

**Watershed Urban Runoff Management Program  
Fiscal Year 2009-2010 Annual Report**

**Tijuana River Watershed**

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

**on**

**January 31, 2011**

**Prepared by the County of San Diego**

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## **EXECUTIVE SUMMARY**

This annual report describes implementation of the Tijuana River Watershed Management Area Watershed Urban Runoff Management Program (WURMP) during Fiscal Year 2009-10 (FY09-10). Although much of the Tijuana River Watershed Management Area (WMA) extends into Mexico, only the portion within the United States is subject to the Municipal Stormwater Permit's WURMP requirements. Therefore, this report only addresses activities within the United States.

Section 1.0 provides an overview of the information included in this report and summarizes the ongoing collaboration among Tijuana River WMA Copermittees. There were no updates to the watershed maps during this reporting period.

Section 2.0 presents a water quality assessment for the Tijuana River WMA. The assessment is largely based on results from 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 regional 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 alternates monitoring between the northern and the southern watersheds. The southern watersheds, including the Tijuana River WMA, were monitored during this reporting period.

The Tijuana River WMA WURMP (2008) identified nine high priority water quality problems in the Tijuana River WMA: sediment (TSS/turbidity), pesticides, gross pollutants (organics, pH, trash), bacteria and trace metals. Weston 2010 results for the Tijuana River WMA presented in Section 2.1 confirm that these pollutants should still be considered as high priority. Section 2.2 discusses the potential sources of these problems.

Section 3.0 and Attachment 1 describe the 27 watershed activities that were in various phases of implementation during FY09-10. Many of the activities address sediment, bacteria and trash in the Tijuana Valley Hydrologic Area (HA 911.1).

Section 4.0 describes the collaborative efforts among the Tijuana River WMA Copermittees (County of San Diego, Cities of San Diego and Imperial Beach) and assesses the overall effectiveness of WURMP activities towards reducing pollutant loads and improving receiving water quality. The WURMP water quality activities are making an impact towards raising awareness of the water quality problems in the river valley and reducing the pollutant loads from the Copermittees' jurisdictions. Significant headway is also being made through the collaborative planning efforts from other stakeholder groups such as the Tijuana River Valley Recovery Team, Border 2012, the Tijuana River Estuary Management Authority, and the Tijuana River Bacteria Source Identification Study group; however, there is much more to accomplish before implementing large-scale watershed activities to address cross-border pollution problems. Continued implementation of WURMP watershed activities and participation in other stakeholder groups will result in the development of future activities and lead to incremental improvements in water quality throughout watershed.

Section 5.0 provides a discussion on conclusions and recommendations that were reached during the reporting period.

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# County of San Diego

## LAND USE AND ENVIRONMENT GROUP

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DEPUTY CHIEF ADMINISTRATIVE OFFICER

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### STATEMENT OF CERTIFICATION

#### **Tijuana River Watershed Urban Runoff Management Program (WURMP) FY 2009-10 Annual Report**

I certify, under penalty of law, that this FY 2009-10 Tijuana River Watershed Urban Runoff Management Program (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.

**SARAH E. AGHASSI**  
Deputy Chief Administrative Officer

1/21/11  
Date

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January 30, 2011

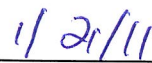
**RE: Statement of Certification  
Tijuana River Watershed Urban Runoff Management Program  
Fiscal Year 2010 Annual Report**

I certify under penalty of law that the City of San Diego participated in the development of the Fiscal Year 2010 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.



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Kris McFadden  
Deputy Director  
Transportation & Storm Water Department  
City of San Diego



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Date

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January 20, 2011

**STATEMENT OF CERTIFICATION**

**Tijuana River Watershed Urban Runoff Management Program 2009-10 Annual Report**

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

H.A. Levien  
Public Works Director

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## **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 WMA to collaborate on the development and implementation of a 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 Watershed Water Quality Activities (pollutant load reduction and source abatement), 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 are included in Attachment 1.

This Annual Report is divided into five sections that highlight the efforts of the Tijuana River WMA Copermittees during the FY09-10 reporting period.

- Section 1: Provides an overview of the information included in this report and 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 were implemented 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: Discusses conclusions reached during FY09-10 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

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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 six times during this reporting period. Table 1-1 provides a summary of the dates and the general topics of discussion at these meetings. Several of the meetings were focused on preparing the draft and final FY08-09 Tijuana River WURMP Annual Report that was submitted to the RWQCB on February 1, 2010.

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 identified several water quality activities which they have coordinated at the Hydrologic Area (HA) level. A collaborative approach was utilized because these activities were identified as beneficial to addressing 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 Attachment 1 provide specific detail on each program that was initiated or completed during the FY09-10 reporting period.

**Table 1-1: Summary of Copermittee Meetings**

Meeting (or Conference) Date	Main Topics of Discussion
09/22/09	<ul style="list-style-type: none"> <li>• Reviewed Draft 2008 Revised TMDL List</li> <li>• Identify Section responsibilities</li> <li>• Discuss/Set Schedule for Report completion.</li> </ul>
11/05/09	<ul style="list-style-type: none"> <li>• Update status of response to 2008 TMDL</li> <li>• Update on potential changes to WURMP reports</li> <li>• Provide Status of WURMP Revisions</li> <li>• Review Schedule</li> </ul>
12/04/09	<ul style="list-style-type: none"> <li>• Discuss revisions to draft Report</li> <li>• Review schedule</li> </ul>
12/16/09	<ul style="list-style-type: none"> <li>• Conference Call – Discussion of Final Edits</li> </ul>
02/18/10	<ul style="list-style-type: none"> <li>• Presentation by Weston regarding the FY08-09 Monitoring Results</li> </ul>
02/25/10	<ul style="list-style-type: none"> <li>• Discussed Weston Presentation</li> <li>• Update of WURMP Leads Meeting</li> </ul>

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 (Action Teams and Steering Committees) has met nine times during FY09-10. In addition, the Recovery Team planned and held one of three planned Visioning Workshops (April 26, 2010) for stakeholders interested in the Tijuana River Valley. 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](http://www.tjriverteam.org).

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

**Table 1-2: Summary of Action Team Meetings**

Meeting (or Conference) Date	Main Topics of Discussion
09/25/09	<ul style="list-style-type: none"> <li>• Action Teams Break-out Discussions</li> <li>• Update on Trash, Tire &amp; Sediment (TTS) Characterization Study - URS</li> <li>• Update on Clean-up and Abatement (C&amp;A) Funding</li> <li>• Other Clean-up Activities.</li> </ul>
10/30/09	<ul style="list-style-type: none"> <li>• Update on Sediment Removal Projects</li> <li>• Update on TTS Characterization Study</li> <li>• Update on Future C&amp;A Funding Requests</li> <li>• Develop Potential Project List</li> </ul>
12/09/09	<ul style="list-style-type: none"> <li>• Prioritize and Provide Cost Estimate for Potential Projects.</li> </ul>
02/26/10	<ul style="list-style-type: none"> <li>• Presentation Of the RWQCB to the Recovery Team</li> <li>• Report on Recovery Team Presentation to the California-Mexico Border Relations Council</li> <li>• Discussion regarding letters of support for Recovery Team/other Projects</li> <li>• Establish Visioning Workshop Schedule and Agenda</li> </ul>
03/26/10	<ul style="list-style-type: none"> <li>• Update of 3/24/10 Steering Committee Mtg.</li> <li>• Update on Visioning Workshops</li> <li>• Action Team Breakout Sessions</li> </ul>

**Table 1-3: Summary of Steering Committee Meetings**

Meeting (or Conference) Date	Main Topics of Discussion
08/28/09	<ul style="list-style-type: none"> <li>• Overall update on grant applications submitted by members of the Recovery Team</li> <li>• Updates provided by each Action Team Chair</li> <li>• Provide Status of WURMP Revisions</li> <li>• Review Schedule</li> </ul>
01/13/10	<ul style="list-style-type: none"> <li>• Structural Discussion: Policy Committee changed to Steering Committee</li> <li>• Annual Meeting Schedule</li> <li>• Coordination, Communications, &amp; Funding</li> <li>• List of Proposed Projects (12/09/09)</li> </ul>
03/24/10	<ul style="list-style-type: none"> <li>• Request for additional Steering Committee Members</li> <li>• Roles of TRVRT as an Interagency Group</li> <li>• Should Formal Agreement (MOU etc.) be considered</li> <li>• Interagency Meetings – Formalities</li> <li>• Engaging other interested parties (NGO’s, Non-Profits etc.)</li> </ul>
06/21/10	<ul style="list-style-type: none"> <li>• Introduce Additions to Steering Committee</li> <li>• Brief Updates by Action Committees</li> <li>• Overview of April 26<sup>th</sup> Visioning Workshop</li> <li>• TRVRT Draft Charter Review</li> <li>• Action Team Direction</li> <li>• ACOE Meeting and Tour</li> <li>• LiDAR Update</li> <li>• Updates on upcoming outreach and speaking engagements</li> </ul>

**1.2 Tijuana River Watershed Map Updates**

There are no Tijuana River Watershed map updates included in the FY09-10 Annual Report.



**SECTION 2.0 WATER QUALITY AND POLLUTANT SOURCE ASSESSMENT**

The Tijuana River Watershed Management Area (WMA) is located in the southern portion of San Diego County. In accordance with the Receiving Waters and Urban Runoff Monitoring Program per the San Diego Regional Water Quality Control Board Order R9-2007-0001 (Permit), the Tijuana River WMA was monitored in 2009-2010. The assessment is based on the following data:

**Table 2-1 Monitoring Program Activities**

Receiving Water	MS4 Outfall	Source Studies and Third-Party Data
MLS and TWAS Monitoring during wet and dry weather: Chemistry, toxicity, and bioassessment.	Random and Targeted: Wet and Dry	No Regional Source Studies performed in this watershed.
MLS - mass loading station MS4 - municipal separate storm sewer system TWAS - temporary watershed assessment station		

**2.1 Water Quality Assessment**

The results of the annual monitoring are presented in the four quadrants shown in Table 2-2, Table 2-3, and Table 2-4 to summarize the results and to identify constituent relationships between the receiving waters and the municipal separate storm sewer system (MS4) outfalls during both wet and dry weather. The constituents listed in the quadrant table represent medium and high priority detected constituents based on the Methodology for Annual and Long-Term Data Assessments for San Diego County Watershed Management Areas, Final Draft-Version 1 (SDCRC, 2010).

The key findings for the Tijuana River mass loading station (MLS) at Hollister St drainage area (Table 2-2) include:

- Receiving Water – Wet vs. Dry:** Priority constituents identified during wet weather include biochemical oxygen demand (BOD), total suspended solids (TSS), turbidity, total and dissolved phosphorus, oil and grease, chemical oxygen demand (COD), nitrite, methylene blue active substance (MBAS), bifenthrin, L-cyhalothrin, and fecal coliform. During dry weather, priority constituents were ammonia, BOD, MBAS, total nitrogen, total and dissolved phosphorus, COD, turbidity, fecal coliform, and enterococci. Bifenthrin, cypermethrin, and permethrin were detected in post-storm sediment samples, suggesting a possible link between wet weather runoff and dry weather conditions. Increasing trends were noted for total and fecal coliform, enterococci, nitrate, TSS, turbidity, total arsenic, total copper, total lead, and total zinc. Decreasing trends were noted for conductivity, total dissolved solids (TDS), diazinon, dissolved nickel, and dissolved zinc.

The TJR-MLS and TJR-TWAS-2 are downstream of the International Boundary Water Commission (IBWC) wastewater treatment plant. During ambient conditions, low flows

are diverted from the Tijuana River and nearby tributaries to the treatment plant, which has a 25 million gallon per day flow capacity (IBWC, 2008). When flow capacities are reached due to stormwater runoff and high base flows, the ambient runoff bypasses the plant and flows are sent downstream untreated (IBWC, 2008). The TJR-MLS and TJR-TWAS-2 sites were both influenced from untreated runoff flows during both dry weather monitoring events.

- Receiving Water vs. MS4 – Wet Weather: Priority constituents identified in both MS4 and receiving waters during wet weather were TSS and fecal coliform.
- Receiving Water vs. MS4 – Dry Weather: Priority constituents identified in both MS4 and receiving waters during dry weather were total phosphorus, total nitrogen, and enterococci. This suggests that potential relationships exist between receiving water concentrations of phosphorus and urban runoff.
- MS4 – Wet vs. Dry Weather: The results of the MS4 outfall program indicate that bacteria are common high priority constituents for both wet and dry weather flows at MS4 outfalls. Although total phosphorus and total nitrogen were identified as priority dry weather constituents, storm event flows may also contribute elevated nutrient loads and would need to be assessed with the loading capacity of the receiving water body. Total and dissolved phosphorus were identified as priority constituents in receiving waters during dry weather. Low dissolved oxygen (DO) was also identified as an issue in dry weather urban runoff. However, the receiving waters are primarily influenced from raw wastewater discharges that bypass the IBWC treatment plant.

The key findings for the Tijuana River TWAS-2 Dairy Mart Rd. drainage area (Table 2-3) include:

- Receiving Water - Wet vs. Dry: Receiving waters at TJR-TWAS-2 had similar characteristics as the MLS just downstream. Priority wet weather constituents included BOD, TSS, turbidity, total and dissolved phosphorus, oil and grease, COD, MBAS, bifenthrin, permethrin, and fecal coliform. Dry weather constituents were similar to wet weather with priority constituents identified as ammonia, BOD, COD, MBAS, TSS, turbidity, total nitrogen, total and dissolved phosphorus, fecal coliform, and enterococci. Bifenthrin and cypermethrin were identified in post-storm sediment samples, suggesting a possible link between wet weather runoff and dry weather conditions. Similar to the MLS, the TJR-TWAS-2 site is influenced from raw wastewater discharges that bypass the IBWC treatment plant.
- Receiving Water vs. MS4 -Wet Weather: Similar to the MLS, priority constituents identified in both MS4 and receiving waters during wet weather were TSS and fecal coliform at the TJR-TWAS-2.
- Receiving Water vs. MS4 - Dry Weather: Priority constituents identified in both MS4 and receiving waters during dry weather were total phosphorus, total nitrogen, and enterococci. This suggests that potential relationships exist between receiving water

concentrations of phosphorus and urban runoff. These results are similar to the results at the downstream MLS.

- MS4 - Wet vs. Dry Weather: The results of the MS4 outfall program indicate that bacteria are common high priority constituents for both wet and dry weather flows at MS4 outfalls. Although total phosphorus and total nitrogen were identified as priority dry weather constituents, storm event flows may also contribute elevated nutrient loads and would need to be assessed with the loading capacity of the receiving water body. As mentioned above, the receiving waters are primarily influenced from raw wastewater discharges that bypass the IBWC treatment plant.





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- MS4 - Wet vs. Dry Weather: No MS4 outfall samples were collected in this drainage area during wet or dry weather.

**Table 2-4 Summary of Tijuana River WMA Assessment Findings TJR-TWAS-1 — Campo**

<b>Tijuana River TWAS-1 (Campo)</b>			
<b>System Assessed</b>	<b>Annual Dry Weather Constituents of Concern<sup>1</sup></b>	<b>Annual Wet Weather Constituents of Concern<sup>1</sup></b>	<b>Core Questions Addressed</b>
<b>Receiving Water Monitoring (MLS, TWAS, and SMC)</b>	<b>Chemistry:</b> None <b>Bacteria:</b> Enterococci (Med) <b>Biology:</b> Poor IBI <b>Toxicity:</b> <i>S. capricornutum</i> growth (Med) <b>Synthetic Pyrethroids Assessment:</b> Cyfluthrin (sediment)	<b>Chemistry:</b> TSS, Turbidity, MBAS (Med) <b>Bacteria:</b> Fecal Coliform <b>Toxicity:</b> None <b>Synthetic Pyrethroids:</b> bifenthrin (Med)	1, 2
<b>Urban Runoff Monitoring (MS4 Outfall)</b>	<b>Chemistry:</b> No samples in this drainage area <b>Bacteria:</b> No samples in this drainage area	<b>Chemistry:</b> No samples in this drainage area <b>Bacteria:</b> No samples in this drainage area	3, 4
<p>1: High frequency constituents of concern are determined following the Final Draft Annual Assessment Methodology developed during the 2009-2010 Monitoring Season.</p> <p>IBI - Index of Biotic Integrity MBAS - methylene blue active substance Med - Medium Priority Constituent MLS - mass loading station</p> <p>MS4 - municipal separate storm sewer system SMC - Stormwater Monitoring Coalition TSS - total suspended solids TWAS - temporary watershed assessment station</p>			

Persistent toxicity was observed during both ambient and wet weather monitoring at sites TJR-MLS and TJR-TWAS-2. Toxicity to *C. dubia* acute and chronic survival, and reproduction was observed during wet weather at TJR-MLS and TJR-TWAS-2. During ambient weather, toxicity to *C. dubia* reproduction was observed at TJR-MLS and acute and chronic survival at TJR-TWAS-2. Additionally, toxicity to *S. capricornutum* was also persistent at TJR-MLS. Although the Permit recommendations suggest toxicity identification evaluation (TIEs) may be of use, the documented chemical concentrations indicating raw wastewater discharges did not warrant conducting a TIE. Persistent toxicity was not observed during wet or dry weather at TJR-TWAS-1 in Campo.

Bioassessment results in the Tijuana River WMA indicated either Poor or Very Poor ratings. The TJR-TWAS-1 site in Campo was the highest rated site (Poor) and was only two points lower than a Fair rating. The observed to expected ratio (O/E) score indicated unimpaired conditions at TJR-TWAS-1. The TJR-TWAS-2 site was also rated Poor, but the assessment result was higher than

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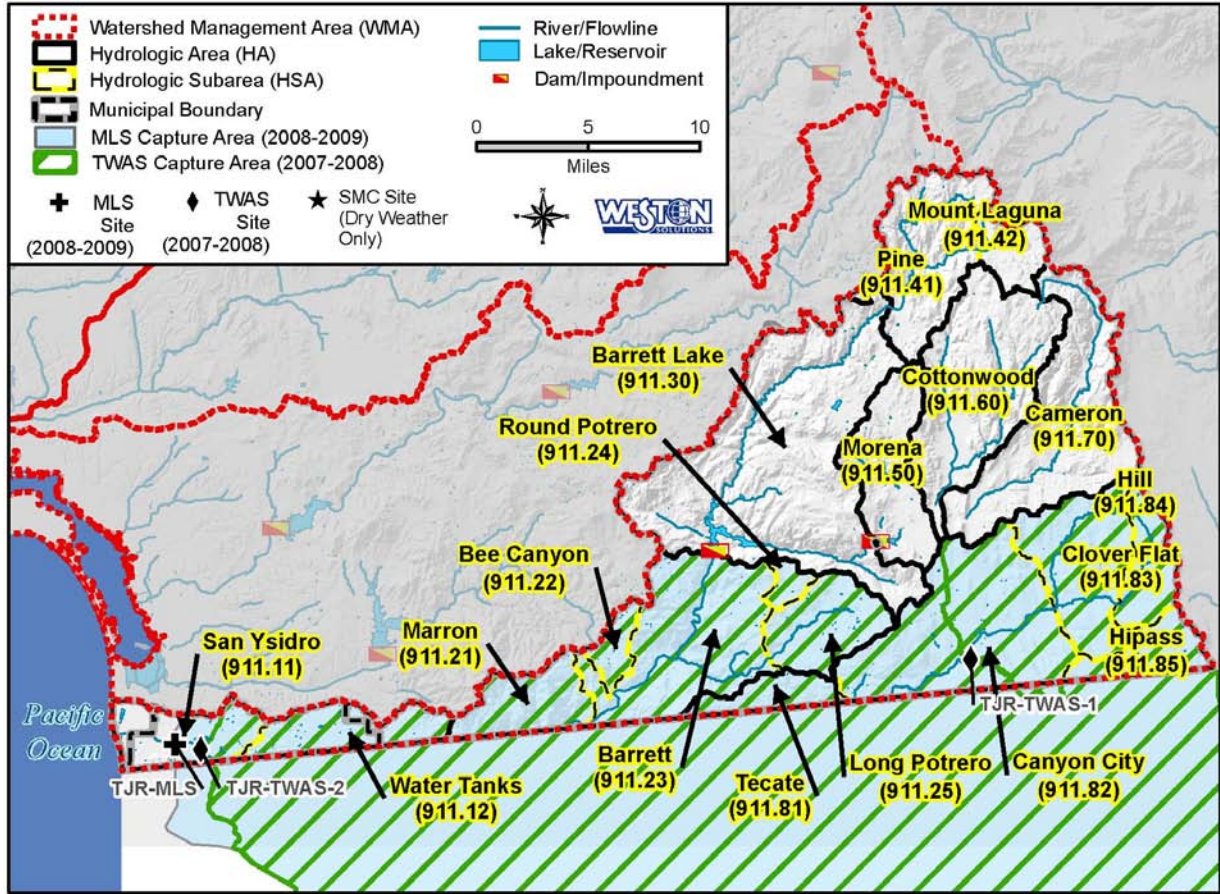
conditions suggested due to IBI methodology differences. The O/E score indicates that this site is the second most impaired of all sites monitored. The TJR-MLS site was rated Very Poor, and the O/E ratio indicated this site was the most impaired of all sites monitored. Physical habitat scores were high (good) at the TJR-MLS and the TJR-TWAS-1 site in Campo. Physical habitat scores were low (impaired) at TJR-TWAS-2. The two lower site locations had very degraded benthic macroinvertebrate (BMI) and algae communities with very low diversity and a predominance of organisms indicative of organic waste.

The spatial distribution of the identified wet weather priority constituents is summarized in Table 2-5 with the referenced hydrologic subareas (HSAs) presented on Figure 2-1. Table 2-5 presents the wet weather priority constituents identified for the receiving water, and the corresponding ratings for these same constituents in each HSA based on the MS4 program results. Similarly, Table 2-6 presents the identified dry weather priority constituents with the referenced HSAs presented on Figure 2-1. Table 2-6 provides a spatial distribution of dry weather priority constituents within each HSA based on the receiving water results. This table indicates the priority ratings for the constituents identified for the receiving water based on SMC data. The spatial results that identify HSA/drainage areas containing a higher number of priority constituents at MS4 locations with similar priority constituents as the receiving waters should be considered in developing the watershed management actions.

Table 2-7 provides a summary of the §303(d) listed water bodies and constituents within the Tijuana River WMA, and identifies whether the annual regional data or other available data sets support the listings. Table 2-7 also identifies where there are no data, and whether total maximum daily loads (TMDLs) have been developed. As identified in Table 2-7, several of the listings occur in reservoirs that are managed by other agencies such as the City of San Diego Metropolitan Water District or San Diego County Water Authority.



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**Figure 2-1: Location of MLS, TWAS, and HSA – Tijuana River WMA**



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**Table 2-5: Summary of Spatial Distribution of Priority Wet Weather Constituents**

Station Type	HA	HSA	Parameter	Nitrite as N	Dissolved Phosphorus	Total Phosphorus	Total Suspended Solids	Fecal Coliforms	Turbidity	MBAS	Oil & Grease	Bifenthrin	Permethrin	L-cyhalothrin	BOD	COD	
MS4 by HSA	Tijuana Valley (911.10)	San Ysidro (911.11)	n	4	0	4	4	4	0	0	0	0	0	0	0	0	
			% > Criteria	0%	NA	0%	50%	75%	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Water Tanks (911.12)	n	2	0	2	2	2	2	0	0	0	0	0	0	0	0
			% > Criteria	0%	NA	0%	0%	0%	0%	NA	NA	NA	NA	NA	NA	NA	NA
<b>TJR-MLS Summary (Hollister St.) (MS4 to Receiving Water Comparison)</b>			MS4 (n)	0	0	0	0	0	0	0	0	0	0	0	0	0	
			MS4 % > Criteria	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			RW Score	Low	Low	Low	High	High	High	Med	Low	Med	Low	Low	Low	Low	
<b>TJR-TWAS-2 Summary (Dairy Mart Rd.) (MS4 to Receiving Water Comparison)</b>			MS4 (n)	3	0	3	3	3	0	0	0	0	0	0	0	0	
			MS4 % > Criteria	0%	NA	0%	33%	33%	NA	NA	NA	NA	NA	NA	NA	NA	
			RW Score	Med	Med	High	High	High	High	Med	Med	Med	Low	Med	High	Med	
<b>TJR-TWAS-1 Summary (Campo) (No MS4 Stations for Comparison)</b>			MS4 (n)	3	0	3	3	3	0	0	0	0	0	0	0	0	
			MS4 % > Criteria	0%	NA	0%	33%	33%	NA	NA	NA	NA	NA	NA	NA	NA	
			RW Score	Low	Med	High	High	High	High	Med	Med	High	Med	Low	High	Med	

No MS4 stations within TJR-TWAS-1 Drainage Area.  
 HAs without MS4 stations are not shown in table and include Potrero (911.20), Barrett Lake (911.30), Monument (911.40), Moreno (911.50), Cottonwood (911.60), Cameron (911.70), and Campo (911.80).

**Key**

High	> 50% Above benchmark	BOD - biochemical oxygen demand
Medium	> 25% and ? 50% Above benchmark	COD - chemical oxygen demand
Low	? 25% Above benchmark	HA - hydrologic area
No Data		HSA - hydrologic subarea
		MBAS - methylene blue active substance
		MLS - mass loading station
		MS4 - municipal separate storm sewer system
		NA - not available
		RW - receiving water
		TWAS - temporary watershed assessment station

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**Table 2-6: Summary of Spatial Distribution of Priority Dry Weather Constituents**

Station Type	HA	HSA	Parameter	Total Nitrogen (calculated)	Dissolved Phosphorus	Total Phosphorus	Total Suspended Solids	Fecal Coliform	Enterococcus	Ammonia-N	Turbidity	MBAS	BOD	COD																														
MS4 by HSA	Tijuana Valley (911.10)	San Ysidro (911.11)	n	3	0	3	3	4	4	0	0	1*	0	0																														
			% > Criteria	67%	NA	100%	0%	25%	75%	NA	NA	100%	NA	NA																														
		Water Tanks (911.12)	n	1*	0	1*	1*	1*	1*	1*	0	0	0	0	0																													
			% > Criteria	100%	NA	100%	0%	0%	100%	NA	NA	NA	NA	NA	NA																													
	Barrett Lake (911.30)	Barrett Lake (911.30)	n	1*	0	1*	1*	1*	1*	1*	0	0	0	0	0																													
			% > Criteria	0%	NA	100%	0%	0%	100%	NA	NA	NA	NA	NA	NA																													
TJR-MLS Summary (Hollister St.) (MS4 to Receiving Water Comparison)			MS4 (n)	3	0	3	3	3	3	0	0	0	0	0																														
			MS4 % > Criteria	67%	NA	100%	0%	0%	67%	NA	NA	NA	NA	NA	NA																													
			RW Score	High	High	High	Low	High	High	High	Med	High	High	Med																														
TJR-TWAS-2 Summary (Dairy Mart Rd.) (MS4 to Receiving Water Comparison)			MS4 (n)	2	0	2	2	2	2	0	0	0	0	0																														
			MS4 % > Criteria	100%	NA	100%	0%	0%	100%	NA	NA	NA	NA	NA																														
			RW Score	High	High	High	High	High	High	High	High	High	High	High																														
TJR-TWAS-1 Summary (Campo) (No MS4 Stations for Comparison)			MS4 (n)	0	0	0	0	0	0	0	0	0	0	0																														
			MS4 % > Criteria	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA																														
			RW Score	Low	Low	Low	Low	Low	Low	Med	Low	Low	Low	Low																														
<p>*One station was used in the summary.            No MS4 stations within TJR-TWAS-1 Drainage Area.            HAs without MS4 stations are not shown in table and include Potrero (911.20), Monument (911.40), Moreno (911.50), Cottonwood (911.60), Cameron (911.70), and Campo (911.80).</p> <p><b>Key</b></p> <table border="0"> <tr> <td>High</td> <td>&gt; 50% Above benchmark</td> <td>BOD - biochemical oxygen demand</td> </tr> <tr> <td>Medium</td> <td>&gt; 25% and ≤ 50% Above benchmark</td> <td>COD - chemical oxygen demand</td> </tr> <tr> <td>Low</td> <td>≤ 25% Above benchmark</td> <td>HA - hydrologic area</td> </tr> <tr> <td>No Data</td> <td></td> <td>HSA - hydrologic subarea</td> </tr> <tr> <td></td> <td></td> <td>MBAS - methylene blue active substance</td> </tr> <tr> <td></td> <td></td> <td>MLS - mass loading station</td> </tr> <tr> <td></td> <td></td> <td>MS4 - municipal separate storm sewer system</td> </tr> <tr> <td></td> <td></td> <td>NA - not available</td> </tr> <tr> <td></td> <td></td> <td>RW - receiving water</td> </tr> <tr> <td></td> <td></td> <td>TWAS - temporary watershed assessment station</td> </tr> </table>															High	> 50% Above benchmark	BOD - biochemical oxygen demand	Medium	> 25% and ≤ 50% Above benchmark	COD - chemical oxygen demand	Low	≤ 25% Above benchmark	HA - hydrologic area	No Data		HSA - hydrologic subarea			MBAS - methylene blue active substance			MLS - mass loading station			MS4 - municipal separate storm sewer system			NA - not available			RW - receiving water			TWAS - temporary watershed assessment station
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		NA - not available																																										
		RW - receiving water																																										
		TWAS - temporary watershed assessment station																																										

**Table 2-7: Tijuana River WMA Assessment Conclusions in Relation to 2006 Section 303(d) Listings**

Waterbody Name	HSA	HSA No.	303(d) Listed Pollutant/Stressor	Supported by Regional Data	Supported by SMC/ Third-Party Data	No Data	TMDL	Runoff Area Managed by Other Agency
Tijuana River	San Ysidro	911.11	Indicator bacteria, eutrophic conditions, low DO, pesticides, solids, synthetic organics, trace elements, and trash	✓				
Tijuana River Estuary	San Ysidro	911.11	Indicator bacteria, eutrophic conditions, lead, low DO, nickel, pesticides, thallium, trash, and turbidity	✓				
Pacific Ocean Shoreline, Tijuana HU	San Ysidro	911.11	Indicator bacteria	✓				
Barrett Lake	Barrett Lake	911.30	Color, manganese, and pH					✓
Pine Valley Creek (upper)	Pine	911.41	Enterococci, phosphorus, and turbidity			✓		
Morena Reservoir	Morena	911.50	Color, manganese, and pH					✓

Listing Source: SWRCB, 2006. The 2010 Section 303(d) List was made available after the development of this report and will be updated in future reports.  
 DO - dissolved oxygen  
 HSA - hydrologic subarea  
 HU - hydrologic unit  
 SMC - Stormwater Monitoring Coalition  
 SWRCB - State Water Resources Control Board  
 TMDL - total maximum daily load

As required by the Permit, the five Core Management Questions are addressed. Responses are based on monitoring of the receiving waters at the MLS, TWAS, and as part of the SMC monitoring. Where applicable, monitoring results are evaluated using a weight of evidence approach that includes the triad assessment of chemistry, biology, and toxicity. Results were assessed using two monitoring sites in the western portion of the WMA (Tijuana Valley HA (911.10)) and one site in the Campo HA (911.80).

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

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Core Management Question 1 was addressed through wet and dry weather receiving water assessments. The results of monitoring were considerably different between the upstream site in Campo (TJR-TWAS-1) as compared to the two downstream sites (TJR-MLS and TJR-TWAS-2).

The TJR-MLS and TJR-TWAS-2 are downstream of the International Boundary Water Commission (IBWC) wastewater treatment plant. During dry weather, low flows are diverted from the Tijuana River and nearby tributaries to the treatment plant, which has a 25 million gallon per day flow capacity. When flow capacities are reached due to stormwater runoff and high base flows, the runoff bypasses the plant and flows are sent downstream untreated (IBWC, 2008). The lower watershed sites were both influenced from untreated runoff flows during wet weather and winter and spring dry weather monitoring events. The two lower watershed sites were not flowing during the September equipment installation. During winter dry flows at the Lower Tijuana HA (911.10), high priority constituents were identified for ammonia, BOD, COD, MBAS, total nitrogen, total phosphorus, dissolved phosphorus, TSS, turbidity, fecal coliform, and enterococci. In the Campo HA (911.80), there were no high priority constituents identified. Medium priority constituents were identified for only enterococci. During wet weather in the Lower Tijuana HA (911.10), high priority constituents were identified for BOD, TSS, turbidity, total phosphorus, bifenthrin, and fecal coliform. Medium priority constituents were identified for dissolved phosphorus, O&G, COD, nitrite, permethrin, L-cyhalothrin, and MBAS. In the Campo HA (911.80), high priority wet weather constituents were identified for TSS, turbidity, and fecal coliform. Medium priority constituents were identified for MBAS and bifenthrin. These results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Bioassessment results in the Tijuana River WMA were rated either Poor or Very Poor. The site in the Campo HA (911.80) was the highest rated site (Poor) and was only two points lower than a Fair rating. The observed to expected ratio (O/E) score indicated unimpaired conditions. The TJR-TWAS-2 site was also rated Poor, but appears to be artificially higher than conditions suggest. The O/E score was the second most impaired of all sites monitored. The TJR-MLS site was rated Very Poor and the O/E ratio was the most impaired of all sites monitored. Physical habitat scores were high (good) at the TJR-MLS (Lower Tijuana HA) and the TJR-TWAS-1 site in the Campo HA. Physical habitat scores were low (impaired) at TJR-TWAS-2. The two lower sites had very degraded BMI and algae communities with very low diversity and a predominance of organisms indicative of organic waste. The bioassessment results suggest that conditions in receiving waters may not be protective of all assigned beneficial uses.

Toxicity was observed during both ambient and wet weather monitoring in the Lower Tijuana HA (911.10). Toxicity to *C. dubia* acute and chronic survival, and reproduction was observed during wet weather. During ambient weather, toxicity to *C. dubia* reproduction was observed. Additionally, toxicity to *S. capricornutum* was persistent at TJR-MLS during dry weather. Although the triad recommendations suggest TIEs may be of use, the documented chemical concentrations indicating raw wastewater discharges did not warrant conducting a TIE. Persistent toxicity was not observed during wet or dry weather in the Campo HA (911.80). Toxicity was not observed during wet weather monitoring. However, toxicity to *S. capricornutum* was observed during one dry weather event. This suggests that conditions vary between upstream and downstream in receiving waters may not be protective of all assigned beneficial uses.

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

Core Management Question 2 was addressed through spatial analysis of results and the frequency of the results above benchmarks. As mentioned above, conditions are markedly different downstream of the IBWC treatment plant in comparison to conditions at the site in the Campo HA (911.80). Chemistry constituents downstream of the IBWC treatment plant were indicative of raw wastewater effluent with results above benchmarks being considerably higher than those throughout the region. In contrast, the site in the Campo HA had considerably fewer results above benchmarks. TDS concentrations were generally similar amongst all sites monitored.

As mentioned above, bioassessment scores were rated either Poor or Very Poor. The site in the Campo HA (911.80) was the highest rated site (Poor) and was only two points lower than a Fair rating. The two lower watershed sites were rated Poor or Very Poor and the O/E scores were the most impaired of all sites monitored in the region.

Toxicity was most pronounced at the lower watershed sites. Toxicity to *C. dubia* acute and chronic survival, and reproduction was observed during wet weather. During ambient weather, toxicity to *C. dubia* reproduction was observed. Additionally, toxicity to *S. capricornutum* was also persistent at the TJR-MLS. As mentioned above, toxicity was observed during only one dry weather event (*S. capricornutum*) in the Campo HA (911.80).

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. It is evident that receiving water impairments in the lower watershed are largely a function of untreated wastewater that bypasses the IBWC treatment plant and trash. For the MS4 outfall monitoring, there were relatively few accessible sites in the lower Tijuana River WMA. As such, the limited sample data set may not be reflective of the majority of the outfalls that exist. During wet weather, no high priority constituents were identified in the outfalls monitored. TSS and fecal coliform were identified as medium priority constituents in the TJR-MLS and TJR-TWAS-1 drainage area. No wet weather MS4 Outfall samples were collected in the TJR-TWAS-1 drainage area in Campo. During dry weather, total phosphorus, total nitrogen, dissolved oxygen, and enterococci were identified as high priority constituents in the TJR-MLS and TJR-TWAS-2 drainage areas. No medium priority constituents were identified. All other parameters monitored were low priority. No MS4 outfall samples were collected in the TJR-TWAS-1 drainage area. MS4 outfalls may contribute to receiving water problems. This question may be answered with a higher level of confidence with the five year assessment required by the MS4 Outfall Monitoring Workplan.

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, the CSDM 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. A wet weather source identification study of single family residences was conducted by the Copermittees during the 2009–2010 Monitoring Season.

Results from this study suggest that fecal coliforms, TSS, turbidity, synthetic pyrethroids, dissolved metals, and Malathion may locally occur in concentrations above wet weather benchmarks. 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.

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. Increasing trends were observed for fecal coliform, total coliform, enterococci, nitrate, TSS, turbidity, total arsenic, total copper, total lead, and total zinc. Decreasing trends were observed for conductivity, TDS, Diazinon, dissolved nickel, and dissolved zinc.

There are no apparent trends in the benthic community. The bioassessment ratings in the WMA have been Poor or Very Poor in all assessments conducted from 2001 to 2008. The results of the 2010 survey were also Poor or Very Poor at all locations.

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 33% of the 21 monitored storms for the *H. azteca* acute test. Although toxicity to the algae *S. capricornutum* has not been observed during any monitored storms, persistent toxicity was observed to this test organism during ambient conditions at the MLS. Although the toxicity data suggest evidence of persistent toxicity to *C. dubia* in wet weather conditions, no trends in the data set are apparent.

## **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 (e.g., 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 2-8 below. In addition to these sources, the Weston Monitoring Report (2010) identified the likely sources of trash as being the urbanized population centers found in the lower portion of the WMA which had

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the greatest proportion of trash and the greatest percentage of sites with Submarginal or Poor trash ratings.

The results of the 2009-2010 monitoring programs indicate that the high frequency Constituents of Concern for wet weather are biochemical oxygen demand (BOD), total suspended solids (TSS), turbidity, total and dissolved phosphorus, oil and grease, chemical oxygen demand (COD), nitrite, methylene blue active substance (MBAS), bifenthrin, L-cyhalothrin, and fecal coliform. During dry weather, priority constituents were ammonia, BOD, MBAS, total nitrogen, total and dissolved phosphorus, COD, turbidity, fecal coliform, and enterococci. Bifenthrin, cypermethrin, and permethrin were detected in post-storm sediment samples, suggesting a possible link between wet weather runoff and dry weather conditions. Based on the Weston Monitoring Report, trash is also considered a Constituent of Concern in the 911.10 HA. These Constituents of Concern are also high priority water quality problems that are currently being addressed by several of 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 2-7 above. There are several changes being proposed for the Tijuana WMA 2008 303(d) list, and these changes will be discussed in future annual reports.

**Table 2-8 Likely Sources for High Priority Pollutants**

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

In addition to the regional monitoring, the Tijuana River WMA copermittees continued the source identification studies. These projects are discussed below.

Imperial Beach Bacteria Source ID

Funding for the Proposition 50 Clean Beach Initiative Grant was reinstated in February 2010 for the Tijuana River Bacteria Source Identification Study. The purpose of the study is to identify sources of bacterial contaminants in the U.S. western most portion of the Tijuana River Watershed and recommend BMP activities to reduce the input of those sources to the watershed. The project consists of a number of sanitary surveys and special studies that will assess bacterial sources from the MS4, sediment stock piles, natural sources, ground water, and cross-border loads. Most of the project activity during the reporting period consisted of redeploying monitoring equipment, planning for the second sanitary survey, and collaborating with stakeholders.

Sanitary Survey Dry Weather Monitoring Results

During the reporting period the Copermittees planned for the second of two sanitary surveys to be conducted in July 2010. The survey will revisit the same 220 monitoring sites as the first sanitary survey and conducted analysis for bacteria (enterococci, fecal coliforms, and Bacteroides), nutrients (ammonia, nitrate, nitrite, and orthophosphate), and general chemistry (conductivity, DO, salinity, temperature, MBAS, and pH) whenever water is present. Results will be presented in the next annual report. The results of the first sanitary survey were presented in the FY08-09 Tijuana WURMP Annual Report.

Wet Weather Monitoring Results

Plans were also completed for the second wet weather monitoring event scheduled for the upcoming winter season. This winter one pollutograph sampling event will be performed at Dairy Mart, Hollister Street, Saturn Street, and select locations identified by the sanitary survey. Results will be presented in the next annual report.



## **SECTION 3.0            IMPLEMENTATION OF WATERSHED ACTIVITIES**

### **3.1                    Watershed Water Quality Activities**

This section describes the Watershed Water Quality Activities conducted by the Copermittees in FY09-10 to address 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 that occurred during the reporting period and includes information pertaining to the lead jurisdiction, the hydrological area(s) impacted, and the priority pollutants targeted by each activity. Several watershed water quality activities also included an education component and are identified in Table 3-1. Progress on all watershed activities has been described in the standardized template, which clearly identifies what was accomplished during the reporting period and how it pertains to high priority water quality problems. For more detail on the specific activities and anticipated future activities, please refer to Attachment 1 for the Watershed Activity Summary Sheets.

During the reporting period, the Tijuana River WMA Copermittees implemented, or were actively planning, a total of 26 activities. Out of the 26 activities there were 19 Watershed Water Quality Activities, nine of which were in an active implementation phase defined by the Municipal Permit. Watershed Water Quality Activities ranged from pet waste dispenser programs to trash cleanup events. Additionally, there were two monitoring and source characterization studies conducted during FY09-10 (see TJ-013 and TJ-018 in Attachment 1).

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**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	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	Coastal Clean-up Day Sponsorship	SD		X	X	911	X	X								
TJ-007	Targeted Auto-Related Facility Inspections	SD		X	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	X								
TJ-011	Large Special Event Clean-up and Inspections	IB		X	X	911	X	X								
TJ-012	Smuggler's Gulch Sediment and Debris Removal Program	COSD		X		911.1		X	X					X		
TJ-013	Tijuana River Bacteria Source Identification Study	IB	COSD, SD	X		911.1 911.2	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	X	911		X	X							
TJ-019	City of San Diego Strategic Plan Implementation	SD		X	X	911.1 911.2	X				X			X		
TJ-020	Pet Waste Dispenser Program	SD		X		911.1 911.2	X									

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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-022	Tijuana River Gross Solids and Sediment BMP's Design	SD		X		911		X	X							
TJ-023	Tijuana River Watershed Brochure	SD			X	911.1 911.2	X		X	X	X	X		X		
TJ-025	Smuggler's Gulch, Pilot Channel, and Northern Channel Sediment and Debris Removal	SD		X		911		X	X					X		
TJ-026	WILDCOAST Spring Clean-Up Event; Effie May Trail	COSD	SD	X	X	911		X								
TJ-027	Tijuana River Action Month	COSD	SD, IB	X	X	911		X								
TJ-028	Xeriscaping of Municipal Facilities	IB		X		911	X									X
TJ-029	Fiesta del Rio Event	SD			X	911	X	X	X	X	X	X	X	X	X	X
TJ-030	Beyer Boulevard Trash Segregation BMP Installation	SD		X		911	X	X						X		
TJ-031	Sweeper Speed Efficiency Study	SD		X		911	X									
TJ-032	Residential Rain Barrel Subsidies and Distribution	COSD			X	911	X		X	X	X	X	X		X	X
TJ-033	SB346: Motor Vehicle Brake Friction Materials	SD		X		ALL					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. In addition to the watershed education activities noted in Table 3-1, each of the Copermittees participated in or hosted several activities to promote watershed education as identified in Table 3-2 during FY09-10.

The County of San Diego also continues to sponsor the Project Clean Water website ([www.projectcleanwater.org](http://www.projectcleanwater.org)), which provides information pertinent to each of the watersheds in San Diego County. During FY09-10, there were 3,761 hits on the Tijuana River Watershed page and 2,709 hits on the Tijuana River WURMP page.

### **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 & Table 3-2). 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.

In addition to the above activities during FY09-10 the City of San Diego finalized a Master Stormwater System Maintenance Program and its associated Program Environmental Impact Report (PEIR). The purpose of the Master Stormwater System Management Program will authorize the City to conduct regular maintenance activities in the numerous channels throughout the City, including those in the Tijuana River Valley. The maintenance program and the PEIR included a significant public participation component. It is expected that the maintenance program and the PEIR will be approved by the City and the Regulatory Agencies in FY10-11.

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**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	07/11/09	Imperial County Visitors Lake Use	Lake Morena	Park Visitors	90	X	X		N
County	08/9/09	Trash Litter Policy	Lake Morena	Park Visitors	2	X	X		N
County	08/22/09	Grey Water Disposal Policy	Lake Morena	Park Visitors	1	X	X		N
County	09/1/09	Birding Event	Tijuana River Valley Regional Park (TJRVRP)	General Public	100	X	X		N
County	09/5/09	Dog Clean Up Sanitation Bag Location	Pine Valley Park	Park Visitors	2	X	X		N
County	10/4/09	Splash Lab - Fiesta Del Rio	Imperial Beach Pier	Students	2000	X			N
County	10/22/09	Watershed Education	Mt. Empire HS	Students - Biology	23	X			Y
County	10/22/09	Watershed Education	Mt. Empire HS	Students - Biology	24	X			Y
County	10/22/09	Watershed Education	Mt. Empire HS	Students - Biology	24	X			Y
County	10/22/09	Watershed Education	Mt. Empire HS	Students - Biology	24	X			Y
County	10/22/09	Watershed Education	Mt. Empire HS	Students - Biology	24	X			Y
County	10/22/09	Watershed Education	Mt. Empire HS	Students - Biology	24	X			Y

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Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
				Biology					
County	10/22/09	Watershed Education	Mt. Empire HS	Students - Biology	28	X			Y
County	10/24/09	Coastal Clean Up	Tijuana River Valley Regional Park	General Public	300	X	X		N
County	11/13/09	Clean Up After Your Dog	Lake Morena	Park Visitors	1	X			N
County	11/21/09	Turkey Toss Recycle Aluminum	Pine Valley Park	Children	55	X	X		N
County	12/15/09	Splash Lab	Campo Elementary	Students - Grades 5 - 7	128	X			N
County	01/17/10	Kiosk Display	Pine Valley Park	Park Visitors	100	X	X	X	N
County	01/23/10	Fishing Tournament & Lake Use Policy	Lake Morena	Park Visitors	95		X		N
County	02/1/10	Information Change To Kiosks	Potrero Regional Park	Park Visitors	5		X	X	N
County	03/4/10	Birding Event	TJRVRP	General Public	25		X		N
County	03/5/10	Birding Event	TJRVRP	General Public	26		X		N
County	03/10/10	Community Health Fair - Sharps & HHW	Campo Senior Wellness Fair	Senior Residents in Campo	40	X	X		N
County	04/1/10	Earth Day: Crafts, Hike & Tree Planting	Potrero Regional Park	Park Visitors	13	X	X		N
County	04/4/10	Trash Litter Policy	Lake Morena	Park Visitors	4	X	X		N
County	04/6/10	Interpretive Program	TJRVRP	General Public	8	X	X		N

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Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
County	04/13/10	Watershed Education	Mt. Empire HS	Student - Economics	21	X			Y
County	04/13/10	Watershed Education	Mt. Empire HS	Student - Economics	22	X			Y
County	04/13/10	Watershed Education	Mt. Empire HS	Student - Economics	22	X			Y
County	04/13/10	Watershed Education	Mt. Empire HS	Student - Economics	22	X			Y
County	06/5/10	Coastal Clean Up	TJRVRP	General Public	60	X			N
County	06/7/10	Splash Lab	Clover Flat Elementary	Students - Grades 4 - 7	76	X			N
County	06/9/10	Green Machine	Jacumba Elementary	Students - Grades K - 2	55	X			N
County	06/12/10	Trash Litter Policy	Lake Morena	Park Visitors	2	X	X		N
County	06/13/10	Interpretive Program	TJRVRP	General Public	5	X	X		N
City of SD	09/19/09	SDCK Coastal Cleanup Day	San Ysidro	Gen Public	92	X	X	X	Y - 4,080 lbs. trash collected with an efficiency of \$1.23per lb.
City of SD	04/24/10	ILACSD Creek to Bay Cleanup	San Ysidro	Gen Public	120	X	X	X	Y - 9,264 lbs. Trash Collected with an efficiency of \$0.54 per lb.

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Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
City of SD	FY09-10	Poster Distribution	TJ WMA	Dev-Const Community	100		X	X	N
City of SD	FY09-10	Guidebook Distribution	TJ WMA	Bus Own / Op & Rest Emp	500		X	X	N
City of SD	FY 09-10	Watershed Brochure	TJ WMA	Res/Com/Ind	100	X	X	X	N
City of SD	FY09-10	Fiesta Del Rio Event	TJ WMA	Res/Com/Ind	4,000	X	X	X	N
Imperial Beach	FY09-10	EDCO Environmental Times (Quarterly Newsletter) Multiple articles on street sweeping, storm water, recycling	City-wide	Residents	28,000	X		X	N
Imperial Beach	FY09-10	Citywide Biannual (Winter and Summer) Newsletter: Multiple articles on storm water, recycling, street sweeping, FOG.	City-wide	Residents	28,000	X		X	N
Imperial Beach	08/1/09	I.B. Auto Show booth and handed out HHW information and oil pans	Seacoast Drive	General Public	1,000	X	X		Y-Survey
Imperial Beach	07/17-19/09	US Open Sandcastle Competition: Provided information to vendors and public. Conducted storm water inspections for food booths.	Seacoast Drive	General Public and Commercial Business	300,000	X	X		Y-Survey
Imperial Beach	09/19/09	Coastal Cleanup Day: ILACSD multiple locations	Tijuana River Valley	General Public	--	X	X	X	N
Imperial Beach	10/20-22/09	Make a Difference Day: Job Corps students cleaned up the unimproved alleys and learned about storm water pollution through presentation	Unimproved Alleys	Students	30	X	X	X	Y- Estimated 6 tons of trash, green waste, and large bulky items
Imperial Beach	10/24/09	Wildcoast Dairy Mart bridge cleanup	Dairy Mart Bridge	General Public	300	X	X	X	Y- Estimated 5 tons of trash and 700 tires



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Lead Copermittee	Date	Event Title	Site Name	Specific Target Audience	Estimated Attendees	Education	Public Outreach	Media	Assessment Conducted (Y/N)
Imperial Beach	03/1/10	Fix a Leak Week: Outreach with CalAmerican water for water conservation.	City-wide	General Public	28,000	X			N
Imperial Beach	04/1/10	Mayor Proclamation: April as Environmental Awareness Month in I.B.	City-wide	General Public	28,000			X	N
Imperial Beach	04/21/10	I.B. Sports Park after school environmental activity (County Splash Lab)	Sports Park	Students	45	X	X		N
Imperial Beach	04/24/10	Coastal Clean Up Day: ILACSD sponsorship and multiple clean-up sites	Tijuana River Valley	General Public	--	X	X	X	N
Imperial Beach	04/27-28/10	I.B. Sports Park after school environmental activity	Sports Park	Students	65	X	X		N
Imperial Beach	05/1/10	Annual Home Front Clean up	Mar Vista HS	General Public	822	X	X	X	Y- 175.6 tons of material collected
Imperial Beach	05/27/10	Watershed Model to 3 <sup>rd</sup> and 5 <sup>th</sup> graders	IB Elementary	Students	135	X			N
Imperial Beach	06/5/10	Wildcoast Tijuana River clean up	Sports Park	General Public	60	X	X	X	Y- 1000 lbs. trash and 100 tires

### **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 FY09-10. The meetings are a forum 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).

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.

Additionally, the Tijuana River WMA Copermittees have taken an active role in the formation and participation on the Tijuana River Valley Recovery Team (Recovery Team). The Recovery Team consists of a Steering Committee and four related subgroups or Action Team(s) made up of representatives from governmental, regulatory, and funding agencies, members of the scientific and environmental communities as well as affected stakeholders. The Recovery Team functions as a coordination and information sharing body to leverage the efforts of each of the responsible agencies, and the overall goal of the Recovery Team is to facilitate the restoration of the Tijuana River floodplain and estuary to a functional wetland ecosystem. The Recovery Team met a total of nine times during the FY09-10 reporting period. Some major milestones during the year included the acceptance by the City of San Diego of a \$700,000 Clean-up and Abatement Funding Grant from the State Water Quality Control Board. This grant is to be used to study the hydrology and hydraulics of the lower Tijuana River Valley, study trash and sediment transport as a basis for sediment and trash detention basins planned in the river valley, and plan and implement three Visioning Workshops. The goal of the Visioning Workshops is to provide stakeholder input into the development of a roadmap for the restoration of the river valley. One Visioning Workshop was held during the reporting period and two more are planned for the next reporting period. Additional information can be found on the Tijuana River Recovery Team website ([www.tjriverteam.org](http://www.tjriverteam.org)).

The Tijuana River Bacteria Source Identification Study involves collaborative planning through the development of a Technical Advisory Stakeholder group that meets quarterly to provide updates and to help shape the direction of the project. These stakeholder meetings encourage Copermittees to actively plan with community organizations to jointly identify potential sources of bacteria, trash, and sediment in the watershed. This information is then used to shape the direction of the special study component of the project that will recommend BMPs to address the sources of bacteria in the watershed. These BMP recommendations will allow Copermittees to provide recommendations to jurisdictional planning department staff regarding appropriate storm

water-related land use planning regulations and policies. The Technical Advisory group for the Tijuana River Bacteria Source Identification Study met twice during the past reporting period.

The Tijuana River WMA Copermittees will continue the working relationships and coordination implemented in FY09-10 by continuing regular watershed meetings to plan and implement the Tijuana River WURMP.

### **3.5 Updated 5-year Strategic Plan**

Development of the 5-Year Strategic Plan included the formulation of a list of activities to implement over a five-year period, and the activities were integrated into the Tijuana River WURMP in March 2008. The Regional Copermittees recognized that there would be a need to revise the 5-year plan as new activities were identified and implemented or activities were modified, updated, or completed. Table 3-3 represents the Tijuana River WMA updated 5-Year Strategic Plan and a description of changes is included below.

#### **3.5.1 *New Watershed Activities***

The Tijuana River WURMP Copermittees define a new WURMP activity as one that has never been listed as a part of the 5-Year Strategic Plan. During FY09-10, a total of eight new activities were added to the Strategic Plan, including six new water quality activities and two new watershed education activities. Brief descriptions of these activities are provided below. Additional information is included in the activity sheets located in Attachment 1.

#### City of San Diego

During the reporting period, the City of San Diego added four new activities including:

**Fiesta Del Rio Event (TJ-029).** The City of San Diego's Think Blue program became a sponsor of the annual Fiesta Del Rio Event, a community event designed to raise awareness about the environment of the San Diego/Northern Baja region surrounding the Tijuana River Estuary during the reporting period. The City's sponsorship included staffing a booth to provide the opportunity to educate the public about preserving the local environment, promote stewardship of the Tijuana River Estuary, and encourage proactive steps in preventing pollution from entering the storm drain system.

**The Beyer Boulevard Trash Segregation Best Management Practice (TJ-030).** Initial planning for this BMP occurred during FY07-08 as part of the City of San Diego's Storm Drain Inlet Inserts Pilot Project. Requests for Proposal were sent to interested vendors during this reporting period with retrofitting of drainage inserts and first phase of monitoring planned for FY10-11. The project involves the installation of catch basin inserts along Beyer Boulevard in the Tijuana River WMA. The catch basin inserts will be directly installed in the existing curb inlets. It is anticipated that the catch basin inserts will assist in load reductions of some pollutants.

**Sweeper Speed Efficiency Study (TJ-031).** Initial planning began for a sweeper speed efficiency pilot study that is expected to be implemented during FY10-11. This study will focus on assessing the speed efficiency of the City's mechanical street sweepers to determine whether the amount of debris collected is dependent on the variation in speed of the sweeper. The project will provide information on the effectiveness of street sweeping activities and the relative level of load reduction potential for street sweepers at various speeds.

**Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials (TJ-033).** During this reporting period, the City of San Diego pursued efforts to achieve true source control of copper. These efforts consisted of the City of San Diego assisting with writing the proposed Senate Bill 346: Motor Vehicle Brake Friction Materials, providing financial resources for technical experts to assist with its development, participating in negotiations with the automobile and brake pad manufacturers, and providing lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage. The authorization of the proposed legislation is expected to result in long-term reductions of copper from automotive brake pads to the environment.

#### City of Imperial Beach

During the reporting period, the City of Imperial Beach also added one new activity:

**Xeriscaping of Municipal Facilities (TJ-028).** The City of Imperial Beach with the help of Boy Scout Troop 53 - North Park, was able to replace 6,500 square feet of landscape in front of City Hall with drought tolerant plants. This resulted in a 42% reduction in water use. The City also completed the plans for a second Xeriscaping project for the Marina Vista Center scheduled to be completed during the next reporting period.

#### County of San Diego

During the reporting period, the County of San Diego added three new activities:

**WildCoast Spring Clean-up Event, June 2010 (TJ-026).** The County collaborated with the Cities of San Diego and Imperial Beach to sponsor a Spring Clean-up event with WildCoast. The clean-up occurred along the Effie May Trail and was attended by over 60 volunteers and resulted in the removal of over 1,000 pounds of trash and 100 tires.

**Residential Rain Barrel Subsidies & Distribution (TJ-032).** The County initiated the planning phases of this activity during the reporting period which included conducting research to identify desired rain barrel features and solicited bids for provisions of rain barrels. As part of this project, the County will implement a rain barrel subsidy and distribution program targeting residents throughout the County. Rain barrel use will be encouraged through a subsidy eligible to residents of unincorporated areas, and residents of incorporated cities will also be able to purchase rain barrels at an affordable price. It is anticipated that the rainwater harvesting will

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reduce the overall amount of runoff from individual properties resulting in a decrease in pollutant mobilization and erosion. This activity will be in active implementation in FY10-11.

**Tijuana River Action Month (TJ-027).** The County submitted and received grant funding of \$35,868 from CalRecycle to plan a series of Clean-up events in the Tijuana River Valley Scheduled for the Month of October 2010. Both the Cities of San Diego and Imperial Beach have contributed funding or collaborative support for this effort. Staging of the event was led by WildCoast with the support of the Copermittees.

**3.5.2 Updated Watershed Activities**

During FY09-10, a total of three watershed activities were modified, updated, or completed from the strategic plan. Brief descriptions of these updates are provided below. Additional information is included in the activity sheets location in Attachment 1.

City of San Diego

During the reporting period, the City of San Diego completed two activities including:

**Tijuana River Targeted Facility Inspections (TJ-007).** The City of San Diego completed its final inspections (Phase 3), assessment and reporting for this activity during this reporting period.

**Municipal Rain Barrel Installation and Downspout Disconnect Project (TJ-009).** The City of San Diego completed the Municipal Rain Barrel Installation and Downspout Disconnect Project during FY09-10. During the reporting period, the effectiveness of the systems were assessed at the San Ysidro Library. Ultimately, the City would like to incorporate the use of these LID techniques into a residential program that may include incentives for implementing these systems on a larger scale. However, this phase of the project is now complete, and will no longer be included in future reporting updates.

City of Imperial Beach

During the reporting period, the City of Imperial Beach's updated one activity:

**Tijuana River Watershed Bacterial Source Identification Study (TJ013).** Funding for the Tijuana River Watershed Bacterial Source Identification Study was reinstated in February 2010 and implementation of the study is underway again.

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

TIJUANA RIVER WATERSHED	Copermittee	Watershed Priorities							Implementation Schedule						
		Total 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	
<b>Watershed Activities Actively Planned, Implemented or Completed through FY09-10</b>															
TJ-001 Pet Waste Dispenser Program County Parks	COSD			X	X					WQ				WQ	
TJ-002 Land Acquisitions	COSD	X	X	X	X			X	X	WQ		WQ		WQ	*
TJ-003 ILCSO Trash Clean-Up Sponsorship	SD			X				X		WQ		WQ		WQ	
TJ-004 Coastal Clean-Up Day Sponsorship	SD			X				X		WQ		WQ		WQ	
TJ-005 Alpha Project for the Homeles, Inc Trash Clean-Up	SD			X				X		WQ					Completed FY07-08
TJ-006 Tijuana River Targeted Restaurant Facility Inspections	SD			X						WQ					To be covered by TJ-007
TJ-007 Tijuana Targeted Facility Inspections	SD	X								WQ		WQ			Project completed in FY09-10
TJ-008 Tijuana Targeted Facility Outreach	SD	X								WE					Not conducted in FY09-10; any future outreach will be included as part of TJ-007
TJ-009 Municipal Rainbarrel and Downspout Disconnects	SD	X	X	X	X			X	X	WQ		WQ		WQ	Completed FY09-10
TJ-010 City of IB Clean-UP Events	IB			X				X		WQ		WQ		WQ	
TJ-011 Large Special Event Inspections And Clean-Ups	IB			X				X		WQ		WQ		WQ	
TJ-012 Smugglers Gulch Sediment Removal	COSD		X							WQ		WQ		WQ	
TJ-013 Tijuana River Bacterial Source Identification	IB			X						M	S	M	S	M	S
TJ-014 LID and Watershed Planning Education: Com & Sponsor Groups	COSD	X	X	X	X			X	X	WE		WE			Funding restored in FY09-10 Completed FY08-09
TJ-015 Public Service Announcements: Karma, Karma Second Chance, Karma Tourist	SD			X				X		WE		WE		WE	PSAs will continue but after FY09-10 activity sheet will no longer be updated Completed FY07-08
TJ-016 Mobile Advertising	SD		X	X						WE					Completed FY07-08
TJ-017 Invasive Species Removal Program Tijuana River Park	COSD		X	X				X		WQ				WQ	
TJ-018 Trash and Sediment Characterization Study	COSD		X					X		S		S		S	
TJ-019 SD Strategic Plan Implementation	SD	X		X		X					LU		LU	LU	
TJ-020 Pet Waste Dispenser Program	SD			X	X						WQ		WQ	WE	
TJ-021 San Ysidro Centennial Celebration	SD		X	X				X			WE	PP			Not conducted in FY09-10
TJ-022 Tijuana River Gross Solids and Sediment BMP's Design	SD		X			X					WQ		WQ		
TJ-023 Tijuana River Watershed Brochure	SD	X	X	X	X	X	X	X	X			WE			
TJ-024 Water Quality Monitoring in the Upper Tijuana Watershed	COSD	X	X	X	X	X	X	X	X		M				Completed FY08-09
TJ-025 Smuggler's Gulch, Pilot Channel, & Northern Channel Sediment & Debris Removal	SD		X			X	X					WQ		WQ	
TJ-026 WILDCOAST Spring Clean-Up Event; Effie May Trail	COSD/SD							X				WQ	PP		Completed FY09-10
TJ-027 Tijuana River Action Month	COSD/SD/IB							X				WQ	PP	WQ	PP
TJ-028 Xeriscaping of Municipal Facilities	IB			X	X									WQ	PP
TJ-029 Fiesta del Rio Event	SD	X	X	X	X	X	X	X	X			WE		WE	PP
TJ-030 Beyer Boulevard Trash Segregation BMP Installation	SD			X		X	X					WQ		WQ	
TJ-031 Sweeper Speed Efficiency Study	SD			X								WQ		WQ	
TJ-032 Residential Rain Barrel Subsidies & Distribution	COSD	X	X	X	X			X	X			WE	WQ	PP	WQ
TJ-033 Source Control of Copper Water Pollutants, Senate Bill 346	SD	X										WQ		WQ	Implementation For FY10-11 Source control expected to result in long-term reductions of copper
<b>Potential Future Watershed Activities</b>															
TJ-00A San Ysidro Boulevard Green Mall Infiltration Retrofit Education and Outreach	SD														
TJ-00B Infiltration BMP retrofit	SD														
TJ-00C Inlet Bacteria Treatment BMP	SD														
TJ-00D Outdoor Water Conservation Rebate Program	SD														Project name change FY09-10
TJ-00E Tijuana River Valley Park Trails and Habitat Enhancement Project	COSD														
TJ-00F Source Identification of Metals and Ammonia	IB														
TJ-00G San Ysidro Boulevard Green Mall	SD														

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 Watershed 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 measureable targeted outcomes.

### **4.1                    Assessment of Overall WURMP Effectiveness**

The overall WURMP Effectiveness is addressed through responses to components one through four below.

#### **4.1.1                *Collaboration among the Tijuana River Watershed Copermittees.***

The Tijuana River Watershed Copermittees have continued to collaborate and work together to implement the collective watershed management strategy outlined in the Tijuana River WURMP. These collaborative efforts have led to the successful implementation of a number of watershed and education-based activities in the WMA and contribute to the effective partnership collaboration in other Tijuana River Stakeholder groups.

The Tijuana River Copermittees met six times during the year to collaborate on shared watershed activities and to further develop and implement the Tijuana River WURMP. The Copermittees also met outside of the WURMP group to collaborate on other regional and bi-national coalitions of stakeholders to tackle the multiple water quality needs in the WMA. These additional Tijuana River Stakeholder groups include:

- Border 2012 – Met twice during the reporting period,
- Tijuana River Valley Recovery Team – Met nine times during the reporting period,
- TRNERR Management Authority – Met four times during the reporting period, and
- Tijuana River Bacterial Source Identification Study group – Met two times during the reporting period.

The Tijuana River Copermittees have made significant progress towards coordinating watershed activities with each other and in collaboration with the various stakeholders in the watershed, which cumulatively begin to address the sources of pollution into the WMA. The contribution of local storm water pollution from urban runoff is being met through the coordination of water quality and education activities in the

WURMP. One activity is the collaborative planning efforts for Tijuana River Action Month proposed for October 2010 that will include multiple cleanup, public participation, and education activities for the month of October. The issues of bi-national sources of pollution are being addressed through the development and implementation of activities through Border 2012 and Tijuana River Valley Recovery Team. Significant improvements to water quality continue to be implemented or planned through both organizations. Additional information is available through each organization's website (<http://www.epa.gov/Border2012> and <http://www.tjriverteam.org>). The management and restoration of the ecosystem services provided by the Tijuana Estuary is coordinated through the activities in the TRNERR Management Authority. A greater understanding of the sources and load contributions of bacteria into the river is also being evaluated through the Tijuana River Bacteria Source Identification Study group.

#### **4.1.2**      *Effectiveness of WURMP Activities on addressing water quality problems and sources.*

Watershed activities in the WURMP focus on storm water management of high priority pollutant sources and practices that jurisdictions have the ability to affect and control. The Tijuana River, Estuary, and adjacent coastline are impaired by a multitude of water quality problems and pollutant sources, many of which are outside the control of local jurisdictions. The Copermittees identified trash, bacteria, and sediment as important target pollutants for the WMA and important to jurisdictional storm water programs. Trash and sediment (turbidity and TDS) are of particular importance to the Copermittees because of the current efforts on establishing a TMDL for 2011. These three pollutants present an immediate downstream threat to habitat in the Estuary and public health along the beach and were therefore selected as the focus for many of the watershed activities in the WMA.

During the current reporting period, the Copermittees actively engaged in 26 water quality and education activities, with 25 of the activities focusing on trash, bacteria, or sediment. 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 planning or 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 contribute to the larger effort of restoring the Tijuana River Valley and managing the effects of cross-border pollution.

#### **4.1.3**      *Evaluation of collective impact of WURMP activities on pollutant loads, urban runoff discharge quality, and receiving water quality at the HA scale.*

The Tijuana River WMA is divided into eight Hydrologic Areas. Water quality and education activities are implemented throughout all HAs; however, water quality activities are primarily focused in the Tijuana River Valley HA (911.1), where the water quality problems are most numerous and significant. Table 4-1 identifies the HA location for each activity, the priority pollutants for each activity, and the improvements made to water quality during the reporting period through any source load reductions. Detailed information on the implementation and assessment for each watershed activity is provided in the Attachment 1.

During the reporting period, there were a total of 26 activities in some form of implementation with eight new activities that were not previously presented in the 5-Year Strategic Plan. The water quality and



education activities are identified in Table 4-1. In total, 16 activities focused on water quality, three activities focused on education, and seven 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, and gross pollutants. Load reductions or source abatements were also achieved in 13 of the watershed activities (TJ-001, TJ-002, TJ-003, TJ-004, TJ-007, TJ-010, TJ-011, TJ-012, TJ-020, TJ-025, TJ-026, TJ-028, and TJ-031). These watershed activities had a positive effect on reducing pollutant loads and urban runoff discharge quality in the WMA, but not on the overall receiving water quality in the Tijuana River Valley HA (911.1) where cross-border pollutant loads appear to be the primary problem.

**4.1.4**            *Assessment of measureable targeted outcomes.*

Copermittees have expanded the focus of their assessments on demonstrating the watershed-level benefits of program implementation. This expanded focus has continued to be refined under Order R9-2007-0001. Annual watershed assessments presented in Table 4-1 below and in the activity summary sheets in Attachment 1 provide a means of assessing the relationship of WURMP implementation to changes in water quality; however, this analysis is best carried out through the Long-term Effectiveness Assessment process. The Copermittees feel that their efforts demonstrated by Level 1, 2, 3, and 4 had positive effects on receiving water quality and will help establish the effectiveness of the Tijuana River watershed program.

**4.2**            **Assessment of TMDL BMP Implementation Plan Effectiveness**

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

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**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 12 existing pet waste bag dispensers at 3 different County parks.
TJ-002	TJWMA Land Acquisition	All	Water Quality	All	4	187 ac. of land acquired for preservation in the WMA.
TJ-003	ILACSD Trash Clean-Up Sponsorship	911.1	Water Quality and Education	Bacteria, Trash	1, 4	120 participants, 9,264 lbs of trash and debris
TJ-004	SD Coastkeeper Trash Clean-up Sponsorship	911.1	Water Quality and Education	Bacteria, Trash	1, 4	92 participants, 4,080 lbs of trash and debris
TJ-007	Targeted Auto-Related Facility Inspections	911.1 911.2	Water Quality	Metals	1, 3, 4	28 inspections with 9 follow-ups
TJ-009	Municipal Rain Barrel Installation and Downspout Disconnects	911.1 911.2	Water Quality	Bacteria, Metals, Pesticides	1, 4	Assessed the effectiveness of six rain barrel systems at two different sites.
TJ-010	City-Wide Clean-Up Events	911.1	Water Quality	Bacteria, Trash	1, 2, 4	822 participants, 175.6 tons of material collected.
TJ-011	Large Special Events Inspection and Clean-Ups	911.1	Water Quality and Education	Bacteria, Trash	1, 3, 4	Enhanced BMPs at 32 special events US Open Sandcastle Event: 69% expressed knowledge on storm water. Recycle: 2,250 pounds Trash: 8.11 tons
TJ-012	Smuggler's Gulch Sediment and Debris Removal Program	911.1	Water Quality	Bacteria, Trash, Sediment	1	Removed 18,000 cubic yards of sediment Removed 40 cubic yards of trash Removed 200 tires
TJ-013	Tijuana River Bacteria Source Identification Study	911.1 911.2	Water Quality	Bacteria	1	Funding restored and source identification study is back on schedule
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 Park	911.1	Water Quality	Bacteria, Sediment, Pesticides	1	Participated in the Technical Advisory Group. Treated exotic invasive species on 86 acres. Restored 1.5 acres.
TJ-018	Trash and Sediment Characterization Study	911.1	Water Quality	Trash, Sediment	1	Characterized 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 and began implementation of Phase 1 list of activities to address high priority water quality problems

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Activity		HA	Activity Type	Priority Problems Addressed	Level Outcome	Measurement or Other Benefit
ID No.	Project Name					
TJ-020	Pet Waste Dispenser Program	911.1 911.2	Water Quality	Bacteria	1, 4	Installed and assessed the effectiveness of pet waste bag dispensers. Observed a 26%-29% reduction in waste piles at two sites.
TJ-022	Tijuana River Gross Solids & Sediment BMP Design	911	Water Quality	Bacteria, Trash, Sediment	1	Data collected from the trash and sediment BMP facilities shall be analyzed to determine efficiency
TJ-023	Tijuana River Watershed Brochure FY09-10	911.1 911.2	Education	All	1	Improved residential brochures to educate residents on pollutants and BMPs.
TJ-025	Smuggler's Gulch, Pilot Channel & Northern Channel Sediment & Debris Removal	911.1	Water Quality	Sediment, Trash, Gross Pollutants	1, 4	Approximately 30,000 cubic yards of material was removed during FY09-10.
TJ-026	WildCoast Spring Clean-Up	911.1	Water Quality & Education	Trash	1,4	60 people 1,000 lbs trash 100 tires
TJ-027	Tijuana River Action Month	911.1	Water Quality & Education	Trash	1,4	Active Planning
TJ-028	Xeriscaping of Municipal Facilities	911.1	Water Quality	Nutrients, Bacteria	1, 2, 3, 4	Demonstration project that involved the community and replaced 6,500 sq ft of landscape. Reduced irrigation by 42% at City Hall.
TJ-029	Fiesta Del Rio	911.1	Education	Bacteria, Sediment, Metals	1, 2, 3	3,000 participants and 121 surveys administered. 92% identified actions to prevent pollution. 100% indicated willingness to engage in behavior to prevent pollution.
TJ-030	Beyer Boulevard Trash Segregation BMP Installation	911.1	Water Quality	Bacteria, Gross Pollutants	1	Pre and post project monitoring to evaluate the effectiveness of the drainage insert selected in load reduction and effluent quality.
TJ-031	Sweeper Speed Study	911.1	Water Quality	Bacteria	1,4	Effectiveness and efficiency will be determined by comparing load reduction values (determined via debris monitoring efforts) at varying operational speeds.
TJ-032	Residential Rain Barrel Subsidies & Distribution	All	Water Quality & Education	All	1	Active Planning
TJ-033	Source Control of Copper Vehicle Brake Pad	All	Water Quality	Metals	1	SB 346 passed in 2010

## **SECTION 5.0 CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Conclusions**

During FY09-10, 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 RWQCB 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 Municipal Permit. The Copermittees also collaborated on other regional and bi-national stakeholder groups, including Border 2012, Tijuana River Valley Recovery Team, TRNERR Management Authority, and Tijuana River Bacteria Source Identification Study group. These collaborative efforts 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 the regional monitoring program. Monitoring programs during the reporting period include targeted MS4, mass loading station (MLS), and temporary watershed assessment stations (TWAS) for both wet and dry weather conditions. The Tijuana River Bacteria Source Identification study also conducted a second sanitary survey for bacteria and nutrients; however, the results from this monitoring program will be assessed during the next reporting period. Results from the multiple monitoring programs provided some of the assessment tools necessary to answer the five core management questions addressed in Section 2.1 Water Quality Assessment.

The Tijuana River WMA Copermittees met six times during the year to implement and further refine the collective watershed strategy as well as to develop new activities to address the high priority pollutants in the watershed. Collaboration on Watershed Water Quality Activities, Watershed Education Activities, and Public Participation, Education, and Outreach Activities are major components of the collective strategy. Tables 3-1 and 3-2 in Section 3.0 identify the watershed activities and information pertaining to the lead jurisdiction, the hydrologic area(s), and priority pollutants. The Copermittees believe these watershed activities are effective at targeting the high priority pollutants originating from the MS4 and contribute to the larger efforts to address other sources of pollutants in the watershed.

During the reporting period, there were a total of 26 activities in some form of implementation with eight new activities that were not previously identified in the 5-Year Strategic Plan. The water quality and education activities are discussed in Section 3. In total, 16 activities focused on water quality, three activities focused on education, and seven 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, and gross pollutants. The Tijuana River Copermittees also implemented a total of 59 Public Participation, Education, and Outreach Activities that reached an estimated audience of 422,800 people. During the next fiscal year, the Copermittees will continue to collaborate and assess the effectiveness of targeted watershed activities, and further develop programs in order to maximize benefits to water quality.

## **5.2 Recommendations**

The Tijuana River Watershed Copermittees will continue their involvement with the Tijuana River Valley Recovery Team to incorporate the 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 and strategic planning among the various agencies and stakeholders within the watershed and also provides the necessary forum to address future TMDLs, including a trash and sediment TMDL that is currently being developed. As TMDLs are developed for the Tijuana River, it is likely that the Recovery Team will become a larger component of the WURMP and the collective watershed strategy to address high priority pollutants. The 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. For the next reporting period, the Copermittees will continue to collaborate with the Recovery Team on addressing the issue of trash and sediment and a longer-term vision for restoration of the Tijuana River Valley.

**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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