky trash was collected. Through the Family Stream Team Initiative activity (SDB-051), approximately 115 tons of trash and debris was removed from Chollas Creek HSA during the eight refuse collection events during this reporting period.

As discussed in Section 4.3.1.2, several San Diego Bay Copermittees have enhanced their inspection programs to address and abate specific watershed concerns, such as sediment, bacteria or metals. For example, the Enhanced Construction Oversight Program (SDB-009) abates construction sites as a source of sediment in the watershed. The estimated annual sediment pollutant load reduction resulting from this activity was 57 tons. The abatement of

sediment within the watershed contributes to improving the quality of the stormwater ultimately discharging into San Diego Bay.

Targeted special studies such as the Municipal Rain Barrel Installation and Downspout Disconnect study (SDB-012) provided the San Diego Bay Copermittees information to evaluate potential activities that are determined to be viable options to implement within their own jurisdictions. The Municipal Rain Barrel Installation and Downspout Disconnect targeted special study was implemented to determine whether rain barrel/rain-harvesting systems reduce stormwater runoff; thereby, reducing metals and bacteria loads, and if so, which system is most effective and efficient. Implementation of this activity addressed both high priority water quality problems by reducing runoff volume via capture, retention and infiltration. Assessment data shows that rain barrels and downspout disconnects are a low-cost, effective BMP for both attenuating storm water flows and reducing pollutant loads (SDB-012).

These activities contribute to the overall success of the WURMP program and demonstrate the Copermittees are making progress towards achieving their program goals and objectives. Based on Level Four assessment discussed above, the San Diego Bay Copermittees believe that they are making great strides towards improving water quality due to the load reductions observed, sources abated, and the knowledge gained by each Copermittee simply by implementing these activities. Through this knowledge, activities can be improved, optimized, or replaced with more efficient ones, thus leading to the most effective program in protecting and improving water quality. The Copermittees expect that future agreement and collaboration on data standards and reporting will allow for trend analyses that further describe the effectiveness of the San Diego Bay WURMP.

4.1.3.4 Level Five Outcome – Changes in Urban Runoff and Discharge Quality

The results from the 2009-2010 *San Diego County Municipal Copermittees Urban Runoff Receiving Waters and Monitoring Report*, as discussed in Section 2, indicate that urban runoff water quality remained similar to conditions reported in the WURMP Document. Organophosphate pesticides (Diazinon, Chlorpyrifos, and Malathion) continue to be below their respective benchmarks. The continued downward trend of Diazinon concentrations in storm water is a positive indication that the San Diego Bay Copermittees' current education and outreach efforts to address Diazinon are adequate. The San Diego Bay Copermittees believe that overall, the concentration of Diazinon will continue to decrease. Even though Diazinon was banned from sales, it is possible that there are still unused products containing Diazinon being stored and used by residents and businesses. As residual Diazinon public supply and use is exhausted, it is possible to see transient, isolated incidents such as this. Diazinon will continue to be monitored and sampled to determine overall statistical trends.

4.1.3.5 Level Six Outcome – Changes in Receiving Water Quality

A Level Six assessment involves direct measurement of overall water quality in receiving water bodies and evaluates changes in water quality with respect to established regulatory

benchmarks, biological integrity, beneficial use, and protection. Validating trends in receiving water quality improvement or degradation generally requires an adequate sample size, so the San Diego Regional Copermittees are continuing to work together to collect water quality data to determine improvements and/or degradations when appropriate. Table 2-4 presents a comparison between baseline HPWQPs identified in the San Diego Bay WURMP Document for the Pueblo San Diego HU to the 2009-2010 monitoring results. Detailed monitoring results are presented in the Regional Urban Runoff Monitoring Report (Weston Solutions, 2011). Changes in receiving water quality are most effectively assessed using multiple years of data. The long-term analysis of available data will likely be provided through the next LTEA assessment.

4.2 Assessment of TMDL Implementation Plan Effectiveness

There are four TMDLs adopted by the RWQCB within the San Diego Bay WMA. These TMDLs include:

- Chollas Creek Diazinon TMDL
- Chollas Creek Dissolved Metals TMDL
- Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL
- Baby Beach (Dana Point Harbor) and Shelter Island Shoreline Park (San Diego Bay) Indicator Bacteria TMDL

A brief summary of the current status and the assessment of the Implementation Plans for the Chollas Creek Diazinon and Dissolved Metals TMDLs and SIYB Dissolved Copper TMDL are presented below. The RWQCB adopted the Baby Beach (Dana Point Harbor) and Shelter Island Shoreline Park (San Diego Bay) Indicator Bacteria TMDL as a Basin Plan Amendment (BPA) on June 11, 2008. During this reporting period, the OAL approved the BPA on September 15, 2009 and the Environmental Protection Agency (EPA) approved the BPA on October 26, 2009.

4.2.1 Chollas Creek Diazinon and Dissolved Metals TMDLs

Status

The Implementation Plan for the Chollas Creek Diazinon TMDL was completed in September 2004 and is currently being implemented. The Copermittees within the Chollas Creek HSA (a sub-watershed of the Pueblo San Diego HU (908)) continue to monitor Diazinon discharges into the creek and implement an education and outreach program to raise awareness among key audiences regarding the harmful effects of pesticides on the environment. The Copermittees also continue to promote the use of Integrated Pest Management (IPM) practices to reduce pesticide loading into Chollas Creek.

The Chollas Creek Dissolved Metals TMDL took effect October 22, 2008 when it was approved as a Basin Plan Amendment by the Office of Administrative Law and subsequently approved by

the Environmental Protection Agency in December 2008. As described in Section 1.1, the seven named dischargers collaborated on a multi-pollutant strategy for addressing the TMDL as well as the development of the required BMP Implementation Plan. The Implementation Plan was submitted to the Regional Board on October 21, 2009. The dischargers are currently implementing Phase I of the strategy.

Assessment

To address Diazinon in FY 2009-10, the Copermittees continued to promote IPM through jurisdictional IPM seminars and events and through the San Diego regional IPM program. Refer to Section 3.2.1.3 and Table 3-3 of this Annual Report for more details. A few dischargers implemented additional activities targeting Diazinon through IPM materials, detailed in the tables in Appendix E. Specifically, dischargers implemented the following activities:

- IPM materials were distributed at five community events targeting specific audience groups.
- 2,848 students were educated through sponsorship by dischargers of San Diego County Office of Education's "Green Machine" traveling outreach van which visits elementary schools within the Chollas Creek watershed area. Education includes IPM practices
- The Copermittees continued to work with the University of California Cooperative Extension (UCCE) to disseminate information on IPM and water quality in both English and Spanish using PSAs, tips cards, and other outreach materials.

The Copermittees continue to conduct monitoring for the Chollas Creek Diazinon and Dissolved Metals TMDLs. Required compliance monitoring is detailed in Appendix C, the Chollas Creek Total Maximum Daily Load Compliance Monitoring Investigation Order No. R9-2004-0277 2009-2010 Water Quality Monitoring Report. In summary, exceedances for metals were observed this year and data analysis on the long-term data set at SD8(1) indicates significantly increasing trends for total and dissolved copper and zinc. However, when compared to historical data (1994-2010), increasing trends are relatively shallow and have flattened over time. Exceedance ratios have steadily decreased at SD8(1) since 2007. Significant trends for total copper and total zinc were also observed at DPR2.

While Diazinon was detected during the 2009-2010 monitoring season, concentrations were generally low. Diazinon was below the chronic WLA at both sites. There are significant, observably decreasing trends for Diazinon in both the north fork and south fork of Chollas Creek since the ban by EPA in 2004. It is anticipated that as residual supplies of Diazinon become exhausted due to its unavailability, concentrations and frequency of detection should continue to decrease.

Only one instance of reproductive toxicity to *Ceriodaphnia dubia* was noted at SD8(1), during the first storm event on November 29, 2009. This event was the first storm following 279 days

without significant rainfall and the buildup during this long dry weather period may have contributed to the toxic effects observed.

Based on the monitoring results presented above, the San Diego Bay Copermittees' efforts to address Diazinon through education and outreach programs, in addition to the ban on Diazinon, are adequate for meeting the goals of the Diazinon TMDL. Education and outreach programs and events for area residents and businesses should continue in order to help further reduce pesticide usage within the Chollas Creek watershed and proactively address the observed shift in pesticide usage that has occurred in recent years toward synthetic pyrethroids.

The key objectives of the Dissolved Metals TMDL dischargers during FY 2009-10 included collaborating and establishing a consensus among stakeholders as well as beginning the implementation of specific pollution prevention activities. While these two objectives were accomplished in FY 2009-10, they are also long term objectives to which the dischargers will continuously strive.

The Implementation Plan was submitted to the Regional Board in October 2009 as described previously, and the dischargers implemented activities as part of their comprehensive Storm Water Programs that will help in TMDL compliance. The Dischargers' approach in addressing the TMDL is an integrated, multi-pollutant based approach targeting metals, trash, bacteria, and pesticides as well as other pollutants. Forty-seven activities, including water quality, education, and ongoing agency-wide activities, were implemented in FY 2009-10.

Activity details including information on measurable targeted outcomes (Levels 1-6), assessment measures and assessment methods are presented in each discharger's BMP Implementation table located in Appendix E. However, this section includes a collective summary of some notable accomplishments. Discharger activity accomplishments for FY 2009-10 include:

- The removal of approximately 2,318 tons of trash, and 160 cubic yards of non-native vegetation from the watershed.
- Over 6,680 school children were educated on urban runoff and watershed issues during class presentations and field trips. Dischargers developed outreach booths at 22 local and regional events with a combined estimated 334,150 attendees. Public Service Announcements continued to air on television and radio regionally.
- Through over 272 targeted commercial, industrial, and municipal facility inspections and audits, 11 deficiencies were noted leading to 8 corrective actions. Corrective actions can include, but are not limited to, stopping/cleaning an active discharge, closing/covering open trash cans, and/or covering and maintain grease bins.
- Through an aggressive street sweeping pilot project, an average of over 58 lbs of debris was removed per mile swept for a total of 149,040 lbs of debris in the watershed over

the two year study period. Through the sweeping of freeways twice a month, an estimated 13.5 cubic yards of debris was collected from 40.8 miles.

- One Municipal Code modification was completed giving the City of La Mesa more stringent authority regulating within the Chollas Creek watershed. One other jurisdiction is planning a code modification to strengthen its sustainable building and green building practices and incorporate low impact development which ultimately will help improve the watershed.
- Four collaborative monitoring activities were conducted: 1) Synthetic Pyrethroid Assessment Monitoring, 2) Bacteria Monitoring, 3) Assessment Grab Samples for Metals, and 4) Jurisdictional Boundary Monitoring in the Upper Watershed. The jurisdictional boundary monitoring program continued on into FY2010-11 for a second year of data.
- Several of the dischargers provided sponsorship to the Sustainable Conservation's Break Pad Partnership to address a major source of copper through a legislative process. SB346 was passed and signed by the Governor in Fall 2010, and will reduce copper in brake pads to 0.5% by 2025.

The accomplishments listed above are not comprehensive. Details regarding all the activities that were implemented and/or are planned and made progress in FY 2009-10 are included in each discharger's activity table included in Appendix E. It is anticipated that over time with implementation of the Dischargers' Dissolved Metals TMDL Implementation Plan, improvements to water quality will be observed. The actions that the Dischargers' have planned are anticipated to reduce pollutant loading and address pollutant sources as well as education the public on water quality issues.

4.2.2 Shelter Island Yacht Basin Dissolved Copper TMDL

Status

The Port of San Diego and the City of San Diego are working with the RWQCB and other local stakeholders to develop a collaborative Shelter Island Yacht Basin (SIYB) Dissolved Copper TMDL Implementation Plan. The goal of the Implementation Plan will be to achieve a 76% reduction in dissolved copper discharges into the SIYB over the next 20 years. The named parties met on six occasions during this reporting year: August 20, 2009, September 17, 2009, January 19, 2010, February 17, 2010, April 14, 2010, and June 16, 2010.

During this reporting period, a conceptual monitoring plan for conducting compliance monitoring for the SIYB dissolved copper TMDL continued to be developed. The purpose of compliance monitoring within the SIYB is to determine if interim and final loading targets, including both numeric and narrative water quality objectives, are being achieved throughout the SIYB. Long-term tracking of vessel hull paint conversion and water quality is necessary to determine whether TMDL compliance has been attained. Compliance monitoring for the dissolved copper

TMDL will include tracking of vessel hull paint conversions to non-copper-based paint; annual water quality assessments of copper levels and toxicity; and monitoring of broader range of water-column, sediment, and biotic indicators on a 5-year basis through integration with the RHMP. The RHMP is further discussed in the Activity Summary Sheet SDB-025 in Appendix D. The primary means of determining compliance with interim loading reduction targets will be tracking the conversion of vessels from copper-based to non-copper paints on a basin-wide basis. The named parties began to develop vessel tracking standards, a vessel tracking database template and to collect vessel data on hull paints during this reporting period. The draft monitoring plan and vessel tracking data base worksheet was presented to the TMDL named parties for review during the aforementioned meetings. The draft Implementation and Monitoring plans are anticipated to be finalized in FY 2010-11.

Assessment

The Copermittees and other named dischargers have been in the process of developing the Implementation Plan during this reporting period. Therefore, an assessment of the Implementation Plan is not possible at this time. However, the Copermittees have been successful in proactively addressing the requirements of the TMDL in FY 2009-10. Accomplishments include:

- The Port of San Diego continued to participate in the EPA-funded “Safer Alternatives to Copper-Based Paints” project. The objectives of the project are to identify environmentally friendly test coatings that are: 1) effective in repelling or preventing fouling growth; 2) relatively easy to clean; and 3) cost effective to apply and maintain. The Port continued to implement the boat testing phase of the project during FY 2009-10. Ten of top performing alternative coatings from the panel testing phase were applied to recreational boats during the previous reporting period. Four boats were painted with test coatings in FY 2009-10. One boat was painted with another top performing test coating. Three boats served as duplicates for three of the top performing non-biocide test coatings. In all, there were 11 test coatings involved in the boat hull testing phase, though two coatings were removed from testing at the start of this reporting period due to coating condition issues. The educational and outreach efforts will provide valuable information and guidance to the boating industry on alternative non-copper based antifouling paints and maintenance strategies, resulting in a Level Three Outcome. The transition away from copper-based coatings would aid in the reduction of copper loading into the SIYB, thereby enabling the possibility of a Level Four Outcome by the end of this Permit cycle. The EPA-funded “Safer Alternatives to Copper-Based Paints” project will be finalized in FY 2010-11.
- The Port of San Diego and other parties named in the TMDL have continued to participate in the state-wide copper sub-workgroup, led by the Department of Pesticide Regulation (DPR), to increase overall understanding of copper impacts statewide. This workgroup met three times: July 9, 2009; April 8, 2010; and August 11, 2010.

- The Port of San Diego developed the framework for a long-term program to evaluate new and emerging hull coatings and technologies. The program will incorporate many of the testing methodologies and assessment protocols developed as part of the EPA Grant Project. The program will also develop mechanisms to continually seek new and emerging products, and develop partnerships with tenants in field testing efforts. As part of the on-going testing, Port staff contracted several of the paint manufacturers to see if any new products were available for testing. To date, approximately 22 new alternative coatings were assessed through panel testing in FY 2009-2010. The coatings tested include new products not previously available, as well as reformulations of several coatings from the EPA Grant Project which did not quite meet the panel testing standards. The field testing will be finalized in August 2010.
- During the previous reporting period, the Port collaborated with the SDSU College of Business' MBA Consulting Program to develop a database of interested parties of whom the Port can solicit solutions for innovative boat hull coatings. As a result of this effort, a Request for Information (RFI) solicitation was developed by the Port and distributed to interested parties in June 2009. The goal of the RFI was to identify innovative approaches to achieving a reduction in copper loading, either through the use of alternative coatings or in the form of concepts that prevent copper from impacting marine life in the area. Of the submittals received, three were determined to have significant potential to produce coatings that are novel in their approach to the problem and effective in preventing fouling of boat hulls. Funding was pending at the conclusion of this reporting period.
- The City of San Diego collected data from September 2009 through April 2010, including wet weather results, dry weather results, flow results, and loading estimates from the MS4 into SIYB (SDB-053). While no loading reduction is required under the TMDL for urban runoff, the City is taking a proactive position and verifying that the copper loading from its MS4 is within the load allocation WLA and WQOs.
- The RHMP conducted a focused special study during this reporting period which reviewed the existing literature and data to assess the spatial extent of copper contamination within the RHMP harbors, specifically focusing on the marina stratum. This comprehensive literature review included an assessment of sediment and surface water concentrations, copper loading, observed toxicity, and physical conditions within marinas that may affect copper bioavailability. Specifically, this task included a review of the primary peer-reviewed literature as well as key regional reports. Detailed information is provided in (SDB-025), located in Appendix D.

Section 5: Conclusions and Recommendations

5.1 Conclusions

The San Diego Bay Copermittees successfully completed all watershed-based requirements of the Municipal Permit and provided many opportunities for public participation and stakeholder input. Due to the success of the programs implemented during FY 2009-10, the San Diego Bay WURMP achieved the following objectives: 1) implementation of activities to specifically address the sources of water quality problems at a WMA and HA level; 2) continuation of the comprehensive water quality program, including long-term trend analysis where appropriate; 3) an evaluation of the collaborative effort on a WMA and HA level; 4) continued refinement of the watershed program; and 5) continue progress toward meeting WURMP goals and objectives. The comprehensive assessment of educational programs implemented through JURMP, RURMP, and WURMP demonstrates how the Copermittees have been successful in increasing public awareness and changing behaviors by implementing extensive pollution prevention efforts directed at potential sources of high priority pollutants. In FY 2009-10, the Copermittees supplemented the JURMP and RURMP educational programs by implementing 13 education activities targeting audiences identified in the Municipal Permit as most likely to have significant impact on the high priority water quality problems in the San Diego Bay.

Several of the watershed activities discussed in Table 4-2 improved knowledge or behaviors, reduced pollutant discharge loads, and abated potential pollutant sources. Assessment of individual activities indicated 13 of 17 water quality activities and nine of 13 educational activities met their assessment targets and were considered to be effective. As noted in Section 4, there were watershed activities that did not complete the assessment mechanisms during this reporting period. For a number of these activities, effectiveness assessment is scheduled to occur in the fifth year of the Permit. Evaluation of the water quality activities at an HA level also provided an assessment of the San Diego Bay Copermittees' collective efforts for several activities that were implemented across several HAs. These activities presented universal solutions to high priority water quality problems common to multiple HAs and the common sources of the pollutants of concern.

The Copermittees identified jurisdictional water quality activities which were implemented across multiple HAs, such as Pet Waste Bags, Trash Cleanups, Enhanced Street Sweeping, and Enhanced Inspections. Copermittees also implemented different approaches or activities which focused on the same pollutant of concern and/or pollutant sources in a HA. The combined effect resulted in a greater impact on the targeted high priority water quality problems and positively influenced the effectiveness and efficiency of the WURMP program.

The named dischargers of the Chollas Creek Dissolved Metals and Diazinon TMDLs have taken a holistic approach to planning, implementation, and assessment of watershed activities. The

holistic approach takes into account watershed activities implemented by named dischargers under WURMP, JURMP, or other stormwater programs. The goal of integrating information from various programs is to compile data from all implemented activities in order to allow a comprehensive evaluation of watershed-wide efforts to address high priority water quality pollutants identified in the TMDL. The involvement of non-Copermittee agencies (i.e., Caltrans and the U.S. Navy) in the Chollas Creek TMDLs enables the incorporation of information on pollutant sources outside of the Copermittees' jurisdictions and the BMPs these agencies have implemented to address these sources. During this reporting period, all named dischargers implemented activities as part of their comprehensive Storm Water Programs that will help in achieving TMDL compliance. The dischargers will share this information and will apply lessons learned in the region with the goal of improving water quality in the Chollas Creek Watershed.

During FY 2009-10, resources were allocated to the planning of seven Targeted Special Studies focused on high priority water quality problems and their sources within the Chollas Creek watershed (908.2). Future assessments of the Targeted Special Studies will provide information enabling Copermittees to determine the most efficient, feasible, and effective BMPs to implement within their individual jurisdictions. The San Diego Bay Copermittees believe monitoring activities provide important information which is essential to the overall success of the Watershed Strategy. Monitoring results may be used to support future management decisions regarding the planning, implementation, and assessment of watershed activities. During this reporting period, ten Monitoring and Source Identification activities were implemented. The San Diego Bay Copermittees attempted to further assess changes in receiving water quality during FY 2009-10, and more thorough assessments will be conducted as additional water quality and pollutant source assessment information becomes available. By acquiring a better understanding of the link between high priority pollutant sources and their impacts to water quality, Copermittees will be able to understand how the watershed activities affect urban runoff discharge and receiving water quality.

5.2 Program Improvements and Recommendations

The most important contribution that watershed programs can make is to protect and improve water quality in each WMA, including the San Diego Bay WMA. To do this, San Diego Bay Copermittees must first expand the understanding of the water quality issues in the WMA (i.e. the sources and magnitude of the issues), allowing for more informed decisions and actions. The comprehensive evaluation of existing activities, BMPs, and assessment strategies pertaining to watershed programming provides the San Diego Bay Copermittees with a valuable resource and a list of effective, efficient BMPs and activities. This resource can then be shared with other watersheds, jurisdictions, and non-Copermittee agencies to improve programs on a regional basis and further increase the list of BMPs Copermittees may potentially implement.

The San Diego Bay Copermittees and other entities will continue to utilize information on watershed pollutants and sources when evaluating and determining which watershed activities to implement. The Watershed Strategy, a key component required for the San Diego Bay

WURMP Document, provides a consistent mechanism for prioritizing pollutants, identifying sources of pollution, maximizing available resources, and developing and implementing activities. The San Diego Bay Copermittees will continue to gather additional water quality data suitable for assessments at the watershed, sub-watershed, and HA levels, as well as research pollutant sources and their loading potential. Because there is a general lack of water quality data directly related to sources, the San Diego Bay Copermittees will continue to coordinate to improve data collection and monitoring. Efforts to further refine the characterization of source inventories and water quality, such as to the HA level, will provide more useful information to the San Diego Bay WURMP. This improved identification of sources and their loading potential will enable the Copermittees to enhance effectiveness assessments of watershed activities, which will enable Copermittees to modify program activities and devote resources to specifically target the most troublesome sources using the most efficient BMPs.

The next step in the evaluation process will be to look at the watershed activities and decide if they are optimized or whether the activities may be further developed to achieve even greater load reductions. The San Diego Bay Copermittees will continue to evaluate the standardization of incoming data available through the activity summary sheets and comprehensive assessments. The Copermittees could begin to compare activities to each other, deciding if certain activities are able to be combined to increase effectiveness and efficiency, and the activity's ability to address multiple pollutants. This information when combined with monitoring and source identification may promote the positioning of strategically placed watershed BMPs and comprehensive watershed activities. This process entails improving existing data and assessment strategies, which will lead to improved source identification and improvements in water quality. In addition, the Copermittees will continue to collaborate on efforts to integrate information on JURMP related activities information into the San Diego Bay WURMP Annual Report in order to develop a comprehensive evaluation of all activities implemented to address high priority water quality problems under the various urban runoff management programs in the WMA. By evaluating the activities relevance to each other and to the high priority water quality problems and their sources, the Copermittees will be able to assess if activities are effectively targeting high priority pollutants and/or sources, or if modifications are necessary.

The Copermittees will also continue to contribute to efforts focused on making a more efficient and effective watershed program through modifications to the San Diego Bay WURMP and through their involvement in the San Diego Regional Copermittees efforts to improve coordination on reporting and assessment functions. This will likely help increase the ability to report and assess programs and activities on a watershed level. The Copermittees will also continue participating with other San Diego Regional Copermittees in the process of working with the RWQCB regarding WURMP permit elements in the upcoming permit renewal. The RWQCB is scheduled to renew the San Diego NPDES Municipal Storm Water Permit in 2012. The permit renewal process will provide an opportunity to identify more effective and efficient approaches for protecting water quality from storm water impacts on local jurisdictional and/or watershed-level scales. This process will also present opportunities to reduce inefficiencies and

duplicative efforts so that resources can be redirected to activities that protect and improve water quality.

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