

**Watershed Urban Runoff Management Program
Fiscal Year 2008-2009 Annual Report**

Tijuana River Watershed

Submitted to the Regional Water Quality Control Board, San Diego Region

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Prepared by the County of San Diego



County of San Diego

LAND USE AND ENVIRONMENT GROUP

CHANDRA L. WALLAR
DEPUTY CHIEF ADMINISTRATIVE OFFICER

1600 Pacific Highway, Room 212, San Diego, CA 92101
(619) 531-6256
Fax: (619) 531-5476

STATEMENT OF CERTIFICATION

Tijuana River Watershed Urban Runoff Management Plan (WURMP) FY 2008-09 Annual Report

I certify, under penalty of law, that this **FY 2008-2009 Tijuana River Watershed Urban Runoff Management Plan (WURMP) Annual Report** and all attachments were 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.

Chandra Wallar

CHANDRA L. WALLAR
Deputy Chief Administrative Officer
County of San Diego

1-27-10

Date



THE CITY OF SAN DIEGO

January 30, 2010

**RE: Statement of Certification
Tijuana River Watershed Urban Runoff Management Program
Fiscal Year 2009 Annual Report**

I certify under penalty of law that the City of San Diego participated in the development of the Fiscal Year 2009 Tijuana River Watershed Urban Runoff Management Program Annual Report. City staff assisting in the preparation of the document were 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, to the best of my knowledge and belief, is 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.

Kris McFadden
Deputy Director
Storm Water Department
City of San Diego

Date



Storm Water Department

9370 Chesapeake Drive, Suite 100, MS 1900 • San Diego, CA 92123
Hotline (619) 235-1000 Fax (858) 541-4350



*The City of
Imperial
Beach*



(619) 423-8311
(619) 429-4861 Fax

PUBLIC WORKS

825 IMPERIAL BEACH BOULEVARD • IMPERIAL BEACH, CALIFORNIA 91932

January 12, 2010

STATEMENT OF CERTIFICATION

Tijuana River Watershed Urban Runoff Management Program Document

I certify under penalty of law that the City of Imperial Beach's contributions to the Tijuana River Watershed Urban Runoff Management Program Annual Report for FY 2008-2009 were 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.

H.A. Levien
Public Works Director

TABLE OF CONTENTS

EXECUTIVE SUMMARY iii

SECTION 1.0 INTRODUCTION 1

 1.1 Watershed Collaboration 1

 1.2 Tijuana River Watershed Map Updates 3

SECTION 2.0 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT 4

 2.1 Water Quality Assessment 4

 2.2 Pollutant Source Assessment 11

SECTION 3.0 IMPLEMENTATION OF WATERSHED ACTIVITIES 16

 3.1 Watershed Water Quality Activities 16

 3.2 Watershed Education Activities 19

 3.3 Public Participation Activities 27

 3.4 Collaborative Land-Use Planning Efforts 27

 3.5 Updated 5-year Strategic Plan 29

 3.5.1 New Watershed Activities 29

 3.5.2 Updated 5-Year Strategic Plan 30

SECTION 4.0 EFFECTIVENESS ASSESSMENTS 34

SECTION 5.0 CONCLUSIONS AND RECOMMENDATIONS 38

 5.1 Conclusions 38

 5.2 Recommendations 38

SECTION 6.0 REFERENCES 40

ATTACHEMENT 1: Watershed Activity Summary Sheets

EXECUTIVE SUMMARY

This annual report describes implementation of the Tijuana River Watershed Management Area Watershed Urban Runoff Management Program (WURMP) during Fiscal Year 2008-09 (FY08-09). Although much of the Tijuana River Watershed Management Area (WMA) extends into Baja California, only the portion within the County of San Diego is subject to the Municipal Stormwater Permit's WURMP requirements. Therefore, this report only addresses activities within the County of San Diego.

Section 2.0 presents a water quality assessment for the Tijuana River WMA. The assessment is largely based on the regional monitoring program conducted on behalf of the San Diego County Municipal Stormwater Copermittees in compliance with Municipal Permit requirements, but is supplemented by other monitoring programs, including jurisdictional dry weather monitoring and special studies the monitoring report is identified as "The Monitoring Report (Weston 2010)" throughout this document. It should be noted that the Municipal Permit established a monitoring schedule for the entire county that alternated monitoring between the northern watershed and the southern watersheds.

The Tijuana River WMA WURMP (2008) found that there were nine priority water quality problems in the Tijuana River WMA that are considered high priorities: Sediment (TSS/Turbidity), Pesticides, Gross Pollutants (Organics, pH, Trash), Bacteria and Trace Metals.

Section 3.0 and Attachment 1 describe the 25 watershed activities that were in various phases of implementation during FY08-09. Many of the activities address Bacteria and Trash in the Tijuana Valley Hydrologic Area (HA 911.1). Several activities occurred in the upper HAs including the LID Community Planning Group Training (TJ-014) and the County Pet Waste Bag Dispenser Program (TJ-001). Furthermore, several milestones were reached within the Trash and Sediment Characterization Study (TJ-018) and significant headway was made by Weston Solutions on the Imperial Beach Bacteria Source Study (TJ-013) unfortunately due to the budget issues in the State of California funding for this project was frozen during this reporting period. In FY08-09 due to the flood which occurred in late November 2008 and the perceived threat of additional sediment deposition from the recently constructed Federal Border Fence Infrastructure project, emergency permits (TJ-025) were sought from various resource agencies to remove sediment and trash in the Smuggler's Gulch, Pilot Channel and Northern Channel. Approximately 65,000 cubic yards of sediment will be removed from the channel and as much as 1,000 tons of trash and over 5,000 tires.

Section 4 describes the how effective the Tijuana River WMA copermittees collaborated and whether or not overall WURMP activities were appropriate and effective at the Watershed and HA level. It was determined that a lot of headway has been achieved but there is much more to do. It is hoped that the bacteria source identification study and trash and sediment characterization study will result in future effective activities at not only the WMA area level but also at the entire watershed level.

Section 5 provides a discussion on conclusions and recommendations that were reached during the reporting period.

SECTION 1.0 INTRODUCTION

The NPDES Municipal Stormwater Permit, Order No. R9-2007-0001, referred to throughout this document as the “Permit” or “Municipal Permit”, requires the Copermittees sharing the Tijuana River Watershed Management Area (WMA) to collaborate on the development and implementation of a Watershed Urban Runoff Management Program (WURMP). The WURMP is a collaborative effort to address high priority surface water quality issues throughout the Tijuana River WMA. The program includes identifying and addressing high priority water quality problems in the WMA, and 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 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. The Watershed Activity Implementation Summary Sheets for all watershed water quality and education activities implemented during this reporting period will be included in Appendix 1.

This Annual Report is divided into five sections that highlight the efforts of the Tijuana River WMA Copermittees during the FY08-09 reporting period.

- Section 1: Provides an overview of the information included in this report, summarizes the ongoing collaboration among Tijuana River WMA Copermittees. There were no updates to the watershed maps during this reporting period.
- Section 2: 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: Describes the Watershed Water Quality and Watershed Education Activities that occurred during this reporting period as well as any public participation or collaborative land use planning that took place.
- Section 4: Discusses WURMP effectiveness as a whole. The main goals of this section are to: 1) assess collaboration among WMA 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.
- Section 5: Provides a discussion of conclusions reached during FY08-09 as well as recommendations for future reporting periods.

1.1 Watershed Collaboration

WURMP development and implementation is a collaborative effort by all of the following Tijuana River WMA Copermittees:

- City of Imperial Beach
- City of San Diego
- County of San Diego

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

The Tijuana River WMA Copermittees met or participated in conference calls 6 times during this reporting period. Table 1-1 provides a summary of the dates and the general topics of discussion at these meetings. The majority of the meetings were focused on preparing the draft and final FY07-08 Tijuana River WURMP Annual Report that was submitted to the RWQCB on February 1, 2009.

During this reporting period, the Tijuana River WMA Copermittees collaborated extensively on the watershed activities that were developed through the implementation of the Watershed Strategy that was submitted on March 24, 2007 to the RWQCB.

Utilizing the information from the watershed strategy, the Tijuana River WMA Copermittees have identified several water quality activities which they have coordinated at the Hydrologic Area (HA) level. This collaborative approach was utilized because these activities were identified as beneficial to address high priority water quality problems and can be applied within different locations at different scales of implementation as determined by each Copermittee within their respective HAs. Collaboration on the watershed strategy enabled the Copermittees to identify data gaps by reviewing existing monitoring and land use data which provided the basis for developing additional water quality monitoring and source identification activities. Section 3 and Appendix 1 provide specific detail on each program that was initiated or completed during the FY08-09 reporting period.

Table 1-1: Summary of Copermittee Meetings

Meeting (or Conference) Date	Main Topics of Discussion
10/21/08	<ul style="list-style-type: none"> • Potential WURMP Revisions • ID Section responsibilities.
12/09/08	<ul style="list-style-type: none"> • Discuss and review draft sections • Update on status of WURMP Revisions • Review Schedule
01/06/09	<ul style="list-style-type: none"> • Conference call to discuss revisions to Sections 3 and 4
01/22/09	<ul style="list-style-type: none"> • Final Edits to WURMP Annual Report
01/30/09	<ul style="list-style-type: none"> • Obtain Signed Certification Statements
04/14/09	<ul style="list-style-type: none"> • Discussed Status of WURMP Revisions • Reviewed Ongoing and New activities

In October 2008 the Tijuana River WMA Copermittee's were asked to participate in a meeting to discuss current issues and the future of the Tijuana River Valley. As a result of that meeting the Tijuana River Valley Recovery Team was formed. The Recovery Team is a collaboration of more than 30 federal, state, and local U.S. and Mexican agencies organized into four action teams and working together to implement a recovery plan for the Tijuana River Valley under the overall guidance of a policy committee.

The overall vision of Recovery Team is:

“A Tijuana River Valley free of historical trash and sediment, protected from future deposits of trash and sediment, restored to a sustained physical, chemical and biological integrity, and performing its hydrologic functions, while respecting the rights of current and future landowners and users.”

And the Mission:

To bring together the government administrative, regulatory, and funding agencies in tandem with advice from the scientific community, the environmental community, and affected stakeholders to protect the Tijuana River Valley from future accumulations of trash and sediment, identify, remove, recycle or dispose of existing trash and sediment, and restore the Tijuana River floodplain to a balanced wetland ecosystem.

Each action team developed specific missions including:

Border Action Team: To develop and implement solutions in the immediate vicinity of the border that will capture and divert trash and sediment before it reaches the Tijuana River Valley.

Clean Up Action Team: To identify, map, characterize and cleanup trash and manage sediment in the Tijuana River Valley floodplain in an environmentally sensitive way.

Restoration Action Team: To imagine, plan, coordinate and implement the restoration, mitigation, and flood control features of the Tijuana River Valley ecosystem from the border to the ocean.

Binational Action Team: To identify the sources of trash and sediment in the Tijuana River Valley watershed that impact the Tijuana River Valley floodplain and to recommend, establish, and implement a plan to abate and manage these sources in cooperation with Mexican agencies.

The Recovery team has met 8 times during FY08-09. The majority of these meetings were focused on developing strategies to characterize trash and sediment as well as identifying potential mechanisms to reduce the amount of trash and sediment from entering the river valley. Complete agendas and notes can be found on the Recovery Team website at: www/tjriverteam.org.

Specific efforts the Tijuana River WMA Copermittees are in line with the Mission of the Recovery Team; and include 1) cleaning and dredging the clogged channels, 2) characterizing trash and sediment in support of designing BMPs to reduce the volume of sediments and trash transported during storms (3). For details see Activity Summary Sheets TJ-012, TJ-018, TJ-022, and TJ-025 in Appendix 1 of this report.

1.2 Tijuana River Watershed Map Updates

There are no Tijuana River Watershed map updates included in the FY08-09 Annual Report.

SECTION 2.0 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT

This section summarizes the water quality assessment of the Tijuana River Watershed Management Area (WMA) using the results of the 2008–2009 monitoring. Monitoring activities conducted in compliance with RWQCB Permit Order R9 2007 0001 are provided in Table 2-1.

Table 2-1 2008-2009 Monitoring Program Activities

Program Data Set	Constituents Assessed
Receiving Water Monitoring	
Wet Weather Monitoring	Water chemistry, bacteria, toxicity, and trash
Post-Storm Sediment Pyrethroid Monitoring	Grain size, synthetic pyrethroid pesticides, and TOC.
Bight 08 Estuary Monitoring	Water (bacteria and TSS) and sediment quality (chemistry, toxicity, and benthic macroinvertebrates).
Third Party Data	Fecal indicator bacteria, Bacteroides (PCR) and general chemistry.
Urban Runoff Monitoring	
Jurisdictional Dry Weather Monitoring	Field and analytical chemistry, trash.
MS4 Outfall Targeted Monitoring	Chemistry, metals, pesticides and bacteria.

Within this watershed, contaminants identified on the 2006 State Water Resources Control Board (SWRCB) Section 303(d) list are provided in Table 2-2 with relevant total maximum daily load (TMDL) status. However, several changes are proposed in the 2008 Draft 303(d) List currently under development.

Table 2-2 Tijuana River WMA SWRCB Section 303(d) Listed Waterbodies and TMDL Status

Waterbody Name	Pollutant/Stressor on 2006 SWRCB 303(d) List	TMDL Status
Tijuana River	Indicator bacteria, eutrophic conditions, low dissolved oxygen (DO), pesticides, solids, synthetic organics, trace elements, and trash.	Not adopted
Tijuana River Estuary	Indicator bacteria, eutrophic conditions, lead, low DO, nickel, pesticides, thallium, trash, and turbidity.	Not adopted
Pacific Ocean Shoreline, Tijuana HU	Indicator bacteria.	Not adopted
Barrett Lake	Color, manganese, and pH.	Not adopted
Pine Valley Creek (Upper)	Enterococci, phosphorus, and turbidity.	Not adopted
Morena Reservoir	Color, manganese, and pH.	Not adopted

2.1 Water Quality Assessment

Receiving water monitoring at the MLS was conducted during one wet weather event. Annual receiving water monitoring is conducted on a rotating schedule between the north and south portions of San Diego

County as described in Table 1 of the Permit with the exception of Chollas Creek that is monitored each year. In 2008-2009, the scope of the monitoring program was adjusted due to the Copermittees participation in the Southern California Bight Regional Monitoring Program.

Each element of the Permit required monitoring program was designed to provide scientific data to address five core management questions. The core management questions, as listed in the Permit, are presented as follows:

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?

The core management questions were designed to provide focus in the research and development of specific study objectives and the execution of data collection, data analysis, and reporting for this monitoring program. Elements of the monitoring program for each WMA vary across spatial and temporal scales. Therefore, data support only partial resolution of each core management question. Through continued monitoring and the refinement of the Permit requirements a more complete understanding of the answers to each of the overarching management questions may be obtained.

Assessments were conducted using data from multiple monitoring programs, and the results were applied to the relevant core management questions using a weight-of-evidence approach. The results for the Tijuana River WMA are summarized in Table 2-3.

Table 2-3 Summary of WMA Assessment Findings

Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
Receiving Water Monitoring Program	Ambient Receiving Water Assessment	No exceedances or data analyzed from this program to date.	1, 2
	Wet Weather Receiving Water Assessment	Constituents of concern ¹ : <ul style="list-style-type: none"> • High frequency of occurrence (TSS, turbidity, total coliform, fecal coliform, enterococci, Diazinon). • Medium frequency of occurrence (BOD, COD, and total phosphorus). • Low frequency of occurrence (MBAS). Constituents with a mean magnitude of exceedance by more than five times the benchmark included TSS, turbidity and fecal coliform, Persistent toxicity was observed to acute, chronic and reproductive endpoints of <i>Ceriodaphnia dubia</i> . The pyrethroids ² Bifenthrin, Cypermethrin, and Permethrin were detected at the MLS in post-storm sediment samples at concentrations likely to cause toxicity.	
	Rapid Stream Bioassessment	Altered benthic macroinvertebrate communities (Poor to Very Poor IBI ratings) were observed based on 2002-2007 data.	
	Bight 08	Water quality results found bacteria indicators and TSS were below the benchmarks in all samples collected in the Tijuana Estuary. Sediment monitoring results identified three sites as likely unimpacted, one site as inconclusive, and one site as possibly impacted. <ul style="list-style-type: none"> • A toxicity identification evaluation was conducted for the one site identified as possibly impacted and indicated naturally occurring ammonia was the causative agent of toxicity and not toxic chemicals. The overall result of the possibly impacted site was changed to likely unimpacted based on the SQO Guidance. 	
	Third Party	Localized discharges containing high concentrations of indicator bacteria, as well as indicators of recent human fecal pollution, were found in the MS4 system.	

¹ Constituents of concern are determined by a rating system that evaluates the frequency and magnitude of a constituent above its relevant criteria. Low, medium, and high frequency of occurrence describe the relative ranking of those constituents. The ranking methodology is described in Appendix B.

² The Stormwater Monitoring Coalition suggests that the synthetic pyrethroid analytical method may be highly variable (Schiff, 2009). Pyrethroid benchmarks presented in this document are for comparison purposes only and for further assessment with toxicity results.

Monitoring Program Elements	Assessment	Summary of Findings	Core Questions Addressed
		During wet weather, high concentrations of indicator bacteria were found in receiving waters, together with widespread presence of indicators of recent human fecal pollution.	
Urban Runoff Monitoring	Ambient Urban Runoff Summary (Jurisdictional, MS4,)	Results above action levels or receiving water benchmarks <ul style="list-style-type: none"> • Jurisdictional: Conductivity, turbidity, Total coliform, Fecal Coliform, Enterococci. • MS4: pH, Total Nitrogen, Total phosphorus, Fecal Coliform, Enterococci, Total manganese, Total selenium. 	3,4
	Wet Weather Urban Runoff Areas Assessment (MS4)	The MS4 random wet weather data suggest that at most sites, loads appear to have been influenced by the characteristics of the catchment, particularly land use and drainage area. Additional monitoring is needed to assess the extent to which wet weather effluent from the MS4 influences receiving water conditions.	
WMA Assessment	Receiving Water Trend Assessment	Significantly increasing trends were observed for total coliforms, fecal coliforms, TSS, turbidity, total copper, total lead, total zinc, total arsenic, and nitrate. Significantly decreasing trends were observed for TDS, dissolved nickel, Diazinon, and conductivity.	5
	2001–2006 Baseline Long-Term Effectiveness Assessment Ratings	WMA high frequency of occurrence rating for TSS, turbidity, Diazinon, total coliform, fecal coliform, and enterococci were consistent with the 2001–2006 BLTEA ratings as it relates to the Tijuana Valley.	

Based on these results, each of the five Core Management Questions are addressed below.

1. Are conditions in receiving waters protective, or likely to be protective, of beneficial uses?

Core Management Question 1 was addressed with the wet weather data assessments. No ambient monitoring has been conducted as part of the Permit required monitoring program to date. The results of the 2008–2009 monitoring program in the Tijuana River WMA indicate that some of the constituents monitored were identified as high frequency of occurrence COC. In the Tijuana River WMA, these COC included TSS, turbidity, total coliforms, fecal coliforms, enterococci, and Diazinon. This suggests that some beneficial uses may be impaired by these constituents.

Historical stream bioassessment results indicate evidence of benthic community impairment in the Tijuana River WMA, with Poor or Very Poor IBI ratings near the MLS and TWAS since 2001. Additional analysis of the O/E ratio further suggests benthic alteration as well. The low ratings may be influenced by a number of factors, including poor in-stream physical habitat, the presence of pesticides (e.g., the synthetic pyrethroids Bifenthrin and Permethrin, as well as the organophosphate Diazinon were

detected during wet weather monitoring samples), or other constituents not monitored in this program. In addition, the pyrethroids Bifenthrin, Cypermethrin and Permethrin were detected at the MLS in post-storm sediment samples at concentrations likely to cause toxicity. The bioassessment results suggest that the receiving waters may not be protective of beneficial uses.

There were indications of persistent toxicity during wet weather to *C. dubia* in each of the three toxicity tests conducted on this test organism at the MLS. Toxicity to *C. dubia* has been observed in every storm monitored since 2001. Toxicity has been observed in *H. azteca* nine times since 2001 but not at a rate indicative of persistent toxicity. Pesticides (primarily Diazinon) are also persistently found above benchmarks in the watershed and are likely the major cause of toxicity observed to the freshwater amphipods *C. dubia* and *H. azteca*. These toxicity results suggest that the river receiving waters may not be protective of beneficial uses.

Results of the Bight 08 program suggest that the receiving waters of the estuary are protective of beneficial uses in that, none of the sites were identified as likely or clearly impacted based on the SQO Guidance. Sediment quality monitoring results identified three sites as likely unimpacted, one site as inconclusive, and one site as possibly impacted. A toxicity identification evaluation was conducted for the one site identified as possibly impacted and indicated naturally occurring ammonia was the causative agent of toxicity and not toxic chemicals. The overall result of the possibly impacted site was changed to likely unimpacted based on the SQO Guidance. The Bight 08 program also determined that, water quality was good for bacteria and TSS.

2. What is the extent and magnitude of the current or potential receiving water problems?

Core Management Question 2 was addressed with magnitude of exceedance ratios during wet weather conditions in the receiving waters; wet weather monitoring was conducted only once at the MLS in 2008–2009 due to participation in the Bight '08 Program. Exceedance ratios during wet weather at the MLS were greatest for fecal coliforms, followed by turbidity and TSS. The fecal coliform concentration during the 2008 storm event was more than 2,250 times greater than the benchmark, which is greater than the historical mean ratio of 1,187. The turbidity concentration during wet weather in 2008–2009 was approximately 74 times greater than the benchmark (historic ratio of 36). TSS concentrations during the same storm were more than 25 times greater than the benchmark concentration, as compared to the historic ratio of 19 times greater than the benchmark. These three constituents have historically had the largest exceedance ratios at the Tijuana River MLS.

Historical stream bioassessment ratings conducted in the WMA indicate a Poor benthic community at both sampling stations near the MLS and TWAS locations. The consistent rating of Poor or Very Poor at both sites near the MLS and TWAS since 2001 suggests that the extent of the impairment on the benthic community is not isolated to one area. This is also supported by the historic O/E bioassessment results, which indicate an impaired benthic community at all sites monitored within the WMA.

Bight 08 results characterized 4 of 5 sites as likely unimpacted (when considering the corrected result for the TIE as mentioned above) and 1 of 5 sites as inconclusive based on the SQO guidelines. In terms of the magnitude of the potential receiving waters problem, all sediment chemistry line of evidence (LOE) scores were either minimal or low and the sediment toxicity LOE scores were either non-toxic or low. The benthic community LOE scores indicated either low or moderate impacts.

3. What is the relative urban runoff contribution to the receiving water problem(s)?

Core Management Question 3 was partially answered through the MS4 Outfall Monitoring Program. In 2008–2009, the Tijuana River WMA MS4 was assessed through the random dry, random wet, and targeted dry programs. Eleven sites were visited as part of the random dry program, but no sites were flowing at the time of the survey. Three of the sites had ponded water, which was sampled and analyzed. Results suggest that the MS4 system may be contributing to nutrient and indicator bacteria related issues in the receiving water. However, it is important to note that none of the outfalls monitored were sampled under flowing conditions.

Four sites were assessed during storm events as part of the random wet weather program. Concentrations of several analytes, including total nitrogen, total phosphorus, and indicator bacteria, were greater than benchmarks at some sites, suggesting that wet weather runoff from the MS4 may have the potential to contribute to receiving water problems at these locations. However, it is important to note that the benchmarks used in the assessment are applicable only to receiving waters and do not apply directly to runoff emanating from the MS4. The benchmarks have been used only to help identify areas where MS4 runoff has the potential to contribute to receiving water problems, thus addressing Core Management Question 3. Normalized loads calculated for the sites assessed were greatest for most constituents primarily at one site located in the lower region of HSA 911.11 (San Ysidro HSA). The catchment for this site was characterized by primarily residential and public facility land uses.

A total of six sites in the Tijuana River WMA were visited as part of the targeted dry weather program, one of which was flowing and four were ponded at the time of the survey. Thus, 83% of the targeted dry weather sites were ponded or dry, compared to 100% of the random dry weather sites. Drought restrictions implemented in the Summer 2009 may have helped to reduce flows from some areas. However, this is historically a relatively dry watershed during non-storm conditions. The chemistry data from the flowing and ponded sites were used to address Core Management Question 3 by comparing concentration of chemical analytes in the MS4 runoff to receiving benchmarks for the following constituents: nitrate, total nitrogen, total phosphorus, dissolved cadmium, dissolved copper, dissolved lead, dissolved nickel, dissolved zinc, Chlorpyrifos, Diazinon, and indicator bacteria (i.e., fecal coliforms and enterococci). Of these, total nitrogen, total phosphorus, fecal coliforms, and enterococci had concentrations that were greater than their respective benchmarks for at least one of the six sites assessed. Concentrations of total nitrogen exceeded the benchmark most frequently followed by total phosphorus. The results suggest that effluent from the MS4 has the potential to contribute to receiving water problems at those locations where benchmarks were exceeded.

A comparison of instantaneous loads, based on constituent concentrations and flow at the time of the survey could not be made as flow was only reported at one site in the Monument HA (as all others were either ponded or dry). MS4 runoff from this site may have a greater potential for contributing to the receiving waters because of the greater instantaneous loads measured at the time of the surveys. The 2008–2009 Targeted MS4 Monitoring Program was designed to allow for a relative comparison of instantaneous loads among sites in the Tijuana River WMA; however, the results should not yet be considered representative of dry weather MS4 runoff in the watershed. More meaningful spatial comparisons can be made as a more robust data set is developed in subsequent years of the MS4 Outfall Monitoring Program.

4. What are the sources of urban runoff that contribute to receiving water problem(s)?

Core Management Question 4 is partially answered through land use analysis and limited monitoring data. The Jurisdictional DWM Program and trash assessment in the receiving waters provide some information on urban runoff sources. More detailed discussion of urban runoff sources can be found in each Copermittee's Jurisdictional Urban Runoff Monitoring Program Annual Report.

The trash assessment conducted in 2008–2009 as part of the Jurisdictional DWM Program was used to identify sources of trash in the Tijuana River WMA. A total of 35 sites were assessed for trash in the WMA, including five HSAs. The lower portion of the WMA had the greatest proportion of trash and the greatest percentage of sites with Submarginal or Poor ratings, indicating that this portion of the watershed contained the greatest amount of trash in the WMA. This result coincides with the urbanized population centers, which are also found in the lower portion of the WMA. The Tijuana Valley HA (HSA 911.12) had the only site in the Tijuana River WMA that received a Poor (i.e., more than 400 pieces) rating in the trash assessment. Trash at this site consisted primarily of food packaging, and the potential route was listed as littering. All other locations assessed during the Jurisdictional DWM Program received a rating above Submarginal.

It has been observed that trash in the Tijuana River Valley is an issue of concern, and future trash assessments will be beneficial to addressing water quality issues in the Tijuana River WMA.

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 Tijuana River MLS. Based on the trend analysis, concentrations of nine constituents appear to be increasing over time, including indicator bacteria (i.e., total coliforms and fecal coliforms), TSS, turbidity, total copper, total lead, total zinc, total arsenic, and nitrate. In contrast, concentrations of TDS, dissolved nickel, and Diazinon are decreasing over time. Additionally, conductivity values appear to be decreasing over time.

Although nitrate and total arsenic concentrations appear to be increasing over time, the slopes of both are relatively shallow, and most concentrations have been well below the respective benchmark values. At the current observed rate of increase, it does not appear that these constituents will exceed wet weather benchmarks during the current Permit cycle.

A significantly increasing trend has been observed for three constituents that have been found to frequently be well above their respective benchmark values during wet weather, including fecal coliforms, TSS, and turbidity. The trend in fecal coliform concentrations have a magnitude of 106,250 MPN/100 mL/yr. This is an increase of more than 26 times the benchmark value per year, every year since monitoring began in the watershed.

Increasing trends were revealed for five constituents for which wet weather benchmark values have not been established, including total copper, total lead, total zinc, total arsenic, and indicator bacteria (i.e., total coliforms). In the case of total coliforms, the trend analysis has revealed an annual increase of 231,249 MPN/100 mL/yr.

Concentrations of Diazinon, TDS, and dissolved nickel as well as conductivity values appear to be decreasing over time at the Tijuana River MLS. In the case of Diazinon, trend analysis has revealed a

significant decrease in concentration over time however this pesticide has been detected above the benchmark in 18 of the 19 monitored storms. TDS concentrations have been below the benchmark in every monitored storm since monitoring began at the site. Future monitoring will determine if this trend can be sustained. The decreasing trend in dissolved nickel and conductivity is likely inconsequential in terms of benchmarks, since historic concentrations of these constituents have typically been low at this site.

The bioassessment ratings near the Tijuana River MLS and TWAS have been Poor to Very Poor in nearly all assessments conducted from 2001 to 2008, and there are no apparent trends in the benthic community.

Wet weather monitoring in the Tijuana River has shown observed toxicity in each of the three *C. dubia* tests in every storm monitored since 2001. Toxicity has also been demonstrated in 47% of the 19 monitored storms in the *H. azteca* 96-hr test. However, toxicity to the algae *S. capricornutum* has not been observed during any monitored storms. Although the toxicity data suggest evidence of persistent toxicity to *C. dubia* in wet weather conditions, no trends in the data set are apparent.

Recommendations

The recommendations for this watershed are to continue with the requirements of the Permit, including monitoring at the MLS to determine long-term trends, monitoring for toxic and benthic impacts, and identification of upstream sources of COCs. The addition of two TWAS locations within the Tijuana River WMA during the 2009–2010 Monitoring Season will provide information regarding conditions in other areas of the WMA. Furthermore, conducting ambient weather monitoring at the Tijuana River MLS and TWAS locations will provide information regarding the conditions in the receiving water during dry weather. Finally, MS4 Outfall Monitoring and Source Identification Monitoring data will augment the data collected during the 2008–2009 Monitoring Season.

Specific recommendations for the Tijuana River WMA are based on the triad assessments listed in the Permit. Based on wet weather conditions, conducting TIEs to identify COCs, based on the TIE metric is recommended. In addition, Diazinon was previously identified as a causative agent and is still detected above the level expected to cause toxicity. Pyrethroids are also a likely source of toxicity to *H. azteca* based on TIEs conducted in other watersheds and observed chemistry results. Addressing upstream sources as a high priority is also recommended.

2.2 Pollutant Source Assessment

The Permit requires the Tijuana River WMA Copermittees to identify the high priority water quality problems and identify the likely sources within the Tijuana River WMA and implement activities that will address these pollutants.

A key component of identifying sources of pollutants is knowledge of the land uses and the pollutant-generating activities associated with these specific land uses for example urban and agricultural land uses can result in high levels of nutrients in runoff. The Tijuana River WMA straddles the US–Mexico border with only a quarter of its 1.1 million acres lying within San Diego County. Throughout the WMA, the predominant land use is classified as vacant and undeveloped (60% on the US side, 82% on the Mexico side). On both sides of the border, the watershed becomes less populated from west to east. The major population centers in the watershed are the cities of Tijuana and Tecate in Mexico and cities of Imperial

Beach and San Diego in the US. Within the Tijuana River WMA jurisdictional control is divided amongst the County of San Diego, City of San Diego, and the City of Imperial Beach.

The likely sources of pollutants within the Tijuana River WMA are identified in Table 2-4 below. In addition to these sources the Weston Monitoring Report (2009) has identified the likely sources of trash as being the urbanized population centers found in the lower portion of the WMA which had the greatest proportion of trash and the greatest percentage of sites with Submarginal or Poor trash ratings.

The results of the 2008-2009 monitoring programs indicate that the high frequency Constituents of Concern for wet weather are TSS, turbidity, total coliforms, fecal coliforms, enterococci, Diazinon and trash. These Constituents of Concern are also high priority water quality problems that are already being addressed by the watershed activities.

Additionally pollutants for all water bodies included on the 2006 303(d) list are considered as high priority and are listed in Table 2-5 below. There are several changes being proposed for the Tijuana WMA 2008 303(d) list. These changes will be discussed in future annual reports.

Table 2-4 Likely Sources for High Priority Pollutants

Pollutant	Potential Sources	Pollutant	Potential Sources
Bacterial Indicators	Domestic animals	Trace Metals	Automobiles
	Sewage overflow		Industrial Waste
	Septic systems	Pesticides	Agriculture
	Wildlife		Commercial landscaping
Agriculture	Residential landscaping		
Nutrients & Oxygen	Sewage overflow		Industrial waste
	Septic systems	Gross Pollutants	Commercial
	Agriculture		Illegal disposal
Organic Compounds	Commercial landscaping		Residential
	Residential landscaping	Sediment TSS/Turbidity	Agriculture
	Sewage overflow		Grading/Construction
	Septic systems		Slope Erosion

Table 2-5 303(d) Listings in the Tijuana River Watershed

Water Body Name	Hydrologic Sub Area (HSA)	HSA #	Pollutant/Stressor
Tijuana River	San Ysidro	911.11	Bacteria Indicators, Eutrophic conditions, Low Dissolved Oxygen, Pesticides, Solids, Synthetic Organics, Trace Elements, Trash
Tijuana River Estuary	San Ysidro	911.11	Bacteria Indicators, Eutrophic conditions, Lead, Low Dissolved Oxygen, Nickel, Pesticides, Thallium, Trash, Turbidity
Pacific Ocean Shoreline, Tijuana HU	San Ysidro	911.11	Bacteria Indicators
Barrett Lake	Barrett Lake	911.30	Color, Manganese, pH
Pine Valley Creek (Upper)	Pine	911.41	Enterococcus, Phosphorus, Turbidity
Morena Reservoir	Morena	911.50	Color, Manganese, pH

In addition to the regional monitoring the Tijuana River WMA copermittees conducted several independent monitoring or source identification studies. These projects are discussed below.

County of San Diego Southern Watersheds Monitoring Program Report

The County of San Diego completed a monitoring activity for upper watersheds of the San Diego Bay WMA and the Tijuana River WMA during this monitoring period. The monitoring report was prepared by Brown and Caldwell was completed in March 2009 (Activity Sheet TJ-024 attachment). The project included the installation and monitoring of five mass loading stations (MLS) in the Sweetwater (2), Otay (1) and Tijuana (2) watersheds. The monitoring stations for the Tijuana River WMA were located in Pine Valley Creek where it crosses under Highway 94 and in Campo Creek where it crosses under Highway 94.

The overall purpose of the activity was to acquire more representative data for the southern watersheds which previously included only dry weather grab samples. This monitoring effort utilized two different sampling methods for dry and wet weather events. For dry weather samples, 24 hour continuous sampling was conducted and for wet weather, a flow weighted sampling method was used. Additionally bacteria sampling was accomplished with grab samples. A secondary purpose of the study is to compare water quality data from these upper watershed locations with data collected from Mass Loading Stations which are typically located toward the lower portion of the watershed.

The project was designed to collect both field (5) and laboratory (33) parameters during two storm events and two dry weather events. Field parameters included Temperature, Dissolved Oxygen, pH, Conductivity, and Turbidity. Laboratory measured parameters included: Ammonia-N, Antimony,

Arsenic (total/dissolved) Cadmium (total/dissolved) Chlorpyrifos, Chromium (total/dissolved), Coliform (total/fecal) and Entrococcus, Copper (total/dissolved), Diazinon, Hardness (total), Iron (total), Lead (total/dissolved), Manganese (total) Malathion, Nickel (total/dissolved) Nitrate-N, Nitrite-N, Orthophosphate-P, Selenium (total/dissolved)TDS, Total Kjeldahl Nitrogen, Total Phosphate-P, TSS, and Zinc (total/dissolved). In addition to the above flow measurements were taken at each station to develop discharge rates and to calculate a discharge equation.

The results generally supported that the pollutant loads seen at the lower watershed MLS correlate strongly with industrial, municipal wastewater and urban runoff from the lower watershed and that pollutant loads are higher during the rainy season versus the dry season.

Imperial Beach Bacteria Source ID

During this reporting period, the City with funding from a Proposition 50 Clean Beach Initiative (CBI) Grant, initiated a source identification study to identify sources of bacterial contamination in the U.S. western most portion of the Tijuana River Watershed. The purpose of the study was to identify sources of bacterial contaminants and recommend appropriate actions and activities to reduce the input of those sources to the Tijuana River Watershed. Unfortunately, on December 19, 2008, the City of Imperial Beach received notification that funding for Proposition 50 projects was on hold as a result of California's failure to pass a State budget. The project was subsequently halted having only completed one sanitary survey and one wet weather monitoring event. At the printing of this report, funding had still not been reinstated by the State to complete the project.

Sanitary Survey Dry Weather Monitoring Results

The first sanitary survey started in October 2008 and investigated a total of 220 monitoring sites in the MS4 system for bacteria (enterococci, fecal coliforms, and Bacteroides), nutrients (ammonia, nitrate, nitrite, and orthophosphate), and general chemistry (conductivity, DO, salinity, temperature, MBAS, and pH). Of those sites, 78 had flowing or ponded water and were sampled. Sites with elevated indicator bacteria concentrations or sites with positive Bacteroides were resampled, and further investigations were made upstream to identify the source. Monitoring results from the sanitary survey found the following:

- Enterococcus concentrations were above the Basin Plan benchmark of 151 MPN/100 mL in 30 of the 78 samples.
- Fecal coliform concentrations were above the Basin Plan benchmark of 4,000 MPN/100 mL in 22 of the 78 samples.
- Methylene blue activated substance (MBAS) concentrations were above the Basin Plan benchmark of 0.5 mg/L in 43 of the 78 samples.
- Turbidity was above the Basin Plan benchmark of 20 NTU in 22 of the 78 samples.
- Ammonia concentrations were above the United States Environmental Protection Agency (USEPA) Water Quality Criteria (freshwater) in 23 of the 78 samples.
- pH was above the Basin Plan criteria in two samples where pH was found to be above 9 pH units.
- Of the 78 sites sampled for Bacteroides, five tested positive for human-specific Bacteroides.

Site specific results from the sanitary survey also identified three locations within the US portion of the watershed that were contributing elevated loads of bacteria. One location identified a storm drain line crossing the border from Mexico and flowing 0.4 miles before crossing the border again back into Mexico. The other two locations were a result of stagnant and ponded water from accumulated debris within the MS4 system. The appropriate jurisdictions were notified of the ponded water and occluded lines and cleaning maintenance resolved the issue.

Wet Weather Monitoring Results

On December 15, 2008, a storm water monitoring event was undertaken with pollutograph sampling at Dairy Mart, Hollister Street, and Saturn Street. Spot samples were also collected at Smuggler's Gulch and Goat Canyon. The duration of the storm lasted four days, and sampling continued through December 18. The total rainfall for the event, recorded at the Hollister Street sampling location, was 2.5 inches; however, the majority of the rainfall occurred south of the US border where rainfall was estimated at 4–6 inches and caused extensive flooding throughout the lower Tijuana River and Tijuana Estuary area. Results showed extremely high concentrations of bacteria throughout the entire storm event. Results also indicated that 7 of the 14 wet weather samples were positive for human-specific Bacteroides, indicating a significant presence of human fecal material during wet weather flows.

SECTION 3.0 IMPLEMENTATION OF WATERSHED ACTIVITIES

3.1 Watershed Water Quality Activities

The Tijuana River WMA Copermittees have implemented, or were actively planning, a total of twenty-two activities, seventeen are water quality activities, eight of which were in active implementation, seven active but with no WURMP credit, and two water quality monitoring activities with no WURMP credit. Also of the twenty-one activities, there were a total of four Education activities, three in active implementation and one in its planning phase. There was one Land use planning activity. Each of these activities occurred in FY08-09 and addressed some of the high priority water quality problems identified in the Tijuana River WMA WURMP (March 2008). Table 3-1 identifies each of the water quality activities and includes information pertaining to the lead jurisdiction, the hydrological area(s), and the priority pollutants which these activities targeted. For more detail on the specific activities, please refer to Attachment 1 for the Watershed Activity Summary Sheets describing the Copermittees watershed water quality activities and details regarding their anticipated implementation schedule. These activities include projects ranging from pet waste dispenser programs and trash cleanup events to land acquisition and Low Impact Design (LID) education and outreach focused on specific stakeholder constituencies.

Several watershed water quality activities are also considered education activities and are identified in Table 3-1. Progress on these specific watershed education activities have been described in the standardized template and clearly identifies what was accomplished during the reporting period and how it pertains to high priority water quality problems.

**Tijuana River WURMP
FY2008-09 Annual Report**

Table 3-1: Water Quality, Education and Land Use Activities

Activity ID	Project Name	Lead Copermittee	Other	WQA	WQE	HA	High Priority Water Quality Problems									
							Bacteria	Trash	Sediment	Pesticides	Metals	Organics	Manganese	Gross Pollutants	Color	Nutrients
TJ-001	Pet Waste Dispenser Program	COSD		X		911.2 911.4 911.5	X									X
TJ-002	Land Acquisition within TJWMA	COSD		X		All	X	X	X	X	X	X	X	X	X	X
TJ-003	ILACSD Trash Clean-Up Sponsorship	SD		X	X	911	X	X								
TJ-004	San Diego Coastkeeper Trash Clean-up Sponsorship	SD		X	X	911	X	X								
TJ-007	Targeted Auto-Related Facility Inspections	SD		X		911.1 911.2					X					
TJ-009	Municipal Rain Barrel Installation and Downspout Disconnects	SD		X		911.1 911.2	X		X	X	X					
TJ-010	City-Wide Clean-Up Events	IB		X	X	911	X									
TJ-011	Large Special Events Inspection and Clean-Ups	IB		X	X	911	X	X								
TJ-012	Smuggler's Gulch Sediment and Debris Removal Program	COSD		X		911		X	X					X		
TJ-013	Tijuana River Bacteria Source Identification Study	IB	COSD, SD	X		911.1 911.2	X									
TJ-014	LID and Watershed Planning Education for Com & Sponsor Groups	COSD			X	All	X	X	X	X	X	X	X	X	X	X
TJ-015	Karma and Karma Second Chance PSA	SD			X	911.1 911.2	X	X						X		
TJ-017	Invasive Species Removal Program in Tijuana River Park	COSD		X		911.1	X		X							
TJ-018	Trash and Sediment Characterization Study	COSD	SD	X		911		X	X							
TJ-019	City of San Diego Strategic Plan Implementation	SD		X	X	911.1 911.2	X				X			X		

**Tijuana River WURMP
FY2008-09 Annual Report**

Activity ID	Project Name	Lead Copermittee	Other	WQA	WQE	HA	High Priority Water Quality Problems									
							Bacteria	Trash	Sediment	Pesticides	Metals	Organics	Manganese	Gross Pollutants	Color	Nutrients
TJ-020	Pet Waste Dispenser Program	SD		X		911.1 911.2	X									
TJ-021	San Ysidro Festival FY08-09	SD			X	911	X	X	X							
TJ-022	Tijuana River Gross Solids BMP & Sediment BMP Design	SD		X		911		X	X							
TJ-023	Tijuana River Watershed Brochure F08-Y09	SD			X	911.1 911.2	X		X	X	X	X		X		
TJ-024	Water Quality Monitoring in the Upper Tijuana Watershed	COSD		X		911.4 911.8	X		X	X	X			X		
TJ-025	Smuggler's Gulch, Pilot Channel 7 Northern Channel Sediment and Debris Removal	SD		X		911		X	X					X		

3.2 Watershed Education Activities

The Tijuana River WMA Copermittees recognize the need for education programs as an essential element in watershed protection. The main focus of the watershed education program is to make the public aware of the sources of water pollution in order to positively affect behavioral change. Each of the Copermittees participated in or hosted several activities to promote watershed education including:

- Workshops focusing on LID BMP implementation, preventing urban runoff contamination, and ecological protection of the watershed, and water quality protection activities.
- Trash removal/river cleanup events emphasizing volunteer participation and public awareness, and proper disposal of potential contaminants from entering Tijuana river system.

Table 3-2 identifies each of the Public Participation, Education and Outreach activities that occurred during FY08-09. In addition the County of San Diego continues to sponsor the Project Clean Water Website (www.projectcleanwater.org) this website provides information pertinent to each of the watersheds in San Diego County. During FY08-09 there were total of 5,003 hits on the Tijuana River Watershed page and 3,407 hits on the Tijuana River WURMP page.

**Tijuana River WURMP
FY2008-09 Annual Report**

Table 3-2 Public Participation, Education, and Outreach Activities

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
County	08/08/08	Scout Troop: Stormwater & Lake Use	Lake Morena	Children	12	X			No
County	09/15/08	Recycling & HHW	Mountain Empire High School	Students - HS	47	X	X		No
County	10/04/08	Scout Troop: Stormwater & Lake Use	Lake Morena	Children	11	X			No
County	10/09/08	LID and Watershed Planning Education to Community Planning Groups (CPG)	Potrero CPG Meeting	Potrero CPG	13	X	X		Yes - Pre/Post Tests: 10.9% increase in knowledge
County	10/14/08	LID and Watershed Planning Education to Community Planning Groups	Pine Valley CPG	Pine Valley CPG	15	X	X		Yes - Pre/Post Tests: 29.2% increase in knowledge
County	10/21/08	Green Machine	Campo Elementary	Students – Elem	102	X			No
County	10/26/08	Scout Troop: Stormwater & Lake Use	Lake Morena	Children	24	X			No
County	11/14/08	ILCSD Watershed Stewardship	Mt. Empire High School	Students - HS	24	X			Yes - Pre/Post Tests
County	11/14/08	ILCSD Watershed Stewardship	Mt. Empire High School	Students - HS	24	X			Yes - Pre/Post Tests
County	11/14/08	ILCSD Watershed Stewardship	Mt. Empire High School	Students - HS	24	X			Yes - Pre/Post Tests
County	11/24/08	LID and Watershed Planning Education to Community Planning Groups	Community Church on Oak Drive	Campo/Lake Morena CPG	35	X	X		Yes - Pre/Post Tests: 32.5% increase in knowledge

**Tijuana River WURMP
FY2008-09 Annual Report**

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
County	12/02/08	Green Machine	Pine Valley Elementary	Students – Elem	69	X			No
County	12/03/08	Littering, Keep Your Park Clean	Pine Valley	Students	4	X			No
County	12/09/08	ILCSD Watershed Stewardship	Mt. Empire High School	Students - HS	23	X			Yes - Pre/Post Tests
County	12/10/08	ILCSD Watershed Stewardship	Mt. Empire High School	Students - HS	20	X			Yes - Pre/Post Tests
County	02/05/09	LID and Watershed Planning Education to Community Planning Groups	Boulevard Fire Station/Community Center	Boulevard CPG	14	X	X		Yes - Pre/Post Tests: 17.5% increase in knowledge
County	02/25/09	Community Health Fair	Campo Senior Wellness Fair	Campo Senior Residents	~50		X		No
County	04/09/09	Littering, Keep Your Park Clean	Pine Valley	Students	5	X			No
County	04/11/09	Scout Troop: Stormwater & Lake Use	Lake Morena	Children	16	X			No
County	04/20/09	Green Machine	Potrero Elementary	Students - Elem	75	X			No
County	04/28/09	Littering, Keep Your Park Clean	Pine Valley	Students	6	X			No
County	05/16/09	Green Machine	Elem. Science Field Day / Tierra Del Sol Middle	Students	1200	X			No
County	05/20/09	Mt. Empire School District Health Fair	Lake Morena	Students	50	X	X		No
County	05/20/09	Littering, Keep Your Park Clean	Pine Valley	Students	5	X			No

**Tijuana River WURMP
FY2008-09 Annual Report**

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
County	05/21/09	Littering, Keep Your Park Clean	Pine Valley	Students	50	X			No
County	05/26/09	ILCSD Watershed Stewardship	Mt. Empire High School	Students - HS	23	X			Yes - Pre/Post Tests
County	06/03/09	Green Machine	Jacumba Elementary	Students - Elem	52	X			No
County	06/10/09	Green Machine	Clover Flat Elementary	Students - Elem	80	X			No
County	06/30/09	Down to Earth: Environmentally Friendly Home Gardening Video	County-wide	General Public	60 airings	X	X	X	No
County	06/30/09	How to Manage Manure: Composting for Horse Owners	County-wide	General Public	80 airings	X	X	X	No
SD	12/6/2008	SDCK Coastal Cleanup Day	San Ysidro	Gen Public	46	X	X	X	Yes, 1,860 lbs load reduction associated with sponsorship per event with an efficiency of \$1.08 per lb.
SD	4/25/2009	ILACSD Creek to Bay Cleanup	San Ysidro	Gen Public	105	X	X	X	Yes, 20,320 lbs load reduction associated with sponsorship per event with an efficiency of \$0.25 per lb.
SD	FY08-09	Admobile	Imperial Beach	Residents	N/A		X	X	The City in no longer using mobile advertising as part of its watershed program

**Tijuana River WURMP
FY2008-09 Annual Report**

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
SD	FY08-09	Karma, Karma TV Campaign	County Wide	Res/Com/Ind	446,835		X	X	Yes, Assessment saw 25% increase in correctly answering questions regarding whether storm water is treated after seeing the public service announcement.
SD	FY08-09	Karma, Karma Radio Campaign	County Wide	Res/Com/Ind	613,459		X	X	Yes, Assessment saw 25% increase in correctly answering questions regarding whether storm water is treated after seeing the public service announcement.
SD	FY08-09	Poster Distribution	TJ WMA	Dev-Const Community	100		X	X	No
SD	FY08-09	Guidebook Distribution	TJ WMA	Bus Own / Op & Rest Emp	500		X	X	No
Imperial Beach	FY 08-09	New Employee Training: Provide training on storm water to each new employee	Public Works	Municipal Staff	4	X	X		No
Imperial Beach	7/3/2008	City Weekly FYI: Education on the RWQCB trash and sediment workshop	City of Imperial Beach	City Council and Municipal Staff	168	X		X	No
Imperial Beach	7/9/2008	Eagle and Times Newspaper: Urban runoff pollution prevention and storm water pollution tips	City of Imperial Beach	Residents	Citywide	X		X	No

**Tijuana River WURMP
FY2008-09 Annual Report**

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
Imperial Beach	7/16/2008	US Open Sandcastle Competition: Provided information to venders and public at US Open Sandcastle Competition	City of Imperial Beach	General Public and Commercial Business	300,000	X	X		No
Imperial Beach	7/26/2008	IB Auto Show: Education booth at annual IB Auto Show	City of Imperial Beach	General Public	1,000	X	X		No
Imperial Beach	8/14/2008	City Weekly FYI: Two articles, on e-waste recycling and City recycling program	City of Imperial Beach	City Council and Municipal Staff	168	X		X	N
Imperial Beach	8/25/2008	City Weekly FYI: Waste management of prescriptions and compost	City of Imperial Beach	City Council and Municipal Staff	168	X		X	No
Imperial Beach	9/17/2008	Municipal staff training for Public Works: JURMP components and requirements	Public Works	Municipal Staff	23	X	X		Yes (Survey) Average score of 81% on 16 questions
Imperial Beach	9/23/2008	Municipal staff training for Community Development Department	City Hall	Municipal Staff	12	X	X		Yes (Survey) Average score of 89% on 16 questions
Imperial Beach	10/17/2008	City Weekly FYI: Article on fats, oil, and grease	City of Imperial Beach	City Council and Municipal Staff	168	X		X	No
Imperial Beach	11/1/2008	Eagle and Times Newspaper: Article on fats, oil, and grease and proper disposal during the holiday season	City of Imperial Beach	Residents	Citywide	X		X	No
Imperial Beach	12/1/2008	City Bi-annual Newsletter: Four articles on storm water, FOG, special events, and recycling	City of Imperial Beach	Residents	Citywide	X		X	No

**Tijuana River WURMP
FY2008-09 Annual Report**

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
Imperial Beach	12/12/2008	City Weekly FYI, Eagle and Times Newspaper, and San Diego Union Tribune	City of Imperial Beach	City Council, Municipal Staff, and Residents	Citywide	X		X	N
Imperial Beach	1/9/2009	City Weekly FYI: Battery Recycling at County libraries	City of Imperial Beach	City Council and Municipal Staff	168	X		X	N
Imperial Beach	2/4/2009	City Weekly FYI: Advertising e-waste recycling event	City of Imperial Beach	City Council and Municipal Staff	168			X	No
Imperial Beach	3/25/2009	Post Card: Advertising e-waste recycling event	City of Imperial Beach	Residents	27,000			X	No
Imperial Beach	3/25/2009	City Weekly FYI: Battery collection at County libraries	City of Imperial Beach	City Council and Municipal Staff	168			X	No
Imperial Beach	4/1/2009	EDCO Environmental Times: Multiple articles on storm water pollution tips, proper disposal of HHW, advertisement for special events	City of Imperial Beach	Residents	27,000	X		X	No
Imperial Beach	4/25/2009	Coastal Clean Up Day: Sponsored ILACSD for 7th Annual Coastal Clean Up Day	City of Imperial Beach	Residents	4,000	X	X		No
Imperial Beach	5/2/2009	Home Front Clean Up: Annual home front clean up events for residents to properly dispose of waste	Mar Vista High School	Residents	689	X			No

**Tijuana River WURMP
FY2008-09 Annual Report**

Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
Imperial Beach	5/10/2009	Eagle and Times Newspaper: Advertisement for light bulb exchange	City of Imperial Beach	Residents	Citywide	X		X	No
Imperial Beach	5/14/2009	City Bi-annual news letter: Urban runoff information and pollution prevention tips "After it Rains"	City of Imperial Beach	Residents	Citywide	X		X	No
Imperial Beach	5/20/2009	ILACSD school presentation: Two 5th grade presentation on storm water pollution	Imperial Beach Elementary	School Children	54	X	X		Yes (pre test 75% and post test 87%)
Imperial Beach	6/4/2009	City Weekly FYI: Water conservation and urban runoff pollution info	City of Imperial Beach	City Council and Municipal Staff	168	X		X	N
Imperial Beach	6/16/2009	ILACSD school presentation: 5th and 6th grade presentation on storm water pollution	Central Elementary	School Children	100	X	X		Yes (pre test 73% and post test 83%)

3.3 Public Participation Activities

The Tijuana River WMA Copermittees continue to actively encourage the participation and input of diverse stakeholders in the development, and implementation, of the Tijuana River watershed activities. Public participation is encouraged to ensure that stakeholder interests and creative solutions are considered. A number of activities, both education and water quality, are crafted to encourage public input and involvement (Table 3-1). Public participation activities included volunteer clean-up events, outreach to specific groups such as students and residents within the Tijuana River Watershed, County wide public service announcements and the, Project Clean Water website.

The City of San Diego also completed a proposed Master Stormwater System Maintenance Program which would allow the City to conduct regular maintenance activities in the numerous channels throughout the City, including those in the Tijuana River Valley (most notably the channel in Smuggler's Gulch and the Pilot Channel). In FY08-09, the Master Plan was completed and the City's Development Services Department nearly finalized the Program Environmental Impact Report that will be released for public comment in FY09-10.

3.4 Collaborative Land-Use Planning Efforts

To encourage collaborative planning in the watershed and implementation of the Tijuana River WURMP, the Tijuana River WMA Copermittees met formally six times during FY08-09 to discuss watershed principles and develop collaborative efforts to reduce storm water pollution in the watershed, including possibilities for collaboration in land use planning (see Table 1-1). This section describes collaborative land use planning efforts within the watershed during FY08-09. The Tijuana River WMA Copermittees have identified enhanced education and cross-jurisdictional communication as key elements in lessening the potential watershed impacts resulting from jurisdictional land use decisions. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale. JURMP annual reports contain information on individual Copermittee efforts to integrate watershed and water quality principles into local general plans and ordinances. A discussion of several collaborative land use planning efforts follows.

The Tijuana River WMA Copermittees have taken an active role in the formation of the Tijuana River Valley Recovery Team (TJRVT). The TJRVT, whose members include governmental administrative, regulatory, and funding agencies, as well as members of the scientific and environmental communities and affected stakeholders, was formed to facilitate restoration of the Tijuana River floodplain and estuary to a functional wetland ecosystem. The TJRVT met monthly throughout FY 2008-09 and continue to propose initiatives to reduce trash and sediment from reaching the Tijuana River Valley and restore natural hydrology. Additional information can be found on the Tijuana River Recovery Team website (www.tjriverteam.org).

Tijuana River WURMP
FY2008-09 Annual Report

Education:

The Tijuana River WMA Copermittees have embraced the potential of Low Impact Development (LID) approaches to effectively address the impact of pollutants and discharge volumes resulting from new and significant re-development. In addition to the education and training that is provided to the development community and municipal staff as part of baseline JURMP compliance, targeted LID efforts during this reporting period included the County of San Diego's development of a LID and Watershed Planning Education Activity. This activity is intended to educate local planning and sponsor groups on LID and watershed planning principles, practices, and requirements. The recommendations of local planning and sponsor groups have influence over whether, and under what conditions, development projects within the unincorporated County are approved. This education activity is intended to aid these advisory bodies in making informed recommendations on aspects of development projects that could affect watershed water quality. During the FY08-09 reporting period, County of San Diego staff also conducted other presentations to planning, sponsor groups and students both at the Elementary and High School level as well as Scout Troops on topics like Recycling, Stormwater and Lake Use and Littering.

The City of San Diego Storm Water Department has continued to reach the public in the Tijuana River Watershed through its radio and television public service announcements broadcasted in both English and Spanish. Additionally, the City staffed a booth and handed out educational information to residents during the San Ysidro Days event on May 16, 2009. The City continues to fund the Tijuana River National Estuarine Research Reserve (TRNERR) to conduct field trips for youth groups, implement upgrades to the www.trnerr.org web site, and "Amigo" level sponsorship of the annual Fiesta Del Rio community event. The City plans to continue its relationship with TRNERR in the future.

Cross-Jurisdictional Communication:

The primary means of collaborative land use planning is the clear and timely communication of pending land use decisions among the WMA Copermittees. One way this is accomplished is through notification of the availability of environmental documents and public hearings pursuant to the California Environmental Quality Act (CEQA). To improve awareness of pending projects beyond CEQA requirements, the Copermittees adopted a Memorandum of Understanding in 1991 that establishes guidelines for the notification of land use and development actions approved by Copermittee agencies. Notification triggers are based on considerations of project size, location, and type as specified in the MOU. Each jurisdiction typically provides neighboring jurisdictions with the opportunity to review and comment on discretionary projects located near jurisdictional borders. Through this process, the WMA Copermittees have the ability to participate in and comment on land use planning efforts outside of their jurisdiction. By working together and creating partnerships, Copermittees provide an opportunity to 'catch' potential watershed issues from adjacent jurisdictions. Through enhanced communication and strong relationships, the WMA Copermittees are able to better address watershed needs as a whole.

Tijuana River Bacteria Source Identification Study:

One such activity that involved collaborative planning included the Tijuana River Bacteria Source Identification Study. Collaborative land use planning for the Tijuana River Bacteria Source Identification Study was achieved through the development of a Technical Advisory Stakeholder group. These stakeholder meetings encourage Copermittees to actively plan with community organizations and jointly identify potential sources of bacteria, trash, and sediment (i.e., human activity, storm outfalls), leading to generating pertinent information for field monitoring groups to collect water quality data and make a more informed assessment of pollutant sources along the river. This information is then available to storm water staff that coordinate and periodically make recommendations to jurisdictional planning department staff regarding appropriate storm water-related land use planning regulations and policies.

By pursuing a setting of coordinated dialogue and strong working relationships among each other, the WMA Copermittees are more equipped to develop collaborative land use planning efforts to address the needs of this watershed. The Tijuana River WMA Copermittees will continue its regular meetings to plan and implement the Tijuana River WURMP. Efforts are ongoing to further integrate watershed priorities into jurisdictional land use planning processes and to search for innovative opportunities to enhance collaboration at the watershed scale.

3.5 Updated 5-year Strategic Plan

3.5.1 New Watershed Activities

Development of the 5-Year Strategic Plan included the formulation of a list of activities to implement over a five-year period. These activities have been integrated into the Tijuana River WURMP. The Regional Copermittees recognized that there would be a need to revise the 5-year plan as new activities were identified and implemented. During FY08-09, five new activities have been identified, two of which are watershed education activities. Descriptions of these new activities are noted below.

During FY08-09 the City of San Diego's Think Blue program participated in the San Ysidro Centennial Celebration, a community festival commemorating the 100th birthday of San Ysidro. Participation provided direct outreach to the attending 7,000 watershed residents, with a focus on water bodies in the Tijuana River Watershed Management Area (WMA).

A new brochure program for the six (6) WMAs was implemented by the City of San Diego and Think Blue. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed.

The Tijuana River Gross Solids and Sediments BMP Design project involves the studies of storm water trash sediment BMP projects in the Tijuana River WMA, to reduce the volume of sediments and gross solids which are transported to the Tijuana River's main channel and the Tijuana River estuary during storm events.

During the FY08-09 reporting period the County of San Diego conducted additional dry and wet weather monitoring in the upper Tijuana Watershed. The two monitoring sites were located in Pine Creek (911.40) and Campo Creek (911.80). The purpose of the study was provide more

representative data for the upper watersheds and to also compare these with historic data collected at the lower MLS station in the Tijuana River Valley.

The City of San Diego is excavating and removing of sediment and trash in Smuggler's Gulch, Pilot Channel, and Northern Channel as part of a flood control maintenance activity. A secondary benefit of sediment and trash removal is improved water quality, due to the fact that the items are disposed of properly after removal.

3.5.2 Updated 5-Year Strategic Plan

During FY08-09 several projects were modified, updated, completed or deleted from the strategic plan. These include the City of San Diego's Pet Waste Dispenser Program, Mobile Advertising, and Tijuana River Watershed Bacterial Source Identification Study. Table 3-3 represents the Tijuana River WMA Updated 5-year Strategic Plan.

The City of San Diego Pet Waste Dispenser Program was updated and was in its planning phase during FY08-09, implementation is scheduled for FY09-10, this project will target municipal and mixed-use locations with high pet use. Pet waste stations will be installed for the purpose of reducing pollutant loading of bacteria present in dog waste. There will be a targeted outreach campaign by the City's Think Blue as it relates to this project.

The use of Mobile Advertising was implemented in FY07-08 but based on results from the 2009 Storm Water Survey in which 17% of participants stated they received Think Blue Messages via Mobile advertising, it was determined the program was not effective in generating sufficient knowledge and awareness of the program or storm water issues. Therefore the City discontinued the activity in FY08-09.

The Tijuana River Watershed Bacterial Source Identification Study is currently on hold until funding from the CBI Grant is made available or additional funding from another source can be secured.

Activity TJ-006 noted in Table 3-3 as the Targeted Restaurant Facility Inspections will be eliminated as this item is covered in the General Project Activity for Targeted Inspections, activity TJ-007.

The Sweeping Route Posting and Enforcement Project was renamed to a more accurate title during its planning phase which occurred in FY08-09. The project is now titled Route Posting and Median Sweeping Pilot Study. Planning is underway for FY09-10 to conduct pilot "median" sweeping routes in the Tijuana River Watershed. Implementation of a posted route is anticipated to occur in FY10-11, with final assessment and conclusions being prepared in the first half of FY11-12.

The activity previously reported under the title Trash Segregation BMP Installation was changed to Beyer Boulevard Trash Segregation Best Management Practice (BMP) Installation due to the selection of Beyer Boulevard as a location for this project.

In April 2008, the Regional Board and its consultant, PG Environmental, conducted an audit of the WURMP programs within the San Diego Region. The review focused primarily on the Carlsbad and San Diego Bay watersheds. The final audit report was available for review by the

Tijuana River WURMP
FY2008-09 Annual Report

San Diego Regional Copermittees in September 2008. The audit report contents included overall comments on the watershed programs, assessments of individual watershed activities, and an analysis of the efficacy of the Permit's WURMP requirements as currently written. The San Diego Regional Copermittees have been working together with Regional Board staff to identify how the WURMPs and WURMP Permit language may be modified to meet the goals of the program more effectively.

During the past year the Regional WURMP Workgroup met several times with Regional Board staff to modify WURMP reporting requirements which resulted in a series of proposed revisions to the WURMP Annual Report including content and format. Due to the nature of the proposed changes including requested by interested stakeholders the Regional Board Staff decided that revisions should wait until re-issuance of the permit in 2012.

**Tijuana River WURMP
FY2008-09 Annual Report**

Table 3-3 Five-Year Strategic Plan for Tijuana River WMA

TIJUANA RIVER WATERSHED	Heavy Metals	Sediment	Bacteria	Nutrients	Gross Pollutants	Trash	Dissolved Minerals	Pesticides	FY 07-08		FY 08-09		FY 09-10		FY 10-11		FY 11-12		
Watershed Activities Planned																			
TJ-001 Pet Waste Dispenser Program in County Parks			X	X					WQ		WQ		WQ						
TJ-002 Land Acquisitions	X	X	X	X		X	X	X	WQ		WQ		*						* unable to predict acquisitions
TJ-003 ILACSD Trash Cleanup Sponsorship			X			X			WQ		WQ		WQ						
TJ-004 SDCK Trash Cleanup Sponsorship			X			X			WQ		WQ		WQ						
TJ-005 Alpha Project for the Homeless, Inc. Trash Cleanups			X			X			WQ										Project Completed in FY07-08
TJ-006 Tijuana River Targeted Restaurant Facility Inspections			X						WQ										Activity to be covered in TJ-007
TJ-007 Tijuana River Targeted Facility Inspections	X								WQ		WQ		WQ						
TJ-008 Tijuana River Targeted Facility Inspections Outreach	X								WE				WE						No outreach was conducted in FY 08-09
TJ-009 Municipal Rain Barrel and Downspout Disconnects	X	X	X	X		X		X	WQ		WQ		WQ						
TJ-010 City of IB Cleanup Events			X			X			WQ		WQ		WQ						
TJ-011 Large Special Event Inspection and Cleanup			X			X			WQ		WQ		WQ						
TJ-012 Smuggler's Gulch Sediment Removal		X							WQ		WQ		WQ						Activity did not occur in FY08-09
TJ-013 Tijuana River Bacteria Source Identification Study			X						M	S	M	S	M	S					Funding was frozen in FY08-09
TJ-014 LID Education for Community Planning / Sponsor Groups	X	X	X	X			X	X	WE		WE		WE						Activity completed in FY08-09
TJ-015 Public Service Announcements (PSAs): <i>Karma</i> and <i>Karma Second Chance</i>			X			X			WE		WE		WE						
TJ-016 Mobile Advertising		X	X						WE										Project completed in FY07-08
TJ-017 Invasive Species Removal Program in Tijuana River Valley Park		X	X					X	WQ		WQ		WQ						
TJ-018 Trash and Sediment Characterization Study		X				X			WQ		WQ		WQ						
TJ-019 City of San Diego Strategic Plan Implementation	X		X		X						LU		LU						
TJ-020 Pet Waste Dispenser Program			X	X							WQ		WQ	WE					
TJ-021 San Ysidro Festival FY09		X	X			X					WE	PP	WE	PP					New Activity in FY08-09
TJ-022 Tijuana River Gross Solids BMP & Sediment BMP Design		X				X					WQ		WQ						New Activity in FY08-09
TJ-023 Tijuana River Watershed Brochure FY09	X	X	X	X	X	X	X	X			WE		WE						New Activity in FY08-09
TJ-024 Water Quality Monitoring in the Upper Tijuana Watershed	X	X	X	X	X		X	X			M								Activity completed FY08-09
TJ-025 Smuggler's Gulch, Pilot Channel & Northern Channel Sediment and Debris Removal		X			X	X					WQ		WQ						New Activity in FY08-09
Potential Future Watershed Activities																			
Source Identification of Metals and Ammonia	X			X															
Mobile Business Assessment Program	X																		
Infiltration BMP Retrofit	X		X																
Beyer Avenue Trash Segregation Device Installation			X			X													Project Name Change in FY08-09
Inlet Bacteria Treatment BMP Installation			X																
Green Mall Infiltration Retrofit Education and Outreach	X		X																
Irrigation Controller and Xeriscaping Incentive Program	X		X	X				X											
Route Posting and Medium Sweeping Pilot Program	X					X													Project Name Change in FY08-09
Tijuana River Valley Park Trails and Habitat Enhancement Project		X																	

WQ = Watershed Water Quality Activity (Active Implementation)
WQ = Watershed Water Quality Activity (No WURMP Credit)
WE = Watershed Education Activity (Active Implementation)
WE = Watershed Education Activity (No WURMP Credit)
LU = Watershed-base Land Use Planning Activity

PP = Watershed Public Participation Activity
M = Water Quality Monitoring Activity (No WURMP Credit)
S = Source ID/Characterization Activity (No WURMP Credit)
D = Watershed Data Assessment/Management Activity
O = Other Watershed Activity (No WURMP Credit)

SECTION 4.0 EFFECTIVENESS ASSESSMENTS

This section of the report will assess the effectiveness of the Copermittees collaboration efforts over the year, the overall effectiveness of targeting specific water quality problems, and the collective impacts made towards reducing pollutant loads and improving receiving water quality. In order to facilitate this assessment the Copermittees agreed upon using the 2003 Framework for Effectiveness Assessment, which uses a six level hierarchical analysis to assess the effectiveness of watershed activities. The following section assesses the effectiveness of the WURMP on a whole in relation to four key program components:

1. Collaboration among Tijuana River WMA Copermittees.
2. Effectiveness of WURMP activities on addressing water quality problems and sources.
3. Evaluation of collective impact of WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale.
4. Assessment of measurable targeted outcomes.

1. An assessment of the Copermittees Collaboration Efforts during Reporting Period.

The Tijuana River WMA Copermittees have collaboratively worked together over the past year to successfully implement a number of watershed and education based activities throughout the WMA. In addition to participating together on shared watershed activities, the Tijuana River WMA Copermittees met 6 times during the year to further develop and implement the Tijuana River WURMP. Copermittees also participated in a number of Tijuana River Stakeholder groups including Border 2012, Tijuana River Valley Recovery Team, and Tijuana River Bacterial Source Identification study group. The Border 2012 group met twice during the year to discuss funding and coordinated activities. The Tijuana River Valley Recovery Team met monthly to develop and implement watershed activities, including coordinating efforts on a number of WURMP activities. The Tijuana Bacterial Source Identification study group also met twice to review the results of the literature review and sanitary survey. The Tijuana River WMA Copermittees have made significant progress towards coordinating watershed activities with each other and in collaboration with the various stakeholders in the watershed. All Level 1 provisions of the WURMP were successfully met as required by the NPDES permit.

2. An assessment of whether watershed activities are focused on the appropriate water quality problems and sources or whether additional information is needed to reach such conclusions.

Copermittees collaborated and selected watershed activities that address high level priority pollutants within each jurisdiction and throughout the watershed as a whole. As noted in Section 2, bacteria and trash are two of the many high priority pollutants found throughout the watershed and were the pollutants selected as the focus for many of the watershed activities. During the current reporting period the Copermittees actively engaged in 21 water quality and education activities with 9 activities focusing on bacteria, 4 activities focusing on trash, and 7 activities focusing on both trash and bacteria. Many of the activities addressed multiple pollutants or other priority pollutants in the WMA. Table 4-1 identifies each of the water quality and water education activities that were in active implementation during the reporting period. The current distribution of watershed activities, specifically the activities that target the high priority pollutants, adequately address the likely sources of pollutants from the MS4, and in many cases

contributes to the larger effort towards restoring the Tijuana River Valley and managing the effects of cross border pollution.

3. *A comprehensive assessment of the impact of all the WURMP Activities on the watershed's high priority problems, with a focus at the Hydrologic Area Level.*

The Tijuana River WMA is divided into 8 Hydrologic Areas. The high priority pollutants in the watershed include metals, dissolved minerals (manganese), organics, sediment, pesticides, nutrients, gross pollutants (pH), color, and bacteria/pathogens. By and large, the majority of the priority water quality problems are found in the Tijuana River Valley HA (911.1) where significant amount of pollutants are introduced from cross border sources in Mexico. Although improvements in high priority water quality problems in the watershed are difficult to quantify, the Tijuana River WMA Copermittees feel that local improvements in water quality continue to be made along the U.S. portion of the watershed through the implementation of water quality and education activities. Water quality and education activities were implemented throughout all HAs; however, water quality activities were primarily focused in the Tijuana River Valley HA (911.1), where the water quality problems are most numerous and significant.

During the reporting period, 21 activities were in the active implementation phase with 11 activities focused on water quality, 4 activities focused on education, and 6 activities focused on both education and water quality. These activities addressed several of the priority pollutants in the Tijuana River Watershed including bacteria, trash, sediment, pesticides, metals, organics, nutrients, gross pollutants, and color. Load reductions or source abatements were also achieved in 8 of the watershed activities (TJ-001, TJ-002, TJ-003, TJ-004, TJ-007, TJ-010, TJ-011, and TJ-025). Table 4-1 identifies the HA location for each activity, the priority pollutants addressed, and the results achieved during the reporting period. Detailed information on the implementation and assessment for each watershed activity is provided in the appendix of the report (Activity Summary Sheets).

4. *Measurable targeted outcomes and assessments measures will be used to facilitate assessment wherever possible. Assessment levels one through six will be applied to the watershed as whole where applicable and feasible.*

As a whole, the Copermittees are working to expand the focus of their assessments on demonstrating the watershed-level benefits of program implementation, and will continue to do so under order R9-2007-0001. However, annual watershed assessments do not attempt to address the relationship of WURMP implementation to changes in water quality; this analysis will be confined to the Long-term Effectiveness Assessment process. The Copermittees feel that their efforts demonstrated by Level 1, 2, 3, and 4 likely had positive effects on water quality and will help establish the effectiveness of the Tijuana River watershed program. The bacteria-focused activities implemented a comprehensive method of promoting education and awareness (Level 1, 2, and 3) combined with actual load reduction and source abatement. As can be seen, levels of effectiveness for these activities had wide outcome range, with a majority emphasizing load reduction or source abatement (Level 4). The process also allowed a thorough evaluation of the WURMP and to make improvements, modifications, and changes to the program as needed. As the activities progress and become more developed in its implementation, data will become more available to design measurements that will improve the effectiveness of the activities. This will in turn lead to a better framework of assessing the activities and thereby improve the overall effectiveness of this watershed program.

Table 4-1 Water Quality and Education Activities in Tijuana River WMA

Activity		HA	Activity Type	Priority Problems Addressed	Level Outcome	Measurement or Other Benefit
ID No.	Project Name					
TJ-001	Pet Waste Dispenser Program	911.2 911.4 911.5	Water Quality	Bacteria	4	Maintained existing pet waste bags at 3 different County parks.
TJ-002	TJWMA Land Acquisition	All	Water Quality	All	4	113.39 acres of land acquired in the Tijuana River WMA.
TJ-003	ILACSD Trash Clean-Up Sponsorship	911	Water Quality and Education	Bacteria, Trash	1, 4	105 participants, 20,320 pounds of trash and debris
TJ-004	SD Coastkeeper Trash Clean-up Sponsorship	911	Water Quality and Education	Bacteria, Trash	1, 4	46 participants, 1,860 pounds of trash and debris
TJ-007	Targeted Auto-Related Facility Inspections	911.1 911.2	Water Quality	Metals	1, 3, 4	2 BMP corrective actions, 22 inspections with 7 follow-ups, Education materials distributed and knowledge assessed.
TJ-009	Municipal Rain Barrel Installation and Downspout Disconnects	911.1 911.2	Water Quality	Bacteria, Metals, Pesticides	1, 4	Installed two rain barrels. Assessment will be conducted during the 2009-10 rainy season
TJ-010	City-Wide Clean-Up Events	911	Water Quality	Bacteria, Trash	1, 2, 4	732 participants, 154.3 tons of material collected.
TJ-011	Large Special Events Inspection and Clean-Ups	911	Water Quality and Education	Bacteria, Trash	1, 4	12 special events with enhanced BMPs Increased awareness
TJ-012	Smuggler's Gulch Sediment and Debris Removal Program	911	Water Quality	Bacteria, Trash, Sediment	1	Program in the planning stage and will be implemented in FY09-10.
TJ-013	Tijuana River Bacteria Source Identification Study	911.1 911.2	Water Quality	Bacteria	1	Completed one sanitary survey and one wet weather monitoring event. Study suspended due to State budget problems.
TJ-014	LID and Watershed Planning Education for Com & Sponsor Groups	All	Education	All	1, 2	Community Planning Group training related to LID and watershed planning principles, practices, and requirements. 8 CPG (143 participants) and, the Manzanita band of Kumeyaay Nation (12 participants). A total of 78 pre- and post- surveys were completed.
TJ-015	Karma and Karma Second Chance PSA	911.1 911.2	Education	Bacteria, Trash	1, 2, 3	446,835 est. TV audience. 613,459 est. Radio audience. 44% expressed change in knowledge or attitude. 29% reported making changes in behavior.
TJ-017	Invasive Species Removal Program in Tijuana River	911	Water Quality	Bacteria, Sediment, Pesticides	1	Participated in the Technical Advisory Group. Finalized a "Declaration of Intent" by all public landowners in the Tijuana

**Tijuana River WURMP
FY2008-09 Annual Report**

Activity		HA	Activity Type	Priority Problems Addressed	Level Outcome	Measurement or Other Benefit
ID No.	Project Name					
	Park					River Valley. Acknowledges commitment to control invasive species.
TJ-018	Trash and Sediment Characterization Study	911	Water Quality	Trash, Sediment	1	Characterize the trash and debris in the main channel of the Tijuana River basin for future removal.
TJ-019	City of San Diego Strategic Plan Implementation	911.1 911.2	Water Quality and Education	All	1	Developed Phase 1 list of activities to address high priority water quality problems
TJ-020	Pet Waste Dispenser Program	911.1 911.2	Water Quality	Bacteria	1, 4	Identified locations for new pet waste bag dispensers to be installed FY09-10.
TJ-021	San Ysidro Festival FY08-09	911	Education	Bacteria, Sediment, Metals	1, 2, 3	7,000 participants and 156 surveys administered. 84% identified actions to prevent pollution. 100% indicated willingness to engage behavior to prevent pollution.
TJ-022	Tijuana River Gross Solids BMP & Sediment BMP Design	911	Water Quality	Bacteria, Trash, Sediment	1	Multi year study and design plan to reduce the volume of sediments and gross solids which are transported into the river valley, estuary and ocean during storm events.
TJ-023	Tijuana River Watershed Brochure FY08-09	911.1 911.2	Education	All	1	Improved residential brochures to educate residents on pollutants and BMPs.
TJ-024	Water Quality Monitoring in the Upper Tijuana Watershed	911.4 911.8	Water Quality and Education	All	1	Two dry weather and one wet weather monitoring events.
TJ-025	Smuggler's Gulch, Pilot Channel & Northern Channel Sediment and Debris Removal	911	Water Quality	Sediment, Trash, Gross Pollutants	1, 4	Approximately 5,900 cubic yards of material was removed during FY08-09

4.2 Assessment of TMDL BMP Implementation Plan Effectiveness

At this time, there are no adopted TMDLs currently in effect within the Tijuana River WMA.

SECTION 5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

During FY2008-09 the Tijuana River WMA Copermittees continued to implement and improve the Tijuana River WURMP following the 5-year Watershed Strategy developed and submitted to the regional board in March of 2008. Much of the year was spent collaborating with the other Tijuana River WMA Copermittees to develop and further refine the strategy for implementing Watershed Activities in compliance with the Regional Board Order R9-2007-0001. The collaborative efforts of the Copermittees represent significant steps towards improving the water quality within the Tijuana River WMA for the benefit of residents and wildlife alike.

The condition of the receiving water and relative contribution of pollutants from urban runoff sources were assessed in the Tijuana River WMA during the reporting period through a number of different monitoring programs. Table 5-1 below presents the monitoring programs and assessments that were conducted during the reporting period. Results from the multiple monitoring programs provided some of the assessment tools necessary to answer the 5 core management questions addressed in Section 2.1 Water Quality Assessment.

The Tijuana River WMA Copermittees met six times during the year to develop the strategy as well as to develop new activities to address the High Priority Pollutants in the watershed. Collaboration was made on a number of Watershed Water Quality Activities, Watershed Education Activities, and Public Participation, Education, and Outreach Activities. Table 3-1 and Table 3-2 in Section 3.0 identify the watershed activities and information pertaining to the lead jurisdiction, the hydrologic area(s), and priority pollutants which these activities targeted.

During this reporting period, the Tijuana River WMA Copermittees implemented a total of 21 watershed activities including 11 activities focused on water quality, 4 activities focused on education, and 6 activities focused on both education and water quality. These activities also include 3 new activities from the previous year. The Tijuana River WMA Copermittees also implemented a total of 62 Public Participation, Education, and Outreach Activities that reached an estimated audience of 1,425,000 people.

Lastly, the Tijuana River WMA Copermittees demonstrated effectiveness level outcomes of Levels 1 through 4 with the implementation of the watershed and education/outreach activities during FY2008-09. The Copermittees successfully collaborated on activities targeting the high priority pollutants in the watershed, and collaborated on a comprehensive approach to address two specific pollutants of concern, trash and bacteria. During the next fiscal year the Copermittees will continue collaborate and assess the effectiveness of targeted watershed activities, and further develop programs in order to maximize benefits to water quality.

5.2 Recommendations

During the last reporting period the San Diego Regional Copermittees, through the WURMP Workgroup, initiated dialogue with RWQCB staff to amend permit language where necessary to better achieve watershed program goals. The efforts to amend the WURMP language have been delayed due to the

response from Regional Board staff. The Tijuana River WMA Copermittees are still committed to improving the WURMP and will continue their involvement in this process for future reporting periods.

The Tijuana River WMA Copermittees will also continue their involvement with the Tijuana River Valley Recovery Team to incorporate goals and objectives of the Recovery Team into the evolution and development of the WURMP. The Recovery Team is a good mechanism for collaborative land use planning among the various agencies and stakeholders within the watershed and also provides the necessary forum to present and collaborate on the numerous restoration projects ongoing in the watershed. The Tijuana River Trash and Sediment Characterization study (TJ 018) is one such activity where coordination between the WURMP Copermittees and the Tijuana Recovery Team has resulted in a successful project development and implementation. The continued involvement with the Recovery Team will most likely lead to additional watershed activities being developed and implemented in the watershed.

SECTION 6.0 REFERENCES

California Regional Water Quality Control Board, San Diego Region. 2007, Order No. R9-2007-0001, NPDES Permit No. CAS0108758; Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District and the San Diego County Regional Airport Authority

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