

Tijuana River
Watershed Urban Runoff Management Program

2002-03 ANNUAL REPORT



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Prepared by

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

In partial fulfillment of the requirements of the
Regional Water Quality Control Board, San Diego Region
Municipal Stormwater Permit Order No. 2001-01

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Section M.3 (Universal Reporting Requirements) of the Municipal Storm Water Permit Order Number 2001-01 directs the watershed Copermittees to submit signed certified statements for their individual Watershed URMP Annual Report(s). Signed certification statements for the following Copermittees are located in Appendix A.1 of this report.

Tijuana River Watershed Copermittees

County of San Diego (lead)

City of Imperial Beach

City of San Diego

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EXECUTIVE SUMMARY

1.0 Introduction

The 2002-03 Tijuana River Watershed Urban Runoff Management Program Annual Report (Tijuana River Annual Report) describes the watershed activities conducted by the County of San Diego and the cities of Imperial Beach and San Diego (Copermittees) for Fiscal Year 2002-03, as required under the Municipal Storm Water Permit Order Number 2001-01 (Municipal Permit). The Tijuana River Annual Report represents the Copermittees efforts during the past fiscal year to develop and implement the Tijuana River Watershed Urban Runoff Management Program (Tijuana River Watershed URMP).

This reporting period covers periods of initial program development (July 2002 through January 2003) and the start of program implementation (February 2003 through June 2003). The five-month implementation period represents a very small increment in the overall development and augmentation of the programs and activities proposed in the Tijuana River Watershed URMP. However, the Copermittees are proud to report that progress has been made and the municipalities will continue to implement, improve and enhance these programs and activities over the next several years.

As required in the Municipal Permit Part III, Section 9.c, Performance Indicators, this report is focused on achieving the following first year performance indicators:

- Completion of the Water Quality Assessment and Prioritization. This requirement is addressed through Section III of this report, Water Quality Assessment.
- Development of the list of COCs with linkage to potential contributors. The list of COCs along with a preliminary assessment of potential contributors are also included in Section III of this report, Water Quality Assessment.
- Implementation of each of the objectives for 2003 as presented. Program objectives and implementation are discussed in Sections I – IV, with Section IV focusing on program improvements and recommendations.

In addition, this report addresses performance indicators for 2003 and ongoing as follows:

- Ability to utilize the feedback loop method for modification of goals and objectives. Sections IV and IV discuss program improvements and recommendations based on public input, surveys, assessments and other tools. Because of the short time frame covered by this report, no changes to goals and objectives have been proposed.
- Continued watershed workgroup meetings. Public participation and watershed workgroup meetings continue to be instrumental in program continuation and assessment. Activities related to this performance indicator are discussed in Sections II, IV and V, Public Participation.

- Measurable and statistically significant changes between 2003 and 2004, and 2004 and 2005 regarding community knowledge. Section IV, Educational Activities, summarizes the objectives and methods for the analysis of surveys to be included in the next annual report.

2.0 Report Summary

The Tijuana River Annual Report consists of a total of five sections, and is organized as follows:

Section I – Introduction

Section I of the Annual Report provides a summary of the program background, program approach to improving water quality, the regulatory requirements that the Copermittees must meet and a general overview of the organization and content of the report.

Section II – Activity Implementation

Section III of the TJ Watershed URMP (Plan of Action) identifies several activities and programs aimed at improving the quality of surface stormwater runoff within the watershed. These activities focused specifically in the areas of water quality, land use planning, education, and public participation. Section II of the Tijuana River Annual Report provides a status report of the work completed on these activities and programs during this reporting period.

Section III – Water Quality Assessment

In our effort to assess the water quality of receiving waters in the watershed, the Copermittees' monitoring programs make use of a variety of methodologies to document the physical, chemical and biological characteristics of streams, creeks, rivers, enclosed bays, lagoons, estuaries and beaches. Section III of the Tijuana River Annual Report is designed to summarize the quality of the water in the Tijuana River Watershed based upon cumulative water quality data. A review of the watershed data collected during the reporting period identified some changes from the previous year's assessment. Most notably was the higher frequency of occurrence of turbidity and copper within the watershed, and an apparent reduction in the levels of dissolved phosphorous and ammonia. The remaining constituents of concerns identified in the Tijuana River Watershed URMP were unchanged for the 2002-03 reporting period. A complete discussion of these and other changes is included in this section.

Section IV – Effectiveness Assessment

As discussed in Section 9.c. of the Tijuana River Watershed URMP, the Copermittees agreed on standard performance indicators in the absence of baseline information regarding water quality in the watershed. These performance indicators consisted of three (3) indicators to be completed by the end of 2003, and three (3) additional indicators whose implementation would occur during 2003 and throughout the life of the permit. Section 4 provides an initial assessment of the implementation and effectiveness of the Tijuana River Watershed URMP for the period of July 2002 and June 2003 using these performance indicators, and other performance measures outlined in the Tijuana River

Watershed URMP. This assessment is limited by the short period during which the new standards of the Municipal Permit were in effect. Since the Municipal Permit provided a 365-day period for the development and implementation of most programs, many were not fully in place for the majority of the reporting period.

Section V – Conclusions and Recommendations

Section V provides a summary conclusion of the Tijuana River Annual Report and makes recommendations for improving future reporting efforts.

3.0 Program Highlights

Between July 2002 and June 2003, the Copermitees with land use authority within the Tijuana River watershed made significant progress in developing and implementing programs aimed at improving surface stormwater quality in the watershed. A few of these highlights are found below:

- The Tijuana River Watershed URMP: In January 2003, the Copermitees successfully developed and initiated the implementation of a watershed-based program that addresses surface stormwater quality for the Tijuana River watershed. The work product is a compilation of assessments, activities and strategies the Copermitees and stakeholders plan to undertake over the remaining life of the Municipal Permit.
- Watershed Management Plan: The Proposition 13-funded effort to develop a watershed plan has been successfully moving forward in bringing together U.S. and Mexico representatives and stakeholders to discuss watershed issues and challenges, and to develop a watershed vision for the Tijuana River Watershed.
- Land Use Professional's Reference Manual: The County of San Diego, in cooperation with the City of San Diego, is developing a land use professional's reference manual, which focuses on site design solutions as a Best Management Practice. The Manual is structured to assist land use professionals in identifying the major types of stormwater pollution found within the county's watersheds, possible sources of stormwater pollution, and a listing of site design and programmatic tools land use professionals have at their disposal to address water quality issues at the planning level.
- Watershed Surveys. The Copermitees have conducted surveys for the Tijuana River watershed in order to establish a baseline of watershed understanding. Watershed surveys not only determine whether the educational message is being heard and understood, but surveys help Copermitees focus educational and outreach concepts in order to meet the needs of different sub-regions and associated land uses within the watershed. The survey results will be detailed in the FY 03-04 Annual Report.
- Water Quality Grants: The Wildlife Conservation Board approved a \$1.8 million grant in San Diego for a cooperative habitat restoration project in Goat Canyon. Part of the larger Border Field State

EXECUTIVE SUMMARY

Park, Goat Canyon's flooding has degraded water quality and habitat in the lower watershed through erosion and sedimentation. The project will construct a pair of sediment retention basins. In addition, the County of San Diego, in collaboration with several watershed stakeholders, submitted a Proposition 13/40/50 grant application for arundo and tamarisk removal along Cottonwood Creek and other upstream areas in the upper watershed. This project focuses on the water quality, habitat and flood control benefits achieved through non-native vegetation removal and riparian habitat restoration.

- Copermittee Responsibility Restructuring: On October 1, 2003, the Imperial Beach City Council authorized the transfer of the Lead Copermittee from the City to the County of San Diego, effective November 1, 2003.

The Tijuana River Watershed URMP and Annual Reports should be considered part of overall program development. The Copermittees have responded to meet the challenges of implementing new and aggressive Municipal Permit requirements in a very short period of time. The Copermittees feel strongly that they have made significant strides in developing a comprehensive stormwater program that could serve as a model for other regions. It is also recognized that improvement and refinement is an important part of all program areas and the Tijuana River Watershed URMP will need to be augmented over the long term as the Copermittees continue to develop a better understanding of the complex issues affecting the Tijuana River watershed.

SECTION I – INTRODUCTION

1.0 Background

Municipal Storm Water Permit Order No. 2001-01 (Municipal Permit) is the re-issuance of Order No. 90-42. The Municipal Permit addresses the requirement for a program that reduces pollutants discharged from municipal storm sewers to the maximum extent practicable (MEP). The Municipal Permit also requires that the County of San Diego and the cities of Imperial Beach and San Diego (Copermittees) collaborate in the development of a watershed-based program that addresses surface stormwater quality for the Tijuana River watershed. The rationale for this need is simple; urban runoff does not follow jurisdictional boundaries, and often travels through many jurisdictions while flowing to receiving waters. Therefore, the actions of various municipalities within a watershed regarding urban runoff can have a cumulative impact upon shared receiving waters. The Municipal Permit directs the Copermittees who have land use authority within the Tijuana River watershed to collaborate in developing and implementing a Watershed Urban Runoff Management Program (Tijuana River Watershed URMP) for the watershed. The purpose of the Tijuana River Watershed URMP is to identify and address the highest priority water quality issues/pollutants in each watershed. In addition, the Municipal Permit requires that the Copermittees develop activities that addressed education, public participation and land use planning.

The 2002-03 Tijuana River Watershed Urban Runoff Management Program Annual Report (Tijuana River Annual Report) describes the watershed activities conducted by the watershed Copermittees for fiscal year 2002-03 (July 2002 to June 2003). During this reporting period, which consisted of seven months of program development and five months of initial program implementation, the Copermittees worked extensively to develop and implement activities that address water quality issues affecting the Tijuana River watershed.

2.0 Program Approach

In broad terms, the overall purpose of the Tijuana River Watershed URMP is to address the surface stormwater quality issues and any ongoing degradation within the Tijuana River watershed. Fundamental to both establishing specific Watershed URMP goals and measuring achievement is the understanding that long-term solutions to water quality issues will be more effective if the issues are correctly and comprehensively identified and characterized. Based upon the proper identification and targeted characterization, true “watershed-approach” solutions can be applied.

In order for a plan to be successful, clear goals and objectives must first be established, agreed to and implemented by the Tijuana River watershed Copermittees. Otherwise, program activities and tasks are adopted without an understandable purpose or clear direction. The following provides the program goal of the Watershed URMP and specific objectives that the Tijuana River watershed Copermittees will strive to meet as part of this effort.

**TO POSITIVELY AFFECT THE WATER QUALITY OF THE TIJUANA RIVER WATERSHED WHILE
BALANCING ECONOMIC, SOCIAL AND ENVIRONMENTAL CONSTRAINTS.**

Objective #1: Develop/expand methods to assess and improve water quality within the watershed.

Objective #2: Integrate watershed principles into land use planning.

Objective #3: Enhance public understanding of sources of water pollution within the watershed.

Objective #4: Encourage and enhance stakeholder involvement within the watershed.

As outlined in the Tijuana River Watershed URMP, specific activities and programs have been identified in an effort to meet these objectives. Participating jurisdictions recognize that they face several significant challenges in developing and implementing this program. Further, the cities and county consider this watershed based effort to be in its infancy and expect this program will be refined and augmented over the long term as we develop a better understanding of the complex issues affecting our watersheds and learn to identify and pursue joint opportunities to positively affect the water quality in the region.

3.0 Municipal Permit Requirements

Section M of the Municipal Permit requires that the watershed Copermittees within the Tijuana River watershed collaborate in developing a Watershed URMP Annual Report. The annual report is a documentation of the activities conducted by the watershed Copermittees during the previous annual reporting period to meet the requirements of all components of the Watershed URMP section of the Municipal Permit. In accordance with the Municipal Permit, each Watershed URMP Annual Report shall, at a minimum, contain the following:

- Comprehensive description of all activities conducted by the watershed Copermittees to meet all requirements of each component of Watershed URMP section 'J' of the Municipal Permit;
- Public participation mechanisms utilized during the Watershed URMP implementation process;
- Mechanism for watershed-based land use planning;
- Assessment of effectiveness of the Watershed URMP;
- Proposed revisions to the Watershed URMP;
- A summary of watershed effort related data not included in the annual monitoring report (e.g. special investigations); and,
- Identification of water quality improvements or degradation.

The first Watershed URMP Annual Report is due to the San Diego Regional Water Quality Control Board (SDRWQCB) no later than January 31, 2004 and every January 31st thereafter. The reporting period for the Annual Reports must cover the previous fiscal year. As such, the 2002/2003 Tijuana River Watershed URMP Annual Report will cover the reporting period July 1, 2002 to June 30, 2003.

4.0 Organization and Content of the Report

The Tijuana River Annual Report describes the watershed activities that were conducted by the watershed Copermittees during the 2002-2003 reporting period, which ran from July 1, 2002 to June 30, 2003. It must be stressed that most of this reporting period focused on watershed program development, and this report only covers five months of initial program implementation.

The Tijuana River Annual Report is largely organized according to the "Standardized Format for Watershed URMP Annual Report," agreed upon by the Copermittees and submitted as part of the Unified Watershed Urban Runoff Management Program in January 2003. In addition, the Copermittees have endeavored to stay close to the organizational requirements of the Municipal Permit as possible. However, in some instances, the Copermittees felt that it made sense to consolidate sub-sections that are logically addressed together. Also, some activities covered multiple Municipal Permit requirements (e.g. the *Land Use Professional's Reference Manual* addresses both land use planning requirements and public participation requirements). To avoid unnecessary duplications and to simplify the Tijuana River Annual Report, any activity covering multiple requirements will only be discussed in the most relevant section of the Annual Report (e.g. the *Land Use Professional's Reference Manual* deals more with planning issues than public participation and will be discussed in land use planning section of the report). The structure of the Tijuana River Annual Report is as follows:

SECTION I. Section I of the Tijuana River Annual Report provides a summary of the program background, program approach to improving water quality, the regulatory requirements that the Copermittees must meet and a general overview of the organization and content of the report.

SECTION II. Section III of the Tijuana River Watershed URMP (Plan of Action) identifies several activities and programs aimed at improving the quality of surface stormwater runoff within the watershed. These activities focused specifically in the areas of water quality, land use planning, education, and public participation. Section II of the Tijuana River Annual Report provides a status report of the work completed on these activities and programs.

SECTION III. In our effort to assess the effects of urban runoff on receiving waters, the Copermittees' monitoring programs make use of a variety of methodologies to document the physical, chemical and biological characteristics of streams, creeks, rivers, enclosed bays, lagoons, estuaries and beaches. Section III of the Tijuana River Annual Report is designed to summarize the quality of the water in the Tijuana River.

SECTION I – INTRODUCTION

SECTION IV. Section IV provides an initial assessment of the implementation and effectiveness of the Tijuana River Watershed URMP for the period of July 2002 and June 2003. This assessment is limited by the short period during which the new standards of the Municipal Permit were in effect. Since the Municipal Permit provided a 365-day period for the development and implementation of most programs, many were not fully in place for the majority of the reporting period. Furthermore, many of the programs that were in place before the Municipal Permit requirement were not tracked because there was no prior need.

SECTION V. Section V provides a summary conclusion of the Tijuana River Annual Report and makes recommendations for improving future reporting efforts.

Although the Municipal Permit builds on Order No. 90-42, it literally establishes new and aggressive standards for program development and implementation. This has often required the Copermittees to complete these programs on short time frames; in many respects, they are in their infancy. The period from July 2002 and June 2003 represents a very small increment in the overall development and augmentation of these programs; the Copermittees will continue to improve and enhance them over the next several years.

SECTION II – IMPLEMENTATION

As required under the Municipal Permit, Copermittees with land use authority within the Tijuana River watershed were tasked with developing and implementing a watershed based stormwater management plan. To accomplish this task, the Copermittees formed the Tijuana River Watershed URMP Workgroup, which met a total of 8 times during the past reporting period. At these meetings, responsibilities of each Copermittee were discussed, the status of activities proposed in the WURMP was reviewed, and adjustments were made to the existing Copermittee responsibility structure. The Workgroup and summary of meeting minutes are discussed in Subsection 2.0 – Land Use Planning.

Section III (Plan of Action) of the Tijuana River Watershed URMP includes several activities the Copermittees have or are intending to implement over the remaining life of the Municipal Permit in an effort to meet the four primary objectives of the program, which are:

- *Develop/expand methods to assess and improve water quality within the watershed;*
- *Integrate watershed principles into land use planning*
- *Enhance public understanding of sources of water pollution; and,*
- *Encourage and develop stakeholder participation*

The following sections summarize the activities identified in the Watershed URMP and describe the actions taken by the Copermittees during the FY 2002-03 reporting period.

1.0 Water Quality Activities

The first chapter of the Plan of Action identifies proposed activities to address prioritized water quality issues. The sections below provide a status report of work completed to date on those activities.

1.1 Data Analysis and Management Project

A valid and comprehensive baseline assessment is imperative to quantify changes in water quality, and is the driving force behind responsible management decisions. To this end, each Watershed URMP was given the same activity, which was to develop a comprehensive water quality data management system for their watershed.

However, the Copermittees quickly realized that basic questions still needed to be answered before such a system could be developed. Specifically, How should we inventory the data? How do we check for quality achieved / quality controlled (QA/QC)? What data should be analyzed? As all of the Copermittees were faced with these unanswered questions, the jurisdictions agreed to make this project a “common” activity until a model management system could be developed by the Copermittees. Please refer to the Unified Watershed URMP document for an update on this project.

SECTION II – IMPLEMENTATION

1.2 San Diego Coastal Ocean Observing System Project

Scripps Institution of Oceanography established a South Bay Coastal Ocean and Observing System (SBCOOS) project under a contract with the City of Imperial Beach. This project is funded through a California Clean Beach Initiative (CBI) grant. The project conducts real-time measurements of key oceanographic parameters relevant to understanding the complex coastal transport mechanisms present in this region and their relevance to local water quality issues. Not only is the incidence of bacterial contamination and associated beach closures a problem, but time lags between sampling of the coastal water and completion of the analysis likely result in situations when beach waters may be clean when posted, and not clean when not posted. The multiplicity of possible sources within a close proximity of a few miles radius to the beaches of Imperial Beach has made source identification difficult and has resulted in stalled mitigation and abatement efforts. While this source identification is the first step in any mitigation or abatement program, the statistics of beach closures suggest that the sources and physical transport processes in this region are complex and need to be examined and continuously monitored with sufficient temporal and spatial detail if solutions to beach closures that result from non-local pollution are to be developed. The SBCOOS project is designed to attempt to address these issues, minimize future beach closures and to improve public safety.

It is recognized that the City's local beach problems requires examination on a framework of regional scale. The contractual start date for this project was July 1, 2002. The region monitored spans from Point Loma to the U.S. – Mexico border and waters offshore to a distance of approximately 30 km. The project includes:

1. The deployment of a Coastal Ocean Dynamic Application Radar (CODAR) system to track ocean currents. CODAR sites have been installed at Point Loma, Border Field State Park, and South Island of the Mexican owned Coronado Islands. CODAR data is also being integrated with data from a system operated by colleagues at CICESE/UABC and located near Rosarito Beach, Mexico.
2. A near shore currents and water type sampling system anchored 200-feet west of the westerly end of the Imperial Beach pier. This system measures surface and subsurface currents from a tripod mounted to the seafloor.
3. A surf-zone current and water quality sampling system mounted on the Imperial Beach pier. This system allows for real-time measurements of ocean water temperature, water salinity, and turbidity.
4. Water column stratification measurement systems deployed near the wye of the South Bay Ocean Outfall. This system is a buoy mounted vertical array of temperature sensors to allow the measurement of water column stratification in the region.
5. A central data acquisition and real-time data distribution system that collects the data from the above four (4) systems. The data is then used for the research and analysis as well as raw

data display on the Scripps' web site. The water sampling conducted by the San Diego County Department of Environmental Health is also integrated into the central database and included in the research and analysis effort.

The SBCOOS project is continuing development and data gathering. However using the early SBCOOS data collection effort, collaboration between Scripps, County Department of Environmental Health, and City of Imperial Beach during the 2002-2003 wet-weather season resulted in advance alert networking of conditions for likely for ocean bacterial contamination and for likely contamination-free coastal waters. Current real-time information is available on the SBCOOS web site (<http://www.sdcoos.ucsd.edu>). The project has not published any preliminary results at this juncture. Data is still being gathered. Funding for the SBCOOS through CBI funds is to expire on June 30, 2004. A final report will be provided within 90 days of the expiration of CBI funding. Funding from other sources has contributed to this project over the past 2-years and additional funding is being sought to continue the project past the termination of CBI funding on June 30, 2004.

1.3 Integrated Pest Management Campaign

The Copermittees, and their project partner (University of California Cooperative Extension – UCCE) intend to protect and restore affected beneficial uses of receiving waters throughout the San Diego region through a comprehensive approach to Integrated Pest Management (IPM) outreach and education. During this reporting period, the City of San Diego, as lead agency, applied for and was given preliminary approval for a pesticide mitigation grant from the State Water Resources Control Board (Pesticide Research and Identification of Source and Mitigation Grant Program). A summary of the IPM strategy and approach is highlighted below.

Water quality monitoring data (collected during both dry and wet weather seasons throughout the county) indicate that pesticides (especially diazinon) routinely exceed water quality standards in most of the region's watersheds. The grant funding was sought to develop and implement an IPM educational program, which is sustainable beyond the life of the proposed project. The project will also specifically target the TMDL for diazinon in the Chollas Creek watershed.

IPM promotes the use of integrated, ecologically sound pest management programs. The following is a description of the project strategy:

- Develop educational materials, pertinent to the region, under the leadership of the UCCE;
- Integrate the educational materials into the UCCE Master Gardener's Program;
- Develop and implement a model retail Point of Purchase Campaign in two targeted watersheds;
- Perform regional IPM outreach activities;
- Implement a focus community-based educational program in the Chollas Creek watershed;

SECTION II – IMPLEMENTATION

- Implement a water quality monitoring program for diazinon in the Chollas Creek watershed; and,
- Conduct assessment on outreach effectiveness to provide for a model that can be rolled out to other watersheds throughout the State.

The Copermittees will support the project by in-kind contributions of additional educational materials, outreach activities, and sponsorship of workshops. The project start date is planned for the second quarter of 2004.

1.4 Promote Trans-border Collaboration

The Copermittees have, and are continuing to be engaged in trans-border collaboration with other organizations on issues involving water quality in the Tijuana River watershed. The US and Mexico have been involved in various cooperative efforts (both formal and informal) in an attempt to protect natural resources along our common border. Most significantly, the Proposition 13-funded watershed management plan, scheduled to be completed in early 2005, has brought together over 40 representatives from both sides of the border, including academia, local, state and federal agencies, non-profit organizations, labor groups, industry groups and interested individuals. A Binational Watershed Advisory Council has been formed to discuss key watershed issues including water quality. Key issues and recommendations will be formulated and included in the Tijuana River Watershed Vision document. Please refer to Subsection 2.0 – Land Use Planning for additional information on the watershed management plan efforts.

1.5 Water Quality Grants

The Board approved a \$1.8 million grant in San Diego County for a cooperative habitat restoration project in Goat Canyon. The grant comes through 2002's Proposition 50 (the Water Security, Clean Drinking Water, Coast and Beach Protection Act). Part of the larger Border Field State Park within the Tijuana River Nation Estuarine Research Reserve, Goat Canyon's flooding has degraded marsh and streamside habitats through erosion and sedimentation. Primarily, the project will construct a pair of sediment retention basins.

In addition, the County of San Diego, in collaboration with several watershed stakeholders, submitted a Proposition 13/40/50 grant application for arundo and tamarisk removal along Cottonwood Creek and other upstream areas in the upper watershed. This project focuses on the water quality, habitat and flood control benefits achieved through non-native vegetation removal and riparian habitat restoration. Arundo is absent along tributaries above Barrett Lake and Lake Morena. Water from the upper watershed would naturally drain to the Rio Tijuana, but it is diverted at the Barrett Lake Dam by pipeline to the top of Dulzura Creek, which flows into Lower Otay Lake. On the relatively dry part of Cottonwood Creek below the dam, Arundo starts at a trailer park one mile upstream of Barrett Junction.

The County of San Diego Department of Planning and Land Use has maps and GIS layers of arundo and tamarisk invasive species within the county. Using these maps and GIS layers, the project team determined the uppermost reaches of Cottonwood Creek where the invasive species have established

themselves. The project looks at the uppermost reaches because the species are most easily transported downstream. To completely eradicate the invasive species, the uppermost stands must be removed first to prevent the species from re-establishing themselves.

2.0 Land Use Planning Activities

The Land Use Planning Context & Processes section of the Watershed URMP identifies several different activities and procedures designed to integrate watershed principles into comprehensive planning. The sections below provide a status report of work completed to date on those activities.

2.1 Individual Jurisdictional Planning Goals

Effective land use planning can provide important water quality protections by controlling the type and placement of activities allowed in critical areas, and by providing a framework within which site-specific control measures may be identified and imposed during land development and redevelopment activities. A General Plan is the official city or county policy regarding the potential size and distribution of the jurisdiction's future population – balancing housing, employment and infrastructure needs with resource protection. The General Plan can be described as the city or county's blueprint for future development in that it represents the community's view of its future; a constitution made up of goals and policies upon which the city council, board of supervisors and planning commission base their land use decisions. As such, the General Plan is crucial to the long-term success of the jurisdiction's water quality and environmental programs.

A city's land use authority, or ability to regulate land use development, does not extend beyond the jurisdiction's boundaries; cities are autonomous, and one jurisdiction cannot dictate or mandate local solutions in another. Historically, this has caused General Plans to focus almost entirely on local impacts rather than expanding the analysis to the watershed level. Within recent years, however, jurisdictions have acknowledged the need to protect local assets as well as downstream resources within watersheds. As a result, jurisdictions have, or are currently, amending their General Plans to include similar goals and policies regarding water quality and watershed protection. Collectively, the jurisdictions General Plans form the foundation for water quality improvement on a watershed level. Although adopted and implemented independently, jurisdictional land use policies and procedures function in concert with one another, jointly working towards the protection of the watershed and the improvement of water quality.

As stated in the Tijuana River Watershed URMP, Copermitees who had not yet completed their General Plan update agreed to develop action plans to modify their respective plans in order to include goals and policies that addressed water quality, water protection and jurisdictional collaboration. Below is a status report of those outstanding updates. Jurisdictions not mentioned below have already completed their General Plan amendments and a summary of the changes can be found in Section III of the Tijuana River Watershed URMP document or the Copermitee's individual Jurisdictional URMP document.

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2.1.1 County of San Diego

As reported in the County of San Diego's Jurisdictional URMP Section 6.1, the County's initial analysis of its existing General Plan (Regional Elements and Community/Subregional Plans) revealed areas where changes could provide improved water quality and watershed protection. Staff specifically determined that water quality protection principles should be more centralized within the revised General Plan. It was also recommended that standardized language be included in community plans to more effectively integrate these principles and practices into the entire planning process.

During this reporting period, staff continued to address these issues through the County's comprehensive General Plan update, commonly referred to as GP2020. An important objective of this update is to develop land use goals and policies that will maintain a built environment compatible with, and sensitive to, the County's natural setting, while retaining communities and country towns of unique local character. A particular area of focus is the land use distribution, which identifies the type, intensity, and location of land uses that are anticipated in the foreseeable future. To ensure that water quality and other land use issues and concerns are adequately addressed during this review, the County has conducted numerous meetings with several community groups (including the 26 established planning/sponsor groups in the unincorporated area of the County), interest groups representing building industry and environmental interests, and other stakeholders.

It is anticipated that the residential land use distribution map will be presented before the Board of Supervisors (BOS) in December 2003. Once the BOS agrees with the approach, the Department of Planning and Land Use will begin finalizing the General Plan elements, which will more directly involve developing objectives and policies to address water quality, watershed protection, and stormwater issues. Final adoption of the GP2020 project is expected in Winter 2004/05.

2.1.2 City of San Diego

On October 22, 2002, the San Diego City Council adopted the Strategic Framework Element and Action Plan. In addition, the City Council Land Use and Housing Committee (LU&H) approved the General Plan work program on February 12, 2003. This work program is based upon priority actions identified in the City Council-Adopted Strategic Framework Action Plan to be accomplished by 2008. The Strategic Framework Element is a new element of the City of San Diego's General Plan and lays out a strategy for a comprehensive update of all of the elements of the General Plan. The Strategic Framework Element incorporates water quality and watershed protection principles in the Conservation and the Environment section of the document. The land use strategy proposed in the Strategic Framework Element incorporates a number of site and street design policies that achieve water quality and watershed protection principles such as reducing impervious surfaces and increasing vegetation. The water quality and watershed principles identified in the Urban Runoff Management Program were incorporated into the Strategic Framework Element and Five Year Action Plan and adopted by the City Council into the General Plan.

The Strategic Framework Five Year Action Plan includes direction to update the Conservation Element, among other General Plan elements, to further address storm water and urban runoff. In addition, the Strategic Framework Five Year Action Plan also includes recommendations to update other policies and regulations to address storm water and urban runoff, including amendments to the Street Design Manual, the Drainage Design Manual, and the Land Development Code.

Staff began work on Pilot City of Villages implementation and updates to elements of the General Plan upon adoption of the Strategic Framework Element in the fall of 2002. A summary of the status of the efforts to update the General Plan can be found in the City's Jurisdictional URMP Annual Report. It's important to note that since adoption of the City of Villages strategy and implementation of the Action Plan, new communication tools have been developed to leverage limited Planning Department resources and help provide tipping points in the ongoing dialogue with stakeholders. One of those innovations is development of a consolidated mailing database that has allowed for extensive use of e-mailings. Another is, creation of our "From Controversy to Solution Series", quarterly public forums designed to engage the public in spirited dialogue on the controversial issues related to the General Plan. Presentations to community planning groups and other stakeholder organizations remain a core component of the City's outreach program.

2.1.3 City of Imperial Beach

The City of Imperial Beach has already completed its General Plan amendments. A summary of the changes made to these General Plans can be found in Section III of the Tijuana River Watershed URMP document or the City's Jurisdictional URMP document.

2.2 Current Inter-Jurisdictional Planning Collaborative Mechanism

Before certain discretionary projects are developed, development proposals must be reviewed for conformance with local regulations, environmental effects and public testimony. Generally speaking, such review is conducted by all jurisdictions (there may be minor procedural differences between municipalities, but the review process is basically the same). In order to get a better feel for the planning process, the following sections briefly describe the inter-jurisdictional planning collaborative mechanism. It should be noted that the following is a general synopsis of the entitlement process and does not get into program specifics. Please refer to the individual Jurisdictional URMPs for detail on new and redevelopment project processing requirements.

2.2.1 Memorandum of Understanding

In an effort to improve awareness of development projects near jurisdictional boundaries, the municipalities signed a Memorandum of Understanding (MOU) in January 1991. The MOU established guidelines for the notification of land use and development actions approved by the unincorporated County of San Diego and incorporated municipalities. Because municipalities process thousands of applications annually, and the level of complexity between the applications varies dramatically, it is not feasible or beneficial to inform neighboring cities of ALL projects being conducted. As such, the MOU established notification parameters

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that are based on project size, location, and type. These notification guidelines are separate from the notification requirements under the California Environmental Quality Act (CEQA).

2.2.2 California Environmental Quality Act

Pursuant to CEQA, before a discretionary project (e.g. development proposal, ordinance amendment, general plan update, etc.) can be approved by a jurisdiction, the project must undergo some form of environmental review. As part of this environmental review, consideration must be made to impacts associated with flooding and water quality. In order to adequately address these issues, most discretionary projects prepare a study that fully and adequately characterize the project site's existing water quality, analyze the drainage, develop effective post-construction storm water Best Management Practices (BMPs) and ensure the effectiveness of the BMPs through proper maintenance and long-term fiscal responsibility.

CEQA requires that prior to being approved by a hearing body, the environmental document must be available for public review for a period ranging from 20 to 45 days. Regarding notification, CEQA further requires that jurisdictions notify the public of the environmental documents through either on and off-site postings, direct mailing to contiguous property owners and interested individuals or publication in the newspaper of largest circulation. Most jurisdictions adopt CEQA notification policies that incorporate all three procedures in addition to additional procedures (e.g. directly notifying local and state agencies, organizations who may have an interest, etc.).

2.2.3 Public Hearings

Most projects will require a notified public hearing prior to approval of the project. This hearing usually follows environmental review. The public again has the opportunity to comment on the project as well as participate in hearings relating to land use actions. At the hearing, Staff explains the project to the decision making body who considers the project in light of local regulations, environmental effects and public testimony from interested parties prior to making a decision.

Regarding the notification of public hearings, State law requires that all owners of real property located within 300 feet of the project receive notification of the hearing via mail at least 10 days prior to the hearing. The hearing notification must also be published in at least one paper of general circulation. Again, many jurisdictions adopt policies that incorporate these procedures in addition to other procedures (e.g. at least 20 different property owners are notified, procedures on how apartment complex residents are notified, etc.).

Please refer to the individual Copermittee's Jurisdictional URMP Annual Report for a detailed description of their land development review process and procedures, and a description of the types and numbers of discretionary projects that had SUSMP review prior to being approved by the municipality.

2.3 Watershed-Based Land Use Planning Mechanisms

The jurisdictions within the watershed have started the process of working with their respective planning departments to develop a system of practices to facilitate the integration of watershed data and information into the land use decision-making processes. The Copermittees recognize that planning is an integral part in reducing pollutant levels resulting from new and redevelopment projects. As little new information on water quality was available during this reporting period, efforts have been largely targeted on staff training and education. The amount and type of training conducted by the municipalities can be found within each jurisdiction's Jurisdictional URMP document. Additional watershed based planning efforts currently going on within the watershed include the following.

- ✓ Water Quality Assessment, Information Sharing and Jurisdictional Planning
- ✓ Watershed Management Plans
- ✓ Formal Agreement between Jurisdictions
- ✓ Tijuana River Watershed URMP Workgroup

2.3.1 *Water Quality Assessment, Information Sharing and Jurisdictional Planning*

As discussed in the Tijuana River Watershed URMP, the Copermittees will start considering the role of land use planning during the development of their overall control strategies for specific issues and problems identified as priorities for the watershed, particularly as they relate to the impairment of beneficial uses of the water body. During this reporting period, the jurisdictions within the watershed have started the process of working with their respective planning departments to develop a system of practices to facilitate the integration of watershed data and information into the land use decision-making processes. The Copermittees recognize that planning is an integral part in reducing pollutant levels resulting from new and redevelopment projects. As little new information on water quality was available during this reporting period, efforts have been largely targeted on staff training and education. The amount and type of training conducted by the municipalities can be found within each jurisdiction's Jurisdictional URMP Annual Report.

To help with the education and outreach, The County of San Diego, in cooperation with the City of San Diego, is in the process of developing a document entitled: *"The Stormwater Quality and Watershed Protection Manual – Looking at Alternative Development Practices"* (Manual). The Manual takes the first crucial step towards developing a mechanism for watershed based land use planning by providing land use professionals (e.g. planners, engineers, architects, etc.) with a big picture overview of the water quality problems and the need for more site design solutions.

This Manual will help land use professionals understand first, how land use development affects water quality, and second, based on that understanding, why some tools are generally more effective than others at protecting water quality. This understanding will provide a theoretical approach – a stormwater design philosophy – that will enable land use professionals to make more effective, cost-efficient decisions when "reaching into the planner's toolbox" at both the jurisdictional and project-level planning scales. This

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Manual will help land use professionals better understand the need for land use planning at the watershed level by explaining why pollutants lead to the detriment of the watersheds and what program and site design Best Management Practices land use professionals can consider when designing private development, redevelopment and public facility projects at the initial planning stages.

A summary of the Manual's contents is below.

- **POLLUTANTS:** Section II of the Manual provides a discussion on common stormwater pollutants and the various land use types (e.g. residential, commercial, industrial) that generate them.
- **IMPACTS:** Section III of the Manual provides a discussion on the environmental impacts resulting from excessive pollution discharge.
- **LOCATIONS:** Section IV of the Manual provides a discussion on the watersheds found within the County of San Diego and a summary of the pollutants found within them.
- **TOOLS:** Section V of the Manual provides a discussion on the site design tools/techniques land use professionals can consider when designing (improving) either a water quality program or a specific development project.

The concept of the Manual has been discussed at numerous Copermittee and stakeholder meetings, where the idea of a planner's reference guide was well received. In an attempt to solicit ideas on document content and approach, both the County and City are currently collaborating with individuals from various stakeholder groups and organizations, including the California NEMO Partnership (Nonpoint Education for Municipal Officials), California Stormwater Quality Association, Rick Engineering, Project Clean Water Comprehensive Planning TAC, and San Diego River Watershed Management Plan Workgroup. The County anticipates that a draft document will be available for public comment sometime in the spring of 2004. It is anticipated that the Manual will be finalized sometime in the summer of 2004.

2.3.2 Watershed Management Plans

The County of San Diego, with support from numerous stakeholders within the watershed, have been given the responsibility of developing a comprehensive watershed management plan for the Tijuana River watershed (Costa-Machado Water Act of 2000 – Proposition 13). This successful effort has brought together over 40 representatives from both sides of the border, including academia, local, state and federal agencies (including the three Copermittees in the watershed), non-profit organizations, labor groups, industry groups and interested individuals. The plan components include developing a watershed advisory council, stakeholder database development, watershed resource inventory, watershed analysis, management goals and strategies and ultimately, the watershed management plan. To date, the project team has formed the Watershed Advisory Council (Council), developed the stakeholder database, created the watershed resource inventory and designed the web site for the project (<http://trw.sdsu.edu>). A complete list of the Council members, meeting agendas and minutes, and other key information is posted on the project web site.

The Watershed Advisory Council met four times during this reporting period. The Council developed, through a facilitated process, a list of key environmental challenges and opportunities in the watershed, and developed some preliminary recommendations. Meeting summaries are highlighted in Table 2-2 below.

Table 2-2: Summary of the Watershed Advisory Council Meetings

Meeting Date	No. of Stakeholders	Principal Agenda Items
11/12/2002	37	<ul style="list-style-type: none"> • Project overview • Previous projects and ongoing research in the watershed • Website demonstration • Advisory committee tasks
2/6/2003	25	<ul style="list-style-type: none"> • Watershed vision process • Breakout groups – Challenges and Opportunities • Stakeholder Identification and Participation • Next steps
4/24/2003	30	<ul style="list-style-type: none"> • Watershed activities by City of San Diego • Update on C.N.A. watershed meeting • Role of BWAC • Role of Stakeholders • Comments on challenges, opportunities, goals and objectives
6/19/2003	29	<ul style="list-style-type: none"> • Watershed related activities by Proyecto Fronterizo • Update on TRW SCERP meeting • Update on Encuentro Fronterizo • Update on poster and web site • Stakeholder meeting dates, list of invitees, agenda

2.3.3 Tijuana River Watershed URMP Workgroup

In order to develop and implement the Tijuana River Watershed URMP, the watershed Copermittees created the Tijuana River Watershed URMP Workgroup (Workgroup), which met on a regular basis at the city offices in Imperial Beach. During this reporting period, all Workgroup members took an active role in the development of the Watershed URMP and formally met seven times between July 2002 and June 2003. In addition, the workgroup utilized e-mail to facilitate corroboration on the development of the Watershed URMP by all Tijuana River Copermittees. Table 2-3 presents a summary of the meetings held by the workgroup during the reporting period, including an outline of the principal agenda items.

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Table 2-3: Summary of TJ River Watershed URMP Workgroup Meeting

Meeting Date	Jurisdictions Represented	Principle Agenda Items
9/18/2002	County of San Diego, City of San Diego and City of Imperial Beach	<ul style="list-style-type: none"> • WURMP Report – Overview of outline • Water Quality activities • Education activities
10/03/2002	County of San Diego, City of San Diego and City of Imperial Beach	<ul style="list-style-type: none"> • WURMP Report – Outline revisions • Public Involvement • Water Quality activities
10/17/2002	County of San Diego, City of San Diego and City of Imperial Beach	<ul style="list-style-type: none"> • WURMP Report • Planning Activities • Inter-jurisdictional collaboration
10/23/2002	County of San Diego, City of San Diego and City of Imperial Beach	<ul style="list-style-type: none"> • WURMP Report • Water Quality issues
10/30/2002	County of San Diego, City of San Diego and City of Imperial Beach	<ul style="list-style-type: none"> • WURMP Report • Overview of all activities and timelines
3/6/2003	County of San Diego, City of San Diego and City of Imperial Beach	<ul style="list-style-type: none"> • Review of tasks • Discussion of resources and implementation schedule
5/20/2003	County of San Diego, City of San Diego and City of Imperial Beach	<ul style="list-style-type: none"> • Status of the WURMP tasks • Specific assignments to workgroup members • Public outreach and education - discussion

3.0 Educational Activities

This section describes actions taken by the Copermittees during this reporting period to enhance the general public’s understanding of basic watershed principles and sources of water pollution. Making all San Diegans aware of the importance of individual actions in protecting our water resources and promoting watershed stewardship are crucial components of this educational program.

3.1 Summary of Watershed Education Activities

The Copermittees have started the process of refining current education programs in order to integrate watershed-based components. Education was generally focused in order to meet the needs of different sub-regions and associated land uses within the watershed. Suitable Best Management Practices (BMPs) were incorporated into the education efforts as determined appropriate to the targeted community.

Over the short and long term, the watershed educational strategy focuses on three key principles:

- What is a watershed?
- We all live in a watershed
- Watershed stewardship (all individual actions within our watersheds add up in a cumulative way to influence the health of our water resources)

3.2 Summary of Watershed Education and Outreach Conducted

The following is a description of the four-prong approach developed during the reporting period:

- Incorporate core watershed principles into existing educational programs
- Promote watershed stewardship in communities
- Develop educational strategies to target priority pollutants within the watershed
- Achieve milestones as determined through annual assessments

This approach not only recognizes the importance of targeted outreach efforts to effective watershed management, but also provides a context for conducting them. How the Copermittees are implementing the first two prongs of the four-pronged approach can be summarized as follows: The key principles (“what is a watershed” and “we all live in a watershed”) are incorporated into current educational efforts such as community event demonstrations, clean-up days, citizen monitoring activities and school presentations. Building on these efforts, a watershed stewardship focus has been initiated to establish community ownership of our water resources. Through various watershed programs that are described in the individual Watershed URMP Annual Reports (e.g. watershed model demonstrations, watershed address mapping and citizen watershed monitoring), the connection is made between “our backyard”, effects downstream, and preservation of our precious coastal habitats.

The third element of this approach focuses on priority pollutants within specific watersheds. While the Copermittees are currently focusing on priority pollutants common to multiple watersheds, a watershed-specific focus will be increasingly emphasized in future years. One class of priority pollutants of concern that is found in a majority of the watersheds within the San Diego region is pesticides. Pesticide impacts to water quality are being addressed under the education strategy at the regional level across all watersheds. Education programs will be refined over time to address other specific constituents of concern found in multiple watersheds; as above, this specificity will also depend on the results of ongoing monitoring and assessment.

The fourth and final prong in the approach is the evaluation of program effectiveness. The Copermittees have conducted public awareness surveys in order to develop effective public education programs that are to be founded upon community-based data that will generate locally tailored marketing strategies. These surveys will establish baseline levels of knowledge of pollution prevention/source reduction activities in the watershed communities. Future progress will be measured against this baseline.

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3.3 Education Action Plan

The Educational Program of the Tijuana River Watershed URMP identified actions that participating jurisdictions were going to undertake over the short and long term in order to further develop and implement the watershed based education element. Progress on each specific educational activity identified in the program’s Education Action Plan is described in the following sections.

3.3.1 Public Presentations and Media – Impacts of Individual Actions

Public presentations are aimed at professional organizations and industry-specific associations. They incorporate both general watershed principles common to all watersheds and specific best management practices of interest to the particular audience to address pollution prevention. Of particular focus this fiscal year is the educational efforts aimed at the agricultural/landscaping groups and pesticide operators to increase awareness of pesticide and fertilizer issues and to promote the use of integrated, ecologically sound pest management programs. Core watershed concepts and principles are incorporated into public presentations and media opportunities. Please refer to the following tables for a summary of the public presentations and media releases conducted by the Copermittees during this reporting period.

Table 2-4: Public Presentations and Media Events – County of San Diego

Date	Event Title	Comments	Specific Audience	#	Site	Materials
8/20/02	PCW Presentation to Professional Env. Marketing Association	Overview of PCW activities to consultants and industry representative	Environmental Consulting Organization	12	Hyatt Islandia	PCW Strategic Plans
9/24/02	Stormwater and Runoff Strategies for Golf Course Superintendents	Overview of Municipal Permit, Ordinance and Golf Course BMPs	Golf Course Superintendents, AG. Chemical suppliers, Irrigation Vendors	110	Auld Golf Course	Sedimentation handouts, Inspection Checklist, FAQ Flyers
10/3/02	Horticulture Seminar	Promotion of upcoming regional AG/landscape workshops	AG producers, landscape maintenence operators, AG chemical vendors	75	Wild Animal Park	PCW handout & AG ordinance excerpts
10/9/02	CA AG Production Consultants Assoc.	Overview of stormwater regulation, agribusiness impacts on stormwater, BMPs & IPM	Pest control business operators, production AG business owners	65	Castle Creek Golf Course	

Date	Event Title	Comments	Specific Audience	#	Site	Materials
11/15/02	ROP Continuing Education for Pesticide Applicators	Presentation to continuing education class for pesticide applicators	Pesticide applicators	50	Southwestern College	AWM Stormwater Guidelines, Information letter, FAQ, magnets
12/02/02	CAPCA Laws & Regulation Seminar	Overview of Permit, ordinance and training for AG consultants Association	Pest Control Professionals and AG Industry Personnel	40	Farm Bureau	Landscape and gardening pest control, AWM compliance checklist, PCW strategic plans, business hazard waste disposal, pencils, rulers, magnets
12/19/02	2 nd Annual AG Stormwater Regulatory Update	Update on stormwater ordinance prohibitions, stormwater fees, compliance tips, and resources for more information	Nurseries, greenhouses, golf courses, cemeteries, pest control businesses	360	NA	
3/19/03	Independent Pool & Spa Service Association	Overview of stormwater requirements, review of industry BMPs, Q&A	Pool & Fountain Service Businesses	60	Quality Inn Mission Valley	PCW Strategic Plans, ordinances, magnets, rolodex cards, brochures
3/21/03	MSCP Environmental Stormwater Presentation	Discussed MSCP and stormwater issues w/ residents	General Public	50	Admiral Bakers Field Country Club	MSCP brochures
4/8/03	Pest Control Operators of California	Overview of ordinance, requirements for pest control operators	Agricultural Pest Control Operators	25	Coco's Restaurant	Brochures, pencils, magnets, strategic plans, diazinon brochures, AWM inspection worksheets, HazWaste requirements
4/19/03	Friends of Wilderness Garden Meeting	BMP information presentation	Friends of Wilderness Gardens	12	Wilderness Gardens	
5/8/03	Simplot Partners	Overview of ordinance, requirements for pest control operators	AG pest Control Professionals, Golf Course Operators, Landscapers	90	Simplot Plaza	AG sedimentation, FAQs

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Date	Event Title	Comments	Specific Audience	#	Site	Materials
5/16/03	Press release advertising Regional Stormwater Workshops for Eating and Drinking Establishments	Pres release provided location and time of all 4 regional workshops, as well as contact info for the County and PCW	Restaurant Employees and Owners		N/A	
6/14/03	Union Tribune Press Release Advertising Watershed Awareness Week and Clean Water Summit		General Public		N/A	

Table 2-5: Think Blue FY 2003 Media Buy Year End Summary

Station	FY 2002 \$Expenditure	#Paid PSAs	# Comp N/C PSAs	Value of In-kind	Total Value
FM Sets 102 /KPRI	8,000.	156	48- 60 sec @ Interview 3 mins Web link	\$ 10,400.	\$ 18,400.00
B 94.9 FM (JP)	5,000.	65	3 Events 2@2,000; 1@4,000 6- Surf Sponsor; 34 PSAs	9,580.	14,580.00
KFMB Star 100.7	6,997.	131	Web Link -Feb	2,000.	8,997.00
PLANET 103.7 (I)	5,000.	82	20 @ 83.33 40 Planet Tips @ 150 1-Interview J.Lawrence	10,166.	15,166.00
KPBS	7,500.	74	Full Focus TV Interview ½ hour Karen Rostada	5,000.	12,500.00
KGB 101 (cc)	6,000.	80	10- 20 sec promos @ 75 1 Event-Ju	2,750.	8,750.00
KHTS 933 (cc)	8,000.	120	68 -60 sec events 1 print advertisement	17,080.	25,080.00
AM KOGO- 600 (cc)	7,000.	60	20-5 sec promos @125 5 part interview; web, 10-60 second PSAs	10,750.	17,750.00
COX 4/Padres**	12,000.	32	23- Padres KUSI & COX4 5@750; 18@750	17,250.	29,250.00

Station	FY 2002 \$Expenditure	#Paid PSAs	# Comp N/C PSAs	Value of In-kind	Total Value
COX NETWORK DISC, CNN, BRAVO, MSNBC, TNT, FAM, SDN, SCI- "Taken" Spielberg	12,000.	242	44 @ 59 ea average	2,596.	14,596.00
FOX 6*	60,000.	204	6a-9a live Coastal Clean Up 4-interviews w Kirby	4,000.	64,000.00
Time Warner *** LIFE, DISC, USA, TLC, CNN, TNT, TRVL, FAM, HGTV, NATGEO,ANPL SCI- "Taken" Spielberg	15,000.	188	107 PSAs- various	4,955.	19,955.00
KGTV 10 * (ABC)	13,005.	54	42 various @ 150 -600 ea	12,900.	25,905.00
XEWT 12 *	20,000.	304	36 PSAs @ 100 10 Did you Know tips @500 1 Cinco De Mayo Event 1 Live Interview AM Show	13,100.	33,100.00
KUSI 9/51*	14,960.	110	36- PSAs- @ various 1 morning Show interview 3 News stories	7,725.	22,685.00
KFMB 8 * (CBS)	15,000.	64	8- 10 sec billboards @120 Micro climate sponsorship	2,000.	17,000.00
KNSD 7/39* (NBC)	11,000.	47	4-Today Show Billboards @175 4- Local Billboards @200 3- News stories @500	3,000.	14,000.00
TOTALS:	\$ 226,462.	2013	# PSAs: 536 #Other: 30	Added Value \$ 135,252.	Total Value \$ 361,714.

* Aired entire County

** Aired Cox 4- @400,674 HH county wide + KUSI 51-16 games all county cable HH

*** Cities of San Diego, Del Mar, Poway and Fairbanks Ranch in the County

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Table 2-6: Public Presentations and Media Events – City of Imperial Beach

Date	Event Type	Event Title	Specific Audience	Est Aud #	Site Name	Materials Distributed
8/22/02	Presentation	Storm water pollution prevention (BMP's)	chamber of commerce/business community	20	Imperial Beach Chamber of Commerce	
12/21/02	Newsletter	Storm water pollution prevention	Public/Business	30,000	EDCO Quarterly News letter (winter)	Storm water pollution prevention tips: keep lids on trash, always dispose of hazardous waste properly, maintain repairs on vehicles.
9/21/02	Newsletter	Storm water pollution prevention	Public/Business	30,000	EDCO Quarterly News letter (Fall)	Storm water pollution prevention tips: proper disposal of hazardous wastes generated during a normal fall resident barbecue.
6/21/02	Newsletter	Storm water pollution prevention	General Public	30,000	City Of IB, Quarterly News Letter (summer)	Article on clean streets prevent water pollution and recycling
9/21/02	News letter	Storm water pollution prevention	General Public	30,000	City Of IB, Quarterly News Letter (fall)	Article on proper disposal of pet waste, abandoned vehicle pick up program and household hazardous waste pick up information.
12/21/02	News letter	Storm water pollution prevention	General Public	30,000	City of IB Quarterly News Letter (winter)	Article on household activities, hazardous waste pick up and proper disposal related to our storm water pollution prevention program.

3.3.1.1 Watershed Video

During this reporting period the video entitled “Clean Water and You,” which incorporated general watershed principles aimed at educating the general public, was developed and was released to the media. The County Television Network airs this video developed by County of San Diego on an on-going basis.

3.3.1.2 Public Presentations: Speaker’s Bureau and Other Community Outreach

The City of San Diego participated in a series of regional business outreach workshops coordinated by the County of San Diego on behalf of the Copermitees. The topics were: Integrated Pest Management; Mobile Businesses; Restaurants; and Landscaping. Each workshop topic was held four times at various locations in the region. As a result of the City’s media exposure and participation in the regional workshops, Think Blue received a large number of unsolicited requests to speak to community groups, business associations, church groups, and other agencies and attend community events and street fairs. Think Blue was able to

participate in more than 200 such outreach activities with the assistance of our staff, City Council office staff and our media partners.

3.3.1.3 Think Blue Media- Electronic and Print

As initially conceived and outlined to the broadcast media in FY 2002, the City used the Follow-up Survey data to reduce media participation from the initial 32 television and radio stations to 16 stations in FY 2003. Only the strong performers—those stations that residents recalled hearing the PSAs played on air, or a news story about the issue, or attended a station sponsored event that featured Think Blue information – were invited to participate in year two. A second factor was the station's continued commitment to provide in-kind promotional contributions and opportunities to the campaign. In-kind contributions include additional free airings of the PSAs, live interviews, news stories, event booths, print advertising and the like.

The campaign aired from November 2002 through June 30, 2003 on local broadcast stations reaching the English and Spanish Speaking communities. Table 3.6 summarizes the Think Blue media campaign for the year. The purchased air time totaled \$226,462, with the PSAs airing 2013 times. Additionally the broadcast partners contributed 536 free PSA airings, and another 30 promotional opportunities such as community event booths, print advertising, web page promotions, news stories and live on air interviews. The total value of the in-kind contributions of the 16 broadcast entities is \$135,252, (a 59.7 percent leveraged increase to our media and promotions budget). As in the first year of the campaign, the broadcast visibility of Think Blue generated additional print media coverage. A few print media highlights include:

- Sister Cities Magazine- Debut issue feature article, Summer 2002. A quarterly magazine targeting a bi-national audience of residents and businesses in San Diego and Tijuana. Readership of 800,000.
- North County Times- January 8, 2003, "Habits Must Change to Clean-up Water," Marty Graham staff writer.
- San Diego Union Tribune- Sunday, February 16, 2003, "Stopping Water Pollution at its Source," Ernie Anderson, guest editorial.
- San Diego Union Tribune- Monday February 17, 2003, "City keeps a weather eye out for pollution," Terry Rodgers, staff writer.
- San Diego Union Tribune- February 13, 2003, "Area cities, builders increasingly peeved over water runoff rules," Gordon Smith Copley News Service.
- San Diego Union Tribune- February 26, 2003, "Dirty-water police were out in force," Terry Rodgers, staff writer.
- The value of this collateral coverage and publicity by print media exceeds \$75,000.

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3.3.2 School Presentations: Water Quality and Watersheds

Educating school children is essential for promoting watershed awareness and changing behavior at any early age. School children are a responsive audience, and often bring information on the “right thing to do” home to their family members. During this reporting period, grade levels K-6 were given priority for in-classroom presentations by qualified staff. The existing general stormwater presentations were enhanced with watershed-focused content such as:

- Change in title of presentation from “Water Quality and You” to “Watershed Health and You”;
- Incorporate core watershed principles via Enviroscope (watershed) model;
- Identify “Watershed Address” and concept “We all live in a watershed”;
- Identify constituents of concern per watershed from the Project Clean Water website and associated source land uses through County Water Authority map or interactive discussion;
- Identify various watershed habitats;
- Distribute best management practice literature and promotional items; and,
- Use student-made badges and pledges to promote retention of watershed awareness and stewardship.

The Copermittees conducted four formal presentations that reached 189 students throughout the watershed. Initial outreach efforts have targeted the elementary grade levels (K-6); watershed outreach to high school students was achieved through environmental fairs. The Copermittees strive to make the presentations interactive in order to increase learning through hands-on demonstrations. Visual aids and demonstrations make the presentations interesting and provide for a feedback mechanism that increases retention of basic watershed concepts. Common learning tools include demonstrations with the Enviroscope watershed model, button making, student pledges, puzzles, water activity posters and the video “We All Live Downstream”. Pre and Posttests are utilized to determine educational content retention. Testing results will be used to refine and improve educational program content and delivery. In the next fiscal year, more focus will be placed on increasing teacher training events so that watershed curriculum can be better integrated into existing standard curriculum. Refer to Table 2-6 for a summary of the outreach efforts that were conducted in this watershed.

Table 2-6: Summary of Presentations to Schools

Start Date	Event Title	Comments	Duration (Hours)	Specific Audience	Est Aud #	Site Name
1/0/00	Interpretive Program	Provided information on stormwater awareness and practices	1	School	30	Pine Valley Park
9/13/02	Water Quality and You Presentation	Watershed Model Demo, Showed "We All Live Downstream" Video	4.5	School (Grade K)	50	Willow Elementary School
10/21/02	Water Quality and You (Three 2-Hour Sessions)	Watershed Model Demo, Showed "We All Live Downstream" Video	6	School (Grade 3)	65	Willow Elementary School
10/22/02	Water Quality & You (Three 2-Hour Sessions)	Watershed Model Demo, Showed "We All Live Downstream" Video	6	School (Grade 3)	44	Willow Elementary School

3.3.2.1 Earth Force GREEN

The County of San Diego, Department of Planning and Land Use, MSCP Division hosted an Earth Force GREEN (Global Rivers Environmental Education Network) training workshop at the Water Conservation Garden at Cuyamaca College on March 25, 2002. Participants included George Stratman, Director of Outdoor Education for the County of San Diego Office of Education, staff from County Departments of Planning and Land Use, Parks and Recreation, Environmental Health and the City of San Diego, The Environmental Trust, Otay Water Authority, Helix Water District, and Solana Recyclers. The workshop included water monitoring and other interactive activities as well as Earth Force GREEN *Protecting Our Watershed* curriculum training. Earth Force GREEN is a watershed education program geared towards middle school students that connects learning with youth action and youth voice. Dr. William Stapp of the University of Michigan founded GREEN in 1984 when a group of students asked him to help them investigate a number of cases of individuals who had contracted hepatitis from the Huron River. With Dr. Stapp's help, the students discovered the cause of the problem and worked with the local government to find a solution.

Educators all across the United States and in Canada and South America are currently using the Earth Force GREEN *Protecting Our Watershed* curriculum because it gives them a step-by-step process to guide young people in improving the health of their water resources. Students are not only taught what a watershed is through various interactive activities, classroom learning and field experience, but they are also given the opportunity to make lasting changes in their communities. One result of this training was

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integrating a watershed focus into presentations and nature hikes given by MSCP and Parks & Recreation staff.

3.3.2.2 Environmental Camps and After School Programs

Another strategy used to educate school children is participation in after school programs and environmental camps sponsored by established groups involved in non-formal education such as the Boys and Girls Clubs. These groups often allow for more flexible scheduling and provide a relaxed, less structured atmosphere in which to engage the students in a variety of related activities. Such programs are offered for working parents during school breaks and often enroll students from disadvantaged groups. An example of a successful collaboration is the County of San Diego Watershed Protection Program participation in the Lakeside Boys & Girls Club Spring Envirocamp for the second consecutive year. Activities include hikes, water monitoring, watershed model demonstrations, speakers from environmental agencies, related arts, games and videos.

3.3.2.3 CalPIRG Partnership

The County of San Diego partnered with CalPIRG, who received a grant of \$607,500 to provide, in part, watershed/pollution prevention education to schools in Southern California. As part of this partnership, the County conducted several presentations in the San Diego Region as well as trained CalPIRG participants on how to present watershed education workshops. A total of seven of these presentations were completed in the unincorporated area of the County during this reporting period.

3.3.2.4 Think Blue Campaign at San Diego City Schools

In November 2002, San Diego City Schools agreed to join the Think Blue team. San Diego City Schools is comprised of 20,000 students at 182 elementary, middle and high schools. Superintendent Alan Bersin is working with the Mayor's Clean Water Task Force and the Storm Water Pollution Prevention Program to modify City School science curricula to include water awareness and pollution prevention lessons. The curricula is Project SWELL; Stewardship: Water Education for Lifelong Learning. San Diego City Schools intends to launch the 5th Grade curriculum this school year (January 2004) that will address the following topics: water conservation, water pollution, sources of pollution, water supply, trash as a pollutant, sewage collection, among others. We anticipate that over the next 2-3 years the full SWELL curricula (K-12) will be written and institutionalized in San Diego City Schools.

3.3.3 *Integrated Pest Management Campaign*

The Copermittees, and their project partner (University of California Cooperative Extension – UCCE) intend to protect and restore affected beneficial uses of receiving waters throughout the San Diego region through a comprehensive approach to Integrated Pest Management (IPM) outreach and education. During this reporting period, the City of San Diego, as lead agency, applied for and was given preliminary approval for a pesticide mitigation grant from the State Water Resources Control Board (Pesticide Research and

Identification of Source and Mitigation Grant Program). During this reporting period, no progress was made on the activity. However, a summary of the IPM strategy and approach is highlighted below.

Water quality monitoring data (collected during both dry and wet weather seasons throughout the county) indicate that pesticides (especially diazinon) routinely exceed water quality standards in most of the region's watersheds. The grant funding was sought to develop and implement an IPM educational program, which is sustainable beyond the life of the proposed project. The project will also specifically target the TMDL for diazinon in the Chollas Creek watershed.

IPM promotes the use of integrated, ecologically sound pest management programs. The following is a description of the project strategy:

- Develop educational materials, pertinent to the region, under the leadership of the UCCE;
- Integrate the educational materials into the UCCE Master Gardener's Program;
- Develop and implement a model retail Point of Purchase Campaign in two targeted watersheds;
- Perform regional IPM outreach activities;
- Implement a focus community-based educational program in the Chollas Creek watershed;
- Implement a water quality monitoring program for diazinon in the Chollas Creek watershed; and,
- Conduct assessment on outreach effectiveness to provide for a model that can be rolled out to other watersheds throughout the State.

The Copermittees will support the project by in-kind contributions of additional educational materials, outreach activities, and sponsorship of workshops. The project start date is planned for the second quarter of 2004.

3.3.4 Regional Watershed Poster: What Watershed Do You Live In?

It is very important for the public to become acquainted with the defining features of watersheds – where the water bodies are, the high and low points, where water flows and where it discharges, and the various land uses within each watershed. Posters and maps are tools that illustrate these defining features in a visually attractive and simple way. To that end, the Copermittees initiated the process of developing a regional poster template, with embedded map, for use throughout the San Diego region. The template incorporates the following:

- Regional watershed relief map, including the entire San Juan, Santa Margarita, and Tijuana watersheds which extend beyond County boundaries;
- Major roads, watershed and jurisdictional boundaries, and key water bodies;

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- Information bar and photo for each watershed, including a general locator map that highlights the specific watershed with a listing of water bodies and land uses;
- Standardized watershed definitions and terms; and,
- Graphic images of the biomes within the region.

During the latter part of the 02-03 Fiscal Year, the County and the North County Storm Water Program (NCSWP) reviewed sample watershed maps from various sources and began to coordinate poster design by addressing the goals, features and distribution to target groups. A sample distribution list includes school classrooms, libraries, city halls, nature centers, community centers and for display at public events. To maximize resources and minimize costs to Copermittees, collaboration was initiated to combine educational goals targeted at planners and the general public within the regional poster design. This activity was initiated far earlier than the initially planned WURMP start date of January 2004.

By the end of this reporting period, three draft formats were selected and edited to illustrate San Diego's Watersheds. During the next reporting period (FY 03-04), the Project Clean Water Ed-TAC and the Copermittee Technical Outreach Workgroup will evaluate the draft templates. The Copermittees and watershed stakeholders groups will be asked to submit images and a brief watershed description to be inserted into the template. It is anticipated that by the end of the FY 03-04 reporting period, a complete poster template will be available for Copermittees and stakeholders to personalize with watershed specific information.

3.3.5 Regional Watershed Brochure: What is a Watershed?

The Copermittees recognized early that there was a need to develop a simple, relatively cost sensitive approach of informing the general public about watershed issues. It was generally felt that watershed messages needed to provide information on not only common terms and concepts (e.g. definition of a watershed), but specific and unique issues that were found in the watershed. To fill this need, the Copermittees elected to develop a brochure with maps, common terms and highlighted targeted messages, as determined by water quality assessment and other available information. In order to ensure consistency between watershed brochures, the Copermittees started the process of developing a model brochure.

Successful communication campaigns begin with key, core messages, which are repeated often and given time to become "common knowledge" with target audiences. During this reporting period, standardized watershed terms and definitions related to the San Diego region were established in order to enhance public understanding of watershed principles. These terms and definitions were posted on the Project Clean Water website and can be found at http://www.projectcleanwater.org/pdf/ed_tac/watershed_defs.pdf¹.

¹ The definitions are provided on www.projectcleanwater.org to promote general awareness of watershed issues. More detailed and technical definitions relating to environmental laws and compliance issues exist. They may vary within each local jurisdiction of San Diego County and between local agencies and state and/or federal agencies. For more information, contact the appropriate agency.

Stakeholders participating in the Education and Resource Development Technical Advisory Committee (Ed-TAC) of Project Clean Water developed this list of terms and definitions by committee consensus that were approved in June, 2003.²

The standardized language will be utilized in a regional watershed brochure template that can be refined and augmented with specific information relevant to each watershed. The branding of attention grabbing images and easily understandable language is crucial to program success. As such, the brochure template will mirror the model developed for the regional watershed poster in order to impart consistent messages to the public. The County of San Diego, in cooperation with the Ed-TAC and the Outreach Workgroup, are currently developing the layout of a draft brochure. It is anticipated that the draft will be available for stakeholder comments by July 2005.

3.3.6 Partners in Clean Water – Partnerships in Action

To maximize effectiveness, the Copermittees pursue partnerships and cooperative activities to enhance regional stormwater activities. These partnerships are described in the individual Jurisdictional URMP Annual Reports. Details on watershed stakeholder partnerships, above and beyond those identified in Jurisdictional URMP annual report, are described below.

3.3.6.1 San Diego Citizen Watershed Monitoring Steering Committee

The San Diego Citizen Watershed Monitoring Steering Committee (Steering Committee) is comprised of community, governmental, and scientific leaders: Clean Water Team – State Water Resources Control Board, San Diego Bay Keeper, Surfrider Foundation, San Diego State University, County of San Diego, City of San Diego, San Diego County Water Authority, San Diego Sea to Sea Trail Foundation, Sister Schools of San Diego, and Southwestern College. The Steering Committee fosters project-based learning by encouraging knowledge and resource sharing between groups performing watershed-monitoring activities in San Diego.

Sister schools, coordinating with San Diego Baykeeper and the Steering Committee coordinated Coastal Snapshot Monitoring Day (Bi-National Project) on May 17, 2003. This annual event promotes the citizen monitoring of coastal waters from the Oregon/California border to Ensenada, Mexico. Other efforts by the committee and its members include the coordination of the 1st Annual National Monitoring Day (October 2002) and a 2003 Consolidated Grants Program proposal to coordinate, evaluate, improve and expand citizen monitoring programs in the San Diego region (lead: San Diego State University Foundation).

² Refer to the Unified Watershed URMP and Jurisdictional URMP Annual Reports for more information on the Ed-TAC.

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3.3.6.2 The Environmental Trust

The Department of Parks and Recreation MSCP program, through the MSCP Outreach Workgroup, regularly engages in supporting watershed activities in partnership with The Environmental Trust (TET). TET is an organization that exists to protect and preserve the natural resources of southern California by acquiring land, establishing banks and facilitating the monitoring and management of lands identified and set aside by individuals, agencies, and developers for protection. TET assists with citizen monitoring, watershed restoration projects and school pollution prevention education and provides access to preserved land for promotion of environmental stewardship.

3.3.7 Community Events – Focused on Local Water Body

During this reporting period, the Copermittees participated in an important community event. On September 21, 2002, the County of San Diego led the Coastal Cleanup Day at Lake Morena. This one-day event brought together 25 volunteers that participated in cleanup of the area and distribution of educational materials to residential areas. For future events, the Copermittees will provide participants with the regional watershed brochure and a watershed display.

Other community events planned in the near future include large regional venues, such as Earth Day and the San Diego County Fair, community festivals, nature hikes, and hobby and interest specific events. Interacting with the various communities within in the watershed is the first step in forging key relationships with community groups. Building on these relationships, the Copermittees will target increasing stakeholder involvement in the watershed in order to promote watershed stewardship and to protect our water resources. In addition, several community events were led by the City of Imperial Beach. These events are summarized in Table 2-7 below.

Table 2-7: Community Events in Imperial Beach

Date	Event Title	Comments	Duration (Hours)	Specific Audience	Site Name
5/3/03	City garage sale	Encouraged the reuse of articles, reducing solid waste disposal	2 days	General Public	Imperial Beach
5/10/03	Home Front Clean Up	Residents dropped off various material/items including furniture, yard waste, metal, concrete	2 days	General Public	Mar Vista High School
5/25/02	Green Car Wash	IB helped Mar Vista High School Cheerleaders arrange car wash	2 days	General Public	Mar Vista High School

Date	Event Title	Comments	Duration (Hours)	Specific Audience	Site Name
10/26/02	Green Car Wash	I.B. helped Mar Vista High School Senior Class arrange car wash fund raiser	1 day	General Public	Mar Vista High School

3.3.7 Tijuana River Estuary Education Program

In an ongoing attempt to alleviate some of the problems facing the Tijuana River National Estuarine Research Reserve (TRNERR), a program known as the Coastal Training Program or CTP has been launched here at the Reserve. Critical issues confronted by the Reserve include habitat restoration, endangered species management, management of wastewater from Mexico, sediment management, and the integration of recreation, habitat conservation, and restoration. The CTP provides up-to-date scientific information and skill-building opportunities, such as workshops, to coastal-decision makers who are responsible for making decisions that affect coastal resources. The CTP can ensure that coastal decision-makers have the knowledge and tools they need to address critical resource management issues of concern to local communities. These Coastal Training Programs focus on a wide range of issues, and target a wide range of audiences. Programs can be developed in a variety of formats ranging from seminars, hands-on skill training, participatory workshops, lectures, and technology demonstrations. While these programs are an effective way to increase communication and understanding, partnerships are the true key to the success of the program. Our Reserve works with many partners on both sides of the border in determining key coastal resource issues to address and targeting appropriate audiences. In addition to this increase in knowledge, understanding and communication, the TRNERR is also attempting to affect change “on the ground,” through trans-border projects like the Los Laureles Canyon Erosion Control Project and the Matadero Canyon Conservation Park. In addition to these two projects, there is the Tecate River and Watershed Rescue Project and the possibility of the Punta Banda International Research Reserve in Ensenada, Mexico.

About two thirds of the Reserve’s watershed is in Mexico and the management, education, and research issues necessarily involve a bi-national perspective. Critical issues confronted by the Reserve must be looked at through the lens of a bi-national region, with two unique political, cultural, economical and geographical settings. The CTP has been no exception to bi-national cooperation with a highlight being the new inclusion of the Mayors of Tecate and Tijuana to the Management Authority here at the Reserve. Table 2-8 summarizes the watershed education activities conducted by the TRNERR.

Table 2-8: Tijuana Estuary Watershed Education

Name of Program	Number of Programs	Age	Number of Participants	Program Description
Junior Rangers	30	7 to 12	169	Junior Rangers is a hands-on, after-school program designed to teach about various subjects within the watershed. These include estuarine ecology, natural and cultural history, plants and wildlife.
School Programs	54	K to 12	1566	Students who participate in a guided field trip learn about subjects like the functions of wetlands, watershed education, foodwebs, cultural history, and species adaptations and identification.
Speaker Series	8	adult	126	Once a month the Tijuana Estuary offers a free lecture series. Speakers usually include enthusiastic biologists, specialists or researchers who share information on estuary or watershed related topics.
Scouts	4	7 to 18	60	Programs are most often offered to scout groups who are interested in earning a particular badge (i.e.Cub Scout Naturalist Badge) or to fulfill a required project. These badges usually comprise elements of watershed education, including
Teacher Training	3	adult	25	Teachers who want to bring their students for a guided field trips must participate in a teacher workshop or orientation. These trainings include information on wetland ecology, watershed education, natural and cultural history, and program logistics.
YCC/CCC - Youth Conservation Corps & California Conservation Corps	2	15-18	25	YCC & CCC groups participate in various work projects that usually include an education component that focuses on watershed restoration and management.
Tours	5	adult	72	Various organizations and interested groups request tours from estuary staff. They are most often interested in binational watershed issues and management.

Name of Program	Number of Programs	Age	Number of Participants	Program Description
Special Events	7	all	293	Special events are various planned programs throughout the year. They vary from native plant gardening workshops, to coastal cleanup and restoration projects, to family education programs. They almost always include a watershed theme.

4.0 Public Participation Activities

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

The following sections summarize the activities and efforts made by the Copermittees to encourage public participation during this reporting period. *Please note that this section is not exhaustive and only discusses the activities that were identified in the Public Participation section of the Tijuana River Watershed URMP. Many municipalities have worked with stakeholders on efforts such as the planner's reference manual, grant applications and water quality data collection. The Copermittees felt that it was not necessary to reiterate these activities in this chapter, if such public involvement and interaction was already discussed in the proceeding chapters.*

4.1 Stormwater Copermittee Collaboration and Community Workshops

Refer to “Community Events – Focused on Local Water Body” in Subsection 3 (Educational Program) of this report for information on community workshops and watershed events that were conducted in this watershed during the 2002-03 reporting period.

4.2 Integration and Participation in Local Planning Activities

Watershed planning has become an issue of increasing importance over the past few years. Various local planning efforts provide forums for exploring both the development of watershed and jurisdictional activities and programs. The relationship of these efforts to the Watershed URMP development and implementation

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cannot be overstated since both efforts address complementary issues that rely on public participation for success.

The stakeholders within the Tijuana River Watershed are in the process of developing a watershed management plan that will target various watershed issues, including water quality. As part of plan development, stakeholders within the watershed are attending regular meetings and providing valuable input on plan direction. For more information on this effort, please refer to “Watershed Management Plans” in Subsection 2 (Land Use Planning Activities) of this document for more information.

4.3 Project Clean Water – Tijuana River Watershed Website

During this reporting period, Project Clean Water provided a venue for public participation and involvement in local watershed activities. The relationship of these efforts to Watershed URMP development and implementation cannot be overstated since they address complementary objectives and all rely on public participation for success.

The Project Clean Water watershed website (http://www.projectcleanwater.org/html/ws_map.html) was revised in March 2002 to provide watershed-based resources. The Watershed Map page is the starting point of the watershed website. Visitors wishing to learn more about a particular watershed can simply “click” on a desired watershed in the Watershed Map. Once selected, the visitor is linked to the watershed’s summary page and provided with additional link options. The summary page and additional link options are summarized below.

✓ Tijuana River Watershed Summary Page

The Tijuana River Watershed Summary Page provides general information about the watershed including hydrologic units, major water bodies, 303(d) listed water bodies, major impacts resulting from high pollutant loads and possible sources of pollution. Also included in this page is a narrative that summarizes the unique features found within the watershed (habitat, landmarks, land use types, etc.), the municipalities with land use authority and a reference map. In some cases, the watershed boundary encompasses areas that are outside of the boundaries of the Municipal Permit (such as Mexico). In these cases, only the areas within the limits of the Municipal Permit are shown in detail.

✓ Tijuana River Watershed Plan Page

From the watershed summary page, visitors can access the Tijuana River Watershed Plan Page. The plan page identifies the various known planning and management activities (both private and public) that are currently underway within the watershed (e.g. Watershed URMP, watershed management plans, etc.). Individuals interested in a particular plan can read the summary narrative that is provided or download the entire document (.PDF file). Where possible, this page also provides links to external websites for various projects and plans.

✓ Tijuana River Watershed Project Page

From the watershed summary page, visitors can also link to the Tijuana River Watershed Project Page. This page identifies the known public and private projects currently underway within the watershed. The list can be very extensive and is comprised of the following project categories: monitoring efforts, education and outreach activities, conservation projects and special studies. Individuals interested in a particular project can link directly to the organizations website to get more information on the activity.

✓ Tijuana River Watershed Activities Page

Lastly, from the summary page, visitors can access the Watershed Activities Page for this watershed. The activities page lists the known stakeholder groups (Non-Governmental Organizations (NGOs), Non-Profit Organizations (NPOs), other environmental organizations, government, etc.) who are involved with activities aimed at preserving and protecting the watershed. The list identifies the group name or activity, the point of contact and a contact number. The page also provides links to these activities or groups, when available.

During the past reporting period, Project Clean Water had over 2,000 visitors per month with many downloading the Watershed URMP document. Close to 15 percent of the visitors linked to the watershed page to learn more about what was going on in the watersheds in San Diego County. During FY 02-03, the Tijuana River watershed web page received a total of 2,269 hits. A monthly breakdown of the hits can be found in Table 2-9 below.

Table 2-9: Number of 'Hits' on the PCW Tijuana River Watershed Web Site

<u>July '02</u>	<u>August '02</u>	<u>September '02</u>	<u>October '02</u>	<u>November '02</u>	<u>December '02</u>
101	86	94	184	201	269
<u>January '03</u>	<u>February '03</u>	<u>March '03</u>	<u>April '03</u>	<u>May '03</u>	<u>June '03</u>
237	207	213	273	239	165

4.4 Stakeholder Workgroups

4.4.1 Clean Water Task Force

The Clean Water Task Force met four times during the 2003 fiscal year, and sought public comment on all agenda items, in addition to reserving time for public comment on non-agenda items at each of these meetings (a list of the agendas for these meetings are attached). Some of the significant items discussed included:

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- Storm Water Pollution Prevention Program yearly update
- Urban Runoff Management Program Funding Options
- City of San Diego’s program to clean entire sewer system within two years
- Mission Bay Urban Runoff-Related Projects Update
- Sewer Spills Reduction Information for 2002
- Storm Water Education Activities (including Project SWELL, [Stewardship: Water Education for Lifelong Leadership])
- Chollas Creek Restoration and Water Quality Enhancement Project Grant
- Model SUSMP requirements and the City’s Storm Water Standards Manual
- City of San Diego Volunteer Canyon Watchers Program
- Watershed Urban Runoff Management Plans (WURMPS)
- Dog Beach Pollution Status Report
- City of San Diego Low Flow Diversion Program

4.5 Direct Interaction

In addition to the discretionary review process that was detailed in Subsection 2.0 – Land Use Planning, the Copermittees continued to rely heavily on the interaction of staff with members of the public during their regular job duties. As described further in the Jurisdictional URMPs, municipal staff with program implementation responsibilities received targeted training to increase their understanding of urban runoff issues. Staff interaction with the general public provides an additional avenue for obtaining a direct feedback from the public. Feedback and interaction were conducted during the discretionary permit review process, building permitting process, building inspections and public presentations and outreach campaigns.

4.6 Imperial Beach City Council Hearings

Pursuant to Section 7.b.4 of the Tijuana River Watershed URMP, the Imperial Beach City Council hearings provide a powerful venue to maximize the public’s exposure to the watershed program and the challenges and solutions to the noted water quality problems. Through this process, the Copermittees ensure that the community is educated through, and participates in, the decision making process.

The Imperial Beach City Council, through an advertised public hearing, approved the Tijuana River Watershed URMP on December 12, 2002. On December 17, 2003, the City Council, again through an advertised public hearing, approved the 2002-03 Tijuana River Watershed URMP Annual Report.

SECTION III – WATER QUALITY ASSESSMENT

This Tijuana River Annual Report marks the conclusion of the Copermittees first reporting period (July 2002 to June 2003) under the Municipal Permit. As stated in the preceding chapters, the Copermittees implemented a number of new and expanded programs. An important aspect of these programs is ensuring the implementation of water quality assessment strategies that result in usable data that can be analyzed by the Copermittees in a logical pattern, rather than simply obtaining data for the sake of having the information.

This section provides an assessment and analysis of the data obtained by the Copermittees as part of their respective regional and local water quality assessment strategies, as outlined in the Watershed URMP prepared for the Watershed, during the period of July 2002 and June 2003. In addition, this section identifies implementation strategies used by the Copermittees and discusses changes that have occurred in the program over the course of this first year of implementation. It should be noted that although some of these programs have been ongoing, implementation of the complete program is progressive.

1.0 Assessment Program Implementation

The assessment program was limited by the short period during which the new standards of the Municipal Permit have been in effect. Since the Municipal Permit provided a 365-day period for the development and implementation of most programs, many were not fully in place for the majority of this reporting period. Furthermore, the programs that were in place before the Municipal Permit was issued were not tracked since there was no prior need. Because the data identified for each component reflects the result of the program's first year implementation (in most cases, reflects only five months of implementation between February 2003 and June 2003), the complete assessment program has not been implemented at this time.

Due to timing of monitoring activities, and the cost associated with the monitoring activities, the implementation of the water quality monitoring data program is occurring in logical phases. In most of the watersheds, the initial phase, which formed the Core Monitoring Program during the 2001-2002 monitoring year, included the following activities:

- Mass Loading Station Monitoring;
- Urban Stream Bioassessment; and,
- Coastal Storm Drain Monitoring

During the initial phase, the Ambient Bay, Lagoon, and Coastal Receiving Water Monitoring program was in development. Further, the data from dry weather monitoring activities were not complete. During the assessment year covered by this report, data obtained from these two programs were incorporated into the complete assessment program.

During the final phase of the implementation of the assessment program, which will occur during the last year of the permit (assessment year 2004-2005), the watershed programs have the goal of incorporating data obtained from citizen monitoring group efforts in the individual watersheds, such as the San Diego

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Stream Team (in the San Diego River Watershed) and the Home2Ocean Citizen’s Monitoring Group (in the Santa Margarita Watershed).

The Copermittees believe that phased implementation of these portions of the assessment program is the most efficient and economical strategy for coming to terms with the data needs in the watershed. Further, this phased implementation allows for refinement and development of consistency in data collection and management by the individual jurisdictions, without placing an undue financial strain on the smaller jurisdictions, while still achieving the purposes and goals of the assessment program outlined in the individual Watershed URMPs.

2.0 Watershed Data

Objective #1 of the Tijuana River Watershed URMP is to “develop/expand methods to improve water quality within the watershed.” As discussed above, the Copermittees have begun to expand monitoring activities in an effort to ensure that all feasible data sources are included in the assessment program, while allowing for refinement and consistency in data collection and management. The following is a discussion of the data collected during the most reporting period.

2.1 Background

2.1.1 Definitions

To aid in a uniform assessment of watershed management areas, the Copermittees have worked together to define the following terms.

- ✓ Constituent of Concern (COC) is an analyte or parameter being measured in the monitoring program that has exceeded a water quality objective or other action level. Action levels do not necessarily have to be established compliance levels or standards, but may include trigger levels set periodically by the Copermittees for program management. An example is the dry weather program action levels established in 2003 (described below).
- ✓ Frequency of Occurrence of each COC has been defined as high, medium, or low using interim criteria defined by the Copermittees. Determining the frequency of occurrence of a COC was developed as a management tool in 2003 that is subject to improvements or modifications as more data and information is generated by the monitoring program. The interim criteria was established to consider or “flag” COCs that need to be watched and evaluated based on other available information to determine if they are or have a potential to become water quality issues. Watershed Copermittees should evaluate prioritized constituents of concern together with other available data from the watershed (special studies, etc.) to determine if the COC(s) are providing an indication of a water quality problem.

- ✓ Water Quality Issues are determined through the assessment of water quality of receiving waters in the watershed based upon existing water quality data. The identification of water quality issues is accomplished through applying the interim criteria developed by the Copermittees, which defines the issues as having a high, medium or low frequency of occurrence. In some cases confirmation of water quality issues will require that additional data be collected or assessed to understand the extent. Adequate information to assess if a water quality problem exists may not be available through the existing monitoring program and a special study(s) may be required to answer questions relating to sources of the COC(s).

2.1.2 General Approach

To identify constituents of concern by watershed, additional steps were taken to assess analytical data for the 2002-03 report. These steps included the addition of dry weather monitoring and coastal outfall monitoring information to the assessment of mass loading station information. The goal of this expanded evaluation of data was to assist with watershed urban runoff planning and management. From the annual data assessment the frequency of COC(s) were evaluated for each watershed and potential water quality issues were determined. Identifying water quality issues takes into account the COCs and other factors in the watershed, such as 303(d) listings, beneficial uses, existing projects and studies, and supplemental information. Water quality issues are prioritized to assist in short and long term planning efforts, and to develop activities directed at maintaining or improving water quality.

To develop and rank activities that will improve water quality, the Copermittees will discuss the COCs and identify the existing needs, actions, and schedules. Appropriate actions to reduce or investigate the COCs further, will be developed through the collaborative process led by the watershed management area lead permittee.

The Copermittees revised the Dry Weather and Coastal Storm Drain Outfall Monitoring Program for their jurisdictions as required in the Municipal Permit. The Dry Weather Monitoring Program was initiated as of May 1, 2002, and the Coastal Storm Drain Monitoring Program started in November 2001. The data collected by the Copermittees has been merged into one single database for assessment and evaluation with the wet weather data collected at 10 mass loading stations (MLS) located in nine watersheds in the County. An assessment of water quality conditions for each watershed management area (WMA) is based on this information. The watershed monitoring analysis provided in this section uses data compiled for:

- Dry weather stations from May 1, 2002 – September 30, 2002
- Mass loading stations (wet weather) from October 1, 2002 – March 31, 2003
- Chemistry data
- Toxicity data (including a toxicity identification evaluation (TIE))
- Rapid stream bioassessment (benthic data)

A complete report and detailed discussion of the data collected as part of the regional monitoring program is provided in the San Diego County Municipal Copermittees 2002-2003 Urban Runoff Monitoring Report (Monitoring Report). Sections 3, 4, 5 and 6 of that report cover Stormwater Monitoring Methods and

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Results, Rapid Stream Bioassessment, Ambient Bay and Lagoon Monitoring, and Regional Watershed Assessments, respectively. This Watershed URMP Annual Report includes summarized information available in the 2002-2003 Monitoring Report.

2.2 Water Quality Objectives and Action Levels

Water quality objectives are utilized in the Copermittee program as benchmarks for comparison to monitoring results and do not necessarily reflect regulatory compliance for municipal stormwater discharges. Mass Loading Station wet weather results are compared to water quality objectives found in one of the following:

- San Diego Basin Plan (September 8, 1994)
- 40 CFR 131
- USEPA Multi-Sector General Permit (65FR 64746, October 30, 2002)
- California Department of Fish and Game

The water quality objectives utilized are the same across all watersheds in San Diego County except for total dissolved solids and fecal coliform. Total dissolved solids objectives were applied by hydrologic area or hydrologic sub-area (1994 Basin Plan, Table 3-2). Fecal coliform REC-2 standards were applied at Chollas Creek and Tijuana River while REC-1 was used for all other watersheds.

The 2002 dry weather action levels were modified slightly in order to allow for comparison with exceedances in the MLS. For bacterial indicators the levels established for the 2003 season were applied and for turbidity Best Professional Judgment (BPJ) was replaced with the Basin Plan water quality objective of 20 NTU. See Table 3-1 for a summary of the dry weather action levels used to perform the data analysis.

Table 3-1: Dry Weather Action Levels for 2002.

Analyte	Action Level	Note
pH	<6.5 or >9.0	
Orthophosphate-P	2.0 mg/L	
Nitrate-N	10.0 mg/L	
Ammonia-N	1.0 mg/L	
Turbidity	20 NTU	Used Basin Plan WQO instead of BPJ when comparing with MLS data
Conductivity	5,000 umhos/cm	
MBAS	1.0 mg/L	
Oil and grease	15 mg/L	
Diazinon	0.5 ug/L	
Chlorpyrifos	0.5 ug/L	
Dissolved Cadmium	CTR	

Analyte	Action Level	Note
Dissolved Copper	CTR	Used CTR table, 1-hour criteria. Action level is based on hardness. Where hardness data were not available, the average value for the watershed was substituted.
Dissolved Lead	CTR	
Dissolved Zinc	CTR	
Total Coliform	50,000 MPN/100 mL	Used 2003 Action Levels
Fecal Coliform	20,000 MPN/100 mL	
<i>Enterococcus</i>	10,000 MPN/100 mL	

2.3 Data Analysis Methods and Assumptions

Dry weather data for the Tijuana River watershed were obtained directly from the City of San Diego, the City of Imperial Beach and via consultants working for the Copermittees. The data were provided in the established dry weather format; however some of the data were reported with differing units. For example, some Copermittees reported results for dissolved metals in µg/L rather than in mg/L, conductivity was reported in umhos and mhos, temperature in both Celsius and Fahrenheit, estimated flow in gpm, cfs and descriptive text. All data were converted to consistent units prior to analysis.

2.3.1 Dry Weather

The Dry Weather Monitoring workgroup established minimum detection limits for dry weather monitoring performed by the Copermittees for use in the 2003 monitoring program. The data evaluated in this report were collected prior to the establishment of these common limits and the detection limits vary widely for many of the measured analytes. This variation is a limiting factor for some of the analyses that compare results across jurisdictional lines.

For purposes of comparison, the wet weather water quality objective for turbidity of 20 NTU was used for dry weather stations as well (the designated action level for dry weather turbidity is “best professional judgment”).

The original database(s) entries for land use included all possible combinations. Simplifications of the land use categories were needed to identify the most prevalent constituents of concern (COC). The number of land use combinations went from over 30 to 19. This allowed for the most prevalent COC to be identified in 10 land use types.

The type of MS4 conveyance system listed at each sampling site was also simplified and combined where appropriate to identify the most prevalent COC within each type. Some conveyance types were combined to increase the number in the group, for example, three natural drains were combined with one natural culvert and seven natural outfalls into one category.

To highlight the COC in each watershed (or jurisdiction) the number of exceedances was calculated as a ratio. The calculation of the ratio is the measured value to the action level for analytical results above the

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appropriate action levels. These ratios (<2, 2, 3, 4....9, 10, >10) are used to accentuate the magnitude of the results. The results of this assessment were mapped by parameter and magnitude of the ratio to look for patterns in each watershed. The number of observations above the action level was also tabulated for comparison to exceedances at the mass loading stations and at the coastal outfall stations (for bacteria only). This map for the Tijuana watershed is found in Figure 3-1.

Cluster analyses could not be performed, except for Mission Bay, mainly because of the detection limit issues. For the purposes of conducting cluster analyses detection limits had to be set at the same value. The assignment of detection limits is what precludes this analysis from providing quantitative information. If all detection limits had been reported consistently throughout the watershed, a more complete analysis would have been possible. Diazinon and chlorpyrifos measures with high detection limits (3, 6, and 10 µg/L) were set to 0.5 µg/L. Metals with high detection limits (0.1 mg/L) were set to the mean of the remaining observations in the watershed. Nevertheless, clustering just on the basis of the high detection limit could not be avoided. Stations with less than five parameters measured were eliminated from the analysis as were parameters that were measured at less than 75% of the stations to avoid clustering on missing data. Even with these adjustments, cluster analyses on watersheds with differing detection limits were invalid because clustering was driven by detection limit differences and real patterns were not discernable. It is anticipated that this tool will be appropriate for all watersheds for the 2003 dry weather data when common detection limits are used. In future years, cluster analyses should provide more meaningful results as Copermittees utilize standardized reporting limits for each COC.

2.3.2 *Mass Loading Stations*

2.3.2.1 Yearly Chemistry Assessment

To identify COCs, the data collected for each storm were compared to the water quality objectives at each MLS as set forth in the Basin Plan and other regulations or requirements. Analytical results or measurements that exceeded the water quality objective were highlighted in bold/red type and shaded in each watershed mass loading station data table.

2.3.2.2 Trend Assessment

Trend analyses of the long-term data sets were intended to track increasing and decreasing trends through time. At this time, the Tijuana River watershed management area does not have enough long-term MLS data to conduct trend analyses.

2.3.2.3 Interim watershed COC assessment

The COCs identified in the Watershed URMPs and in this year's water quality assessment were compared. Because a uniform set of criteria was not applied in 2001-02 in the region, the methods used to determine COCs in 2001-02 varied from watershed to watershed. The COCs in 2002-03 have been determined using the interim criteria described in Table 3-2. The interim COC criteria are anticipated to evolve as the program matures and the data set expands. The interim criteria takes into account the exceedances at the

MLS and dry weather stations and classifies each COC as high, medium or low frequency of occurrence in the watershed. Bacteria data collected from the Coastal Outfall Program that exceed AB411 criteria are also considered in Table 3-2.

The DWS data is given less weight in the determination of watershed COCs due to factors that include:

1. The dry weather monitoring program's main focus is to identify illicit connections and illegal discharges (ICID). Sample stations often represent worst case scenarios and may not be representative of overall urban runoff quality.
2. Dry weather monitoring parameters are a subset of MLS monitoring parameters.
3. Dry weather stations may be located in the MS4 upstream of BMPs (detention basins, etc.) and samples may not be representative of urban runoff entering the receiving water.

Dry weather stations that only have field test results using field test kits were not used in the assessment of COCs. Field test kit results were only used for dry weather stations where laboratory analyses from grab samples were collected. Both field test results and laboratory results at these dry weather stations were compared with MLS exceedances of water quality objectives. And, only dry weather stations (DWS) located upstream of the MLS were taken into account when applying the interim COC criteria. Lastly, only DWS samples collected during routine monitoring and not as part of the illicit connection and discharge investigation phase of the program were used. The distinction between routine site visits and ICID investigations may not have been made in the 2002 dry weather database; therefore, minor deviations in the type of sampling data set used may have occurred.

Table 3-2: Interim criteria for evaluating Mass Loading and Dry Weather Station Data

COC Frequency of Occurrence	Criterion No.	Definition
High ◆◆◆	1	Mass loading station tests results exceed WQO in greater or equal to 80% of samples.
	2	Six of the last consecutive storm samples at the MLS exceed WQO.
	3	Less than 80% and greater than or equal to 50% of the MLS samples exceed WQO <u>and</u> at least one DWS exceedance(s).
	4	Less than 80% and greater than or equal to 50% of the MLS samples exceed WQO <u>and</u> a significant increasing trend is found.
Medium ◆◆	5	Less than 80% and greater than or equal to 50% of the MLS samples exceed WQO <u>and</u> no exceedances or data available for DWS.
	6	Less than 80% and greater than or equal to 50% of the MLS samples exceed WQO <u>and</u> one or more exceedances found in last 2 years of monitoring at the MLS (generally applies to historical datasets).
	7	Greater than 50% of the DWS samples have exceedances.
	8	DWS exceedances in 10 to 50% of the samples.

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COC Frequency of Occurrence	Criterion No.	Definition
Low ◆	9	MLS exceedances found in 25% to less than or equal to 50% of the samples <u>and</u> at least one exceedances found in last 2 years at the MLS (with or without DWS exceedances).
	10	Greater than 50% of the MLS samples have exceedances <u>and</u> no exceedances in the last 2 years at the MLS.
Coastal Program	11	Persistent exceedances add one ◆ to bacteria determination (up to three ◆ maximum).

Note: Best professional judgment applies when unique situations arise (fewer samples at a site; sewage spills) and for toxicity once it is linked to a specific COC

If the number of DWS sampled was small, best professional judgment was used when applying the interim COC criteria. For example, if only three samples were collected and one exceedance was observed, then the 33% exceedance frequency may not be representative of watershed conditions.

Bacteria levels were judged differently in the MLS and DWS. The MLS water quality objective for fecal coliform was derived from the Basin Plan (REC-1 and REC-2) while DWS levels were compared to Copermittee defined action levels (Table 3-1) for all three bacterial indicators (total and fecal coliform, and Enterococcus). In order to compare the two datasets, the DWS levels were applied to the MLS total coliform and Enterococcus data. Otherwise, identification of bacterial indicators as potential COCs in the watershed between these two different data sets was not feasible. The summary of exceedances presented in Table 3-8 for the MLS applied the DWS action levels only for the purpose of applying the interim COC criteria.

Toxicity measurements listed in MLS data table were not considered COCs even if they satisfied the criteria in Table 3-2. Toxicity is a test to determine if an analyte (chemical or other) or group of analytes is present in concentrations capable of causing toxicity in the selected species. Once an analyte(s) is identified as the source of the toxicity through the TIE/TRE steps of the method, then it is possible to define toxicity as having a high frequency of occurrence because it has been positively linked to the actual constituent of concern identified to be causing the toxicity.

The 2002-03 determination of COC frequency of occurrence is presented at the end the watershed management area discussion. The high, medium and low frequency of occurrence was based on the combination of Best Professional Judgment, MLS, DWS, and Coastal Outfall Station data as outlined in Table 3-2.

2.3.2.4 Toxicity Methods

Toxicity testing is an effective tool for assessing the potential impact of complex mixtures of unknown pollutants on aquatic life in receiving water. Rather than performing chemical analysis on a sample for a

host of compounds potentially toxic to aquatic life, this approach utilizes a laboratory test species to provide a direct measure of the toxicity of the sample. Interactions among the complex mixture of chemicals and physical constituents can lead to additive or antagonistic effects, potentially causing an individual compound to become either more or less toxic than it would be were it isolated. While the potential effects of these interactions cannot be derived from simple chemical measurements, they were directly accounted for in toxicity tests. If toxicity is detected, specialized toxicity identification evaluations (TIEs) may be used to help characterize and identify the constituent(s) causing the toxicity. Toxicity testing provides information on both potential short-term or “acute” effects, as well as, longer-term “chronic” effects.

Freshwater species were used to evaluate the potential impacts of stormwater on the list of receiving water bodies including the Tijuana River. It is important to note that ultimately, all of the receiving water bodies for these drainage basins are estuarine/marine (e.g., San Diego Bay, Mission Bay, various coastal lagoons and estuaries such as the Tijuana River Estuary). The use of freshwater species to evaluate the potential impact in such marine/estuarine environments can be problematic. For example, the organic ligands present in an estuarine environment may make contaminants unavailable for uptake (reduce bioavailability) and therefore, reduce toxicity. In addition, marine organisms often have different sensitivities to constituents than freshwater organisms. To better reflect the potential impacts to marine/estuarine receiving waters, other tests (with marine/estuarine species) may be considered to be designed and conducted.

Three species were used in this monitoring program. The Cladoceran, *Ceriodaphnia dubia*, represents the invertebrates that live in the water column and serve as a source of food for larger invertebrates and small fish. This species is known to be sensitive to metals and pesticides in water, as well as other constituents. The freshwater amphipod *Hyalella azteca* is an invertebrate that is associated with the sediment at the bottom of streams and lakes. It again serves as a food source for larger invertebrates as well as fish. This species is generally sensitive to metals and pesticides, as well as nitrogen compounds such as ammonia. The freshwater plant *Selenastrum capricornutum* is a unicellular alga that is present in the water column of lakes and streams. It is at the base of the food chain in freshwater systems. It is sensitive to herbicides and metals, but its growth is also greatly affected by nutrient loads (e.g. nitrates and phosphorus) in a water body. Nutrients tend to stimulate the growth of *S. capricornutum* (causing an algal bloom), and if the nutrient loads are high enough in a water body, they can offset the toxic effect that constituents might otherwise produce.

Toxicity tests were conducted by MEC's laboratory in Carlsbad, California. Samples collected were evaluated in chronic tests with a freshwater cladoceran (*Ceriodaphnia*), acute tests with a freshwater amphipod (*Hyalella*), and chronic tests with freshwater algae (*Selenastrum*).

2.3.2.5 Rapid Stream Bioassessment

For this analysis, stream bioassessment data from historical surveys conducted between 1998 and 2001 by the CDFG and MEC (Ode et al. 2002, MEC 2002), as well as new data from surveys conducted in May and October of 2002 by MEC (MEC unpublished data) were reviewed. In this time span, up to 12 surveys were conducted at a single monitoring reach, allowing for a broad range of biological and physical conditions to

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express variability over time. Bioassessment sampling sites were located throughout each WMA, often ranging from reference conditions in the upper elevation tributaries with little or no urban runoff, to lower elevation watercourses that were sometimes dominated by urban runoff.

This analysis utilizes monitoring reach ratings derived from Index of Biotic Integrity (IBI) calculations. The method for calculating an IBI was developed by the CDFG Aquatic Bioassessment Laboratory (Ode et al. 2002) and is applicable to the San Diego and Orange County coastal region for all seasons and elevations. The quantitative IBI score, which may range from 0 to 70, is categorized into five qualitative ratings. The lower ratings are Very Poor and Poor; Fair is in the middle of the range; Good and Very Good are the highest ratings. These ratings refer specifically to the quality of the benthic macro invertebrate community, which is a reflection of water quality and physical habitat quality combined.

2.3.2.6 Triad Assessment

Results are evaluated by watershed management area using all three elements of the weight-of-evidence or triad approach (stormwater chemistry, stormwater toxicity, and stream benthic community health). Stormwater chemistry is a generic term that includes: general physical measurements (pH and conductivity), bacteriological testing, wet chemistry (ammonia, turbidity, etc.), pesticides, and total and dissolved metals. Stormwater chemistry and stormwater toxicity data provide an indication of both the pollutant load during a storm event and the potential impacts to aquatic organisms during storm events. The stream bioassessment provides a more direct indication of the ecological health of the watershed in terms of insect/benthic community abundance and diversity. In addition, the stream bioassessment procedure provides information about the quality and condition of the physical habitat. The ABLM information provides an additional triad of data (sediment chemistry, sediment toxicity, and marine/estuarine benthic community) that will be used for watershed assessment.

The bioassessment data from October 2002 provides an evaluation of the freshwater creek and river benthic communities prior to the 2002-2003 storm season. This assessment also includes the effects of continual or sporadic dry weather contributions via urban runoff.

Results from stormwater chemistry, stormwater toxicity and relative benthic community health are assessed together using the triad approach to determine when a toxicity identification evaluation (TIE) would be appropriate in a watershed. The general idea in the triad assessment is to look for persistence in the indicators. Persistence in several indicators provides an indication of an ecological concern that triggers the need to conduct a TIE to identify the constituents of concern (COC) in the watershed that might be responsible for stormwater toxicity and/or benthic community degradation. Where long-term datasets are available, all data are evaluated to identify persistent conditions. The majority of the mass loading stations are in their second year of monitoring and only have two years (or six storm events) available for the triad assessment. However, as the program matures, the intent is to assess multiple years of data together to determine persistent problems by watershed areas that may require additional investigations.

The triad approach does not consider fecal coliform and total dissolved solids for the purposes of triggering a decision on a TIE. The bacteria parameters are not considered in the triad because they are not believed

to influence toxicity responses in bioassay test organisms. Further, the water quality objectives exceeded by bacterial indicators are the human health objectives for water contact recreation or non-water contact recreation, REC-1 and REC-2 (for non-coastal recreational waters where AB 411 standards are used). Total dissolved solids are not considered since the water quality objectives for this COC as defined in the Basin Plan are set for municipal drinking water and do not necessarily reflect impacts to the ecology of the watersheds.

The data from the three elements of monitoring (chemistry, toxicity, and benthic community assemblage) were assessed using the triad decision matrix (Tables 3-3, 3-4, and 3-5). This triad decision matrix was developed by MEC and the Copermittee monitoring workgroup. This approach was presented to the RWQCB staff and approved as an appropriate approach for evaluating the health of watersheds and identifying possible actions to be taken. Minor modifications to the triad decision matrix have been incorporated for this year's assessment.

Table 3-3: Tabular decision matrix benthic assemblage data only.

Chemistry	Toxicity	Benthic Alteration	Possible Conclusion(s)	Possible Actions or Decisions
Not Available	Not Available	Indications of alteration	Inconclusive evidence for alteration as a result of toxic contamination	Insure that benthic alteration is not due to physical factors Collect site specific water and sediment to evaluate chemistry and toxicity. Move to Table 3 for triad evaluation

Table 3-4: Tabular decision matrix chemical and toxicity data only.

Chemistry	Toxicity	Benthic Alteration	Possible Conclusion(s)	Possible Actions or Decisions
Persistent exceedances of water quality objective(s)	Evidence of toxicity	Not Available	Toxic contaminants are bioavailable, but in situ effects are not demonstrated	Continue to monitor using triad approach and determine if toxicity and chemical effects are persistent Perform TIE if chemical and toxicity data demonstrate persistent degradation Collect benthic data at a station that is as close as possible to the MLS station
No persistent exceedances of water quality objectives	Evidence of toxicity	Not available	Unmeasured toxic contaminants are causing contamination	Collect benthic data at a station that is as close as possible to the MLS station If benthic data suggest a degraded assemblage, assure that it is not due to physical factors Consider additional advanced chemical analyses to identify potential contaminants of concern.

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Chemistry	Toxicity	Benthic Alteration	Possible Conclusion(s)	Possible Actions or Decisions
				Move to Table 3 for triad evaluation
Persistent exceedances of water quality objective(s)	No persistent evidence of toxicity	Not Available	Contaminants do not appear to be bioavailable	TIE would not provide useful information if there is no evidence of toxicity Continue monitoring and attempt to identify source(s) of chemical(s) exceeding water quality objectives
No persistent exceedances of water quality objectives	No persistent evidence of toxicity	Not Available	No evidence of pollution-induced degradation.	No action necessary

Table 3-5: Tabular decision matrix – chemical, toxicity, and benthic assemblage data available.

Chemistry	Toxicity	Benthic Alteration	Possible Conclusion(s)	Possible Actions or Decisions
Persistent exceedances of water quality objective(s)	Evidence of toxicity	Indications of alteration	Strong evidence for pollution-induced degradation	Utilize TIE to identify contaminants of concern if evidence of toxicity is persistent
No persistent exceedances of water quality objectives	No persistent evidence of toxicity	No indications of alteration	No evidence of pollution-induced degradation.	No action necessary
Persistent exceedances of water quality objective(s)	No persistent evidence of toxicity	No indications of alteration	Contaminants are not bioavailable	TIE would not provide useful information if there is no evidence of toxicity Continue monitoring and attempt to identify source(s) of chemical(s) exceeding water quality objectives
No persistent exceedances of water quality objectives	Evidence of toxicity	No indications of alteration	Unmeasured contaminant(s) or conditions have the potential to cause degradation	Recheck chemical analyses; verify toxicity test results Consider additional advanced chemical analyses Utilize TIE to identify contaminants of concern if evidence of toxicity is persistent

Chemistry	Toxicity	Benthic Alteration	Possible Conclusion(s)	Possible Actions or Decisions
No persistent exceedances of water quality objectives	No persistent evidence of toxicity	Indications of alteration	Alteration is probably not due to toxic contamination	No action is necessary due to toxic chemicals (action may be necessary for other reasons, e.g. physical habitat changes)
Persistent exceedances of water quality objective(s)	Evidence of toxicity	No indications of alteration	Toxic contaminants are bioavailable, but in situ effect are not demonstrable	Determine if chemical and toxicity tests indicate persistent degradation Recheck results from benthic analyses, consider additional data analyses If recheck indicates benthic alteration, perform TIE to identify contaminant(s) of concern If recheck shows no effect, utilize TIE to identify contaminants of concern if evidence of toxicity is persistent
No persistent exceedances of water quality objectives	Evidence of toxicity	Indications of alteration	Unmeasured toxic contaminants are causing degradation	Determine if toxicity is persistent Recheck chemical analyses and consider additional advanced chemical analyses Utilize TIE to identify contaminants of concern if evidence of toxicity is persistent
Persistent exceedances of water quality objective(s)	No persistent evidence of toxicity	Indications of alteration	Inconclusive	TIE would not provide useful information if there is no evidence of toxicity Continue monitoring and attempt to identify source(s) of chemical(s) exceeding water quality objectives

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Table 3-6: Constituents of concern measured in the Tijuana River MLS.

ANALYTE	UNITS	WQO	SOURCE	2001-02			2002-03		
				01/29/2002	02/17/2002	03/17/2002	11/08/2002	2/11/2003	2/25/2003
General / Physical / Organic									
Electrical Conductivity	umhos/cm			1610	2300	2490	1664	1830	2890
Oil And Grease	mg/L	15	USEPA Multi-Sector General Permit	4	2	1	3.93	1.23	8.56
pH	pH Units	6.5-8.5	Basin Plan	7.4	8.1	7.6	7.30	8.51	7.32
Bacteriological									
Enterococci	MPN/100 mL			170,000	500,000	17,000	2,400,000	50,000	30,000
Fecal Coliform	MPN/100 mL	4000	Basin Plan	800,000 ^c	300,000 ^c	300,000 ^c	5,000,000	500,000	16,000,000
Total Coliform	MPN/100 mL			1,700,000	800,000	1,100,000	16,000,000	1,300,000	16,000,000
Wet Chemistry									
Ammonia As N	mg/L	0.025 (a)	Basin Plan	8	7.2	6.4	5.22	8.00	10.40
Un-ionized Ammonia as N	µg/L	25 (a)	Basin Plan				39.2	636	63.0
BOD	mg/L	30	USEPA Multi-Sector General Permit	27.3	46.2	33.3	3.56	86.40	23.20
Chemical Oxygen Demand	mg/L	120	USEPA Multi-Sector General Permit	95	263	122	152	257	113
Dissolved Organic Carbon	mg/L						30.60	35.70	23.40
Dissolved Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	2.2	2.9	2.28	1.75	1.90	0.93
Nitrate As N	mg/L	10	Basin Plan	1.6	0.8	1.1	3.12	0.72	0.44
Nitrite As N	mg/L	1	Basin Plan	0.34	1.44	0.6	0.98	0.37	0.13
Surfactants (MBAS)	mg/L	0.5	Basin Plan	<0.5	3.3	0.7	0.3	2.0	<0.1
Total Dissolved Solids	mg/L		Basin Plan by watershed	737	1080	965	885	883	794
Total Kjeldahl Nitrogen	mg/L			10.3	12	16.8	9.5	13.6	22.0
Total Organic Carbon	mg/L						47.50	51.00	18.60
Total Phosphorus	mg/L	2	USEPA Multi-Sector General Permit	3.2	4.7	2.52	2.37	2.04	2.38
Total Suspended Solids	mg/L	100	USEPA Multi-Sector General Permit	240	48	176	160	97	1070
Turbidity	NTU	20	Basin Plan	48.4	19.9	54.7	141	72.8	1000
Pesticides									
Chlorpyrifos	µg/L	0.02	CA Dept. of Fish & Game	0.06	0.08	0.09	0.168	<0.03*	<0.03*
Diazinon	µg/L	0.08	CA Dept. of Fish & Game	0.74	0.53	0.57	0.372	0.506	0.339
Malathion	µg/L	0.43	CA Dept. of Fish & Game				1.00	0.88	0.27
Hardness									
Total Hardness	mg CaCO ₃ /L			970	352	286	279	334	395
Total Metals									
Antimony	mg/L	0.006	Basin Plan	0.003	0.003	0.003	<0.002	0.002	0.003
Arsenic	mg/L	0.34/0.05	40 CFR 131/ Basin Plan	0.007	0.008	0.006	0.005	0.008	0.018
Cadmium	mg/L	0.0046	40 CFR 131	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	0.016	CTR (Cr VI)	0.020	0.013	0.006	<0.005	0.006	0.049
Copper	mg/L	0.0135	40 CFR 131	0.028	0.013	0.016	0.008	0.021	0.053
Lead	mg/L	0.082	40 CFR 131	0.025	0.005	0.009	0.004	0.011	0.045
Nickel	mg/L	0.47/0.1	40 CFR 131/ Basin Plan	0.044	0.033	0.028	0.003	0.021	0.040
Selenium	mg/L	0.02	40 CFR 131	<0.002	0.008	<0.002	<0.004	<0.004	<0.004
Zinc	mg/L	0.122	40 CFR 131	0.120	0.041	0.062	<0.02	0.077	0.269

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Dissolved Metals									
Antimony	mg/L	(e)	40 CFR 131	<0.002	<0.002	0.002	0.004	0.003	0.004
Arsenic	mg/L	0.34 (c)	40 CFR 131	0.005	0.004	0.005	0.010	0.008	0.005
Cadmium	mg/L	(b)	40 CFR 131	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	mg/L	(b)	40 CFR 131	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	mg/L	(b)	40 CFR 131	0.008	<0.005	<0.005	0.011	0.060	0.013
Lead	mg/L	(b)	40 CFR 131	<0.002	0.002	<0.002	0.003	<0.002	<0.002
Nickel	mg/L	(b)	40 CFR 131	0.033	0.028	0.024	0.018	0.017	0.013
Selenium	mg/L	0.2 (d)	40 CFR 131	<0.002	<0.002	<0.002	<0.004	<0.004	<0.004
Zinc	mg/L	(b)	40 CFR 131	<0.020	0.026	0.057	0.062	0.130	0.046
Toxicity									
<i>Ceriodaphnia</i> 96-hr	LC ₅₀ (%)	100		36.11	17.36	32.99	19.5	10.15	32.98
<i>Ceriodaphnia</i> 7-day survival	NOEC (%)	100		12.5	12.5	12.5	12.5	6.25	12.5
<i>Ceriodaphnia</i> 7-day reproduction	NOEC (%)	100		6.25	12.5	6.25	12.5	6.25	12.5
<i>Hyalella</i> 96-hr	NOEC (%)	100		100	100	100	100	100	50
<i>Selenastrum</i> 96-hr	NOEC (%)	100		100	100	100	100	100	100

Blank spaces have been verified and no data is available due to changes in the monitoring program.

(a) Un-ionized Ammonia is a calculated valued, non-detectable values calculated at the detection limit. Basin Plan WQO is 0.025 mg/L; values shown here have been converted to µg/L.

(b) Water Quality Objective for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.

(c) Water Quality Objectives for dissolved metal fractions are based on water effects ratios (WER) and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.

(d) Water Quality Objective is based on the total recoverable form as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.

(e) USEPA has not published an aquatic life criterion value.

Shaded text – exceeds water quality objective.

* Indicates detection limit exceeds water quality objective.

^a Exceeds the acute aquatic life criterion.

^b Exceeds the chronic aquatic life criterion.

Sources

USEPA National Pollutant Discharge Elimination System (NPDES) Storm Water Multi-Sector General Permit for Industrial Activities, 65 Federal Register (FR) 64746, Final Reissuance, October 30, 2000.

Siepmann and Finlayson 2000.

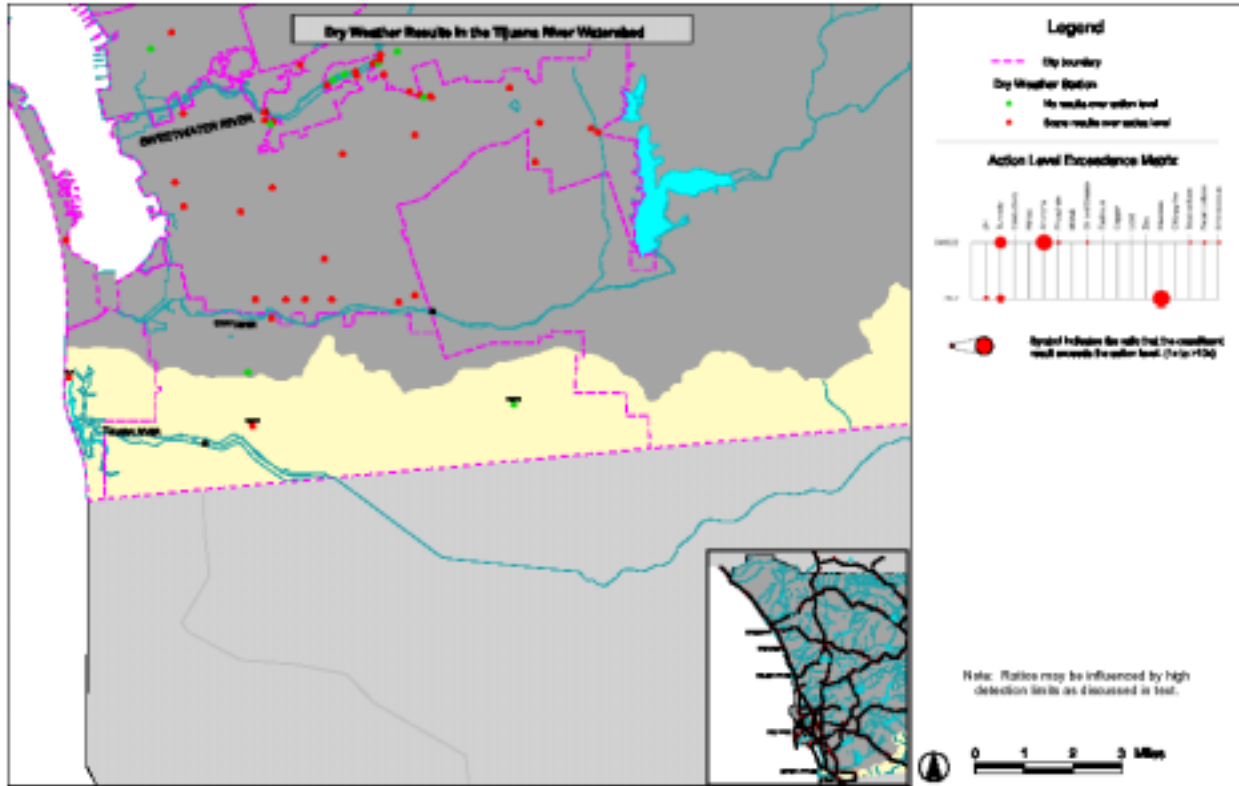
Basin Plan, September 8, 1994.

Assembly Bill 411 - Title 17 of the California Code of Regulations, Section 7958.

USEPA Federal Register Document 40 CFR Part 131, May 18, 2000.

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Figure 3-1: Dry Weather Station Exceedance Matrix and Map.



2.4 Tijuana Watershed Data

The Tijuana River watershed management area (WMA) has one mass loading station located on the Tijuana River. Six storm events have been monitored at this location since the monitoring program was initiated. The Tijuana Watershed mass loading station (MLS) is located under the Hollister Street Bridge in San Diego, downstream from the International Boundary and Water Commission's (IBWC) diversion structure and treatment plant. During periods of low flow the river is diverted through the treatment plant. The river flows freely once the water level rises over the diversion structure. The Tijuana River at the sampling site is an unimproved channel. The river flows through Tijuana, Mexico and runoff contributions come from both Mexico and the United States. However, due to the presence of dams and reservoirs in the watershed (Presa Rodriguez in Mexico and Barrett Lake in the U.S.), the source of contributing runoff is limited to the central subwatersheds.

2.4.1 Chemistry

The analytes tested at the MLS were compared to water quality objectives (Table 3-6). At this southern-most watershed several parameters were found to exceed water quality objectives.

One sample out of six (17% of the time) was outside the acceptable range for pH on February 11, 2003. Fecal coliform exceeded the REC-2 (4,000 MPN/100 mL) standard during all six storms (100% of the time) and were the highest concentrations measured of any mass loading station, including 16,000,000 MPN/100 mL on February 25, 2003. BOD exceeded the USEPA Multi-Sector Permit in three out of six (50%) storm events and COD in four out of six (67%).

In 2002-03 the un-ionized ammonia levels were calculated from the results for ammonia as nitrogen, pH, and temperature and compared to the Basin Plan water quality objective (0.025 mg/L or 25 µg/L) to determine exceedances. Un-ionized ammonia was found above the water quality objective in all three storms monitored at the Tijuana River MLS in 2002-03. The un-ionized ammonia levels were not calculated for the 2001-02 storm and exceedances were unknown.

Dissolved phosphorus was exceeded in three out of six (50%) all occurring in 2001-02. Total phosphorus exceeded the USEPA Multi-Sector Permit in all six storm events (100%). Nitrite exceeded in 2001-02 (but not in 2002-03) during one storm (17%). Several analytes were found in both storm seasons, including surfactants (MBAS) which exceeded the objective three times out of the six storms monitored (50%) and total suspended solids exceeded the USEPA Multi-Sector Permit in four storm events (67%). Turbidity exceeded Basin Plan objectives in five storm events out of six (83%) including 1,000 NTU (the highest recorded level) on February 25, 2003.

Pesticides have been measured with lower detection limits for the last two wet weather seasons. Chlorpyrifos exceeded the CDFG objective in four of six storms (67%) with two measurements at less than 0.030 µg/L (the ELISA detection limit) which were above the water quality objective, and actual exceedances unknown. Diazinon was found to exceed the CDFG objective in all six storms (100% of the time). In 2002-03, Malathion was measured for storm water and found to exceed CDFG criterion in two out of three storms (67%).

During two storms, one in each season, total chromium (the sum of particulate and dissolved trivalent and hexavalent chromium) was measured above the water quality objective or 33% of the time. The hexavalent chromium California Toxic Rule objective is set at 0.016 mg/L. The objective was set for hexavalent chromium, the most toxic form of chromium.

Dissolved copper concentrations exceeded water quality criterion in one storm event out of six (17%). Other metals that exceed standards included: total copper in four out of six storms (67%); and for the first time total zinc in one storm (17%) in 2002-03.

2.4.2 Toxicity

Stormwater from Tijuana River was extremely toxic (Table 2-6) to Ceriodaphnia for all three tests conducted (96-hour, 7-day survival, and 7-day reproduction) during all six storm events or 100% of the time.

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A TIE was conducted on all three 2002-03 Tijuana River storm event samples, in an effort to identify the source of toxicity to *Ceriodaphnia dubia*. Results indicated the sources of toxicity to be a non-polar organic compound(s). Subsequent evaluation of the toxic Tijuana River samples, known as Phase II and Phase III analyses, have singled out three compounds which were consistently associated with the toxic fraction of the effluent: Diazinon, methyl dihydrojasmonate, and quinoline and its products. In order to more closely identify the causes of toxicity the Tijuana River stormwater, additional analyses are currently being performed. Included in these analyses are steps to confirm that the aforementioned compounds are capable of causing toxicity to *Ceriodaphnia dubia*, either individually or synergistically. Industrial processing activities are considered the probable origin of both methyl dihydrojasmonate, and quinoline and its products. It is thought that these toxic compounds are a result of cross border effluent entering the United States from industrial activities in Mexico.

2.4.3 *Benthic Community Assessment for the Watershed*

The Tijuana River WMA contains many higher elevation tributaries that were designated Rapid Stream Bioassessment reference sites. The Tijuana watershed bioassessment sites, including Kitchen Creek, Pine Creek, Cottonwood Creek.

2.4.4 *Triad Decision Matrix*

There was evidence of persistent chemical exceedances of water quality objectives. Diazinon and total phosphorus (as phosphate) exceeded water quality objectives for all storms monitored. Chlorpyrifos exceeded objectives most of the time. There was evidence of persistent toxicity to *Ceriodaphnia* linked to three organic compounds in the 2002-03 storms. The only survey available to date for this river showed that the benthic community was severely impacted in the lower watershed area.

In this instance, the triad decision matrix identified the following possible actions or decisions:

- ✓ Persistent water quality exceedances are evident for diazinon, total phosphate and turbidity
- ✓ Persistent evidence of severe toxicity to *Ceriodaphnia* has been documented and linked to specific compounds
- ✓ Benthic community alterations are noted in one survey to date

For the Tijuana River watershed the triad decision matrix excerpt determines the actions or decisions in Table 3-7.

Table 3-7: Decision matrix results for Tijuana River.

Chemistry	Toxicity	Benthic Alteration	Possible Conclusion(s)	Possible Actions or Decisions
Persistent exceedances of water quality objective(s)	Evidence of toxicity	Indications of alteration	Strong evidence for pollution-induced degradation	Utilize TIE to identify contaminants of concern if evidence of toxicity is persistent

The recommendations for the Tijuana River Watershed are:

- ✓ Perform SW-846 Method 8272 screening on MLS samples for the following two compounds (methyl dihydrojasmonate, and quinoline) found during the 2002-03 TIE.
- ✓ Continue bioassessment of benthic communities in the lower watershed.
- ✓ Continue monitoring and attempt to reduce or eliminate the source(s) of diazinon, total phosphate, and turbidity.
- ✓ Consider options to determine proportion of toxic substance entering U.S. through cross boarder effluent.

2.4.5 Dry Weather Data Overview

The Tijuana River WMA dry weather data set was very small with only 3 sampling stations when compared to other watersheds like San Dieguito with 45 or Sweetwater with 69. Additional data from future monitoring years may yield a better understanding of the COC by land use, conveyance type and a better comparison with the MLS data collected to date. Nevertheless, some tentative conclusions can be drawn using the 2002 dry weather data.

Dry weather stations (DWS) within the Tijuana River WMA that had exceedances in common with the MLS were all three bacterial indicators, turbidity, ammonia, and phosphorus (shown in pink in Table 2-8). Oil and grease were exceeded once in a dry weather station and not found at the MLS. Diazinon, total and dissolved copper, chlorpyrifos, pH, dissolved zinc, and surfactants (MBAS) appeared only to be found during wet weather at the MLS (in order of descending prevalence) and not at the DWS.

When the six dry weather stations were taken into account the Tijuana data showed turbidity exceeded the action levels on two occasions. As noted above, the number of samples was not

Table 2-8. Tijuana River exceedance matrix.

	DWS	MLS
pH		1
Turbidity	1	3
Conductivity		
Nitrate		
Ammonia	1	3
Phosphorus	1	3t
MBAS		1
Oil and Grease	1	
Dissolved Cadmium		
Dissolved Copper		1d, 2t
Dissolved Lead		
Dissolved Zinc		1t
Diazinon		3
Chlorpyrifos		1
Total Coliform	1	3
Fecal Coliform	1	3
Enterococcus	1	3
No. of sites/visits	2	3

d = dissolved, t = total

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conducive to conclusions about water quality, especially when it comes to associations with land use or conveyance system type; if any information can be discerned it was limited to mentioning a potential association of turbidity with residential land use. Data collected in future years may clarify the relationship. A map of the dry weather stations and exceedance ratios is found in Figure 3-1.

The cluster analysis for dry weather data could not be performed for the Tijuana River WMA because of the limited number of data points.

2.4.6 Coastal Outfalls

No coastal outfalls are present in the Tijuana River WMA.

2.4.7 Summary of Tijuana Watershed Constituents of Concern

The constituents of concern identified in 2002-03 for the Tijuana River watershed are:

- Bacterial indicators (primarily fecal coliform)
- Pesticides
- Total and dissolved phosphorus
- Turbidity
- Toxicity (Non-polar organic compounds causing toxicity)
- Ammonia

Fecal coliform data satisfies criteria numbers 1 and 2 in Table 2-2 which classifies the COC as having a high frequency of occurrence. Since bacteria levels for total coliform and *Enterococcus* are also notably high during wet weather monitoring, best professional judgment was used to combine the high frequency of occurrence designation to include all bacteria indicators. Diazinon levels satisfy criteria number 1 and 2 making it a COC with high frequency of occurrence in this watershed. The pesticides chlorpyrifos and malathion were found to have a medium frequency of occurrence based on criterion number 5, but using best professional judgment were combined with diazinon in the category of pesticides and categorized as having high frequency of occurrence as a group of COC. Total phosphorus also satisfies criteria numbers 1 and 2 making it a COC with a high frequency of occurrence. Dissolved phosphorus satisfies criterion number 5 making it a medium frequency. Best professional judgment was used in this case to combine total and dissolved phosphorus as having a high frequency of occurrence. Turbidity data fits criterion number 1 from Table 2-2 and yields it has a COC with a high frequency of occurrence in the Tijuana River. Toxicity has been confirmed as a COC and the analytes that may be responsible have been verified; best professional judgment was used to classify toxicity as having a high frequency of occurrence for the watershed. Lastly, ammonia was listed with a high frequency of occurrence by meeting criterion number 3.

Potential constituents of concern include:

- Total suspended solids
- BOD
- COD
- MBAS
- Copper
- Chromium

Medium frequency of occurrence COCs that met criterion number 5 were total suspended solids, BOD, COD, MBAS, and copper. Chromium was the only COC to be designated as low frequency by meeting criterion number 9 in Table 3-2.

The comparison between the designed constituents of concern for 2002 and 2003 is provided in Table 3-9. The high, medium and low designation for 2002 were developed using best professional judgment and the summary presented in the Tijuana River URMP last year. As described above, the COC priorities for 2003 were developed using the interim criteria developed this year as presented in Table 3-2.

Table 3-9: Summary of constituents of concern assessment comparison.

	Bact. Indicators/ Fecal Coliform	Pesticides	TSS	Turbidity	Total phosphorous	Dissolved phosphorous	Toxicity	Copper	Chromium	Ammonia	BOD/COD/MBAS
Tijuana River 2002	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆			◆◆
Tijuana River 2003	◆◆◆	◆◆◆	◆◆	◆◆◆	◆◆◆	◆◆	◆◆◆	◆◆	◆	◆◆◆	◆◆

◆◆◆- Higher frequency of occurrence ◆◆- Medium frequency of occurrence ◆- Lower frequency of occurrence

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3.0 Water Quality Improvements or Degradation

The constituents of concern for the Tijuana watershed identified in 2002-03 were compared to last year's water quality assessment as shown in Table 3-9, the following changes were noted for the Tijuana River MLS in 2002-03 as compared to the previous year's assessment (2001-02).

- ✓ Turbidity, copper, ammonia, and chromium are more apparent as a COC
- ✓ Dissolved phosphorous is less apparent as a COC
- ✓ The remaining COC's were unchanged for Tijuana River WMA in 2002-2003

3.1 Identification of Water Quality Issues – Regulatory Mechanisms

The next review step consists of comparing potential COCs with the regulatory mechanisms for the watershed. The main regulatory tool for the 2002-03 review is the revised 303(d) listings issued in July, 2003 by the San Diego Regional Water Quality Control Board upon approval by EPA. The listings for the Tijuana watershed are summarized in Table 3-10, and a "monitoring" list of potential COCs as defined by the San Diego Regional Water Quality Control Board.

Table 3-10: 303(d) Listed Water Bodies in Tijuana Watershed.

Water Body Name	Hydrologic Sub Area (HSA)	HSA #	Pollutant/Stressor	Year Listed
Pacific Ocean Shoreline	Tijuana (HU)	911.00	Bacterial Indicators	1998
Pine Valley Creek, Upper	Pine	911.41	Enterococci	2002
Tijuana River	San Ysidora	911.11	Bacterial Indicators, Dissolved Oxygen, Eutrophic, Pesticides, Solids, Synthetic Organics, Trace Elements, Trash	1998
Tijuana River Estuary	San Ysidora	911.11	Bacterial Indicators, Dissolved Oxygen, Eutrophic, Lead, Nickel, Pesticides, Thallium, Trash	1998

Source: RWQCB July, 2003

3.2 303(d) List of Water Quality Limited Water Bodies

A review of the 303(d) listed COCs (Table 3-10) for water quality limited water bodies for this watershed finds that the most prevalent and significant are:

- Bacterial indicators
- Dissolved Oxygen
- Eutrophication
- Pesticides
- Trash

3.3 Monitoring List

Lastly, this watershed is on the RWQCB’s “monitoring” list for potential constituents of concern that may further define areas in which to focus future efforts and assessments as data from current monitoring efforts becomes available. The “monitoring” list of constituents of concern, summarized in Table 3-11, is provided to assist Copermittees in long-range planning efforts. These constituents are not considered highly significant in the 2003 water quality assessment.

Table 3-11: Tijuana Watershed “Monitoring” List.

Water Body Name	Hydrologic Sub Area (HSA)	HSA #	Pollutant/Stressor
Cottonwood Creek (lower, middle, upper)	Potrero Barrett Lake Cottonwood	911.2 911.3 911.6	Exotic Vegetation (Tamarisk sp.), Hydromodification (scour from reservoir release), Diazinon, Eutrophic
Scove Creek	Pine	911.41	Bacterial Indicators, Hydromodification (incised channel), Nutrients
Tijuana River Estuary	Tijuana Valley	911.10	Turbidity

Source: RWQCB July, 2003

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3.4 Beneficial Uses Designated for the Watershed

Beneficial use designations describe existing or potential uses of water bodies. Beneficial uses take into consideration the use and value of water for many purposes, including recreation in and on the water, protection and propagation of aquatic life, and public water supplies. It is essential to review the beneficial uses identified within the watershed as part of the water quality assessment effort.

The beneficial uses designated for the entire watershed are summarized in Table 3-12. It should be noted that beneficial uses may be defined more specifically for each water body segment or sub-watershed in the San Diego Basin Plan. The beneficial uses for the watershed can be affected when water quality is limited or altered by a variety of factors.

Table 3-12: Beneficial Uses within the Tijuana Watershed.

Beneficial Uses	Inland Surface Waters	Coastal Waters	Reservoirs and Lakes	Ground Waters
Municipal and Domestic Supply	●		●	●
Agricultural Supply	●		●	●
Industrial Service Supply	●		●	●
Industrial Process Supply	●		●	
Contact Water Recreation	●	●	● ¹	
Non-Contact Water Recreation	●	●	●	
Commercial and Sport Fishing		●		
Fresh Water Replenishment	●		●	
Biological Habitats of Special Significance		●		
Warm Freshwater Habitat	●		●	
Cold Freshwater Habitat	●		●	
Estuarine Habitat		●		
Wildlife Habitat	●	●	●	
Rare, Threatened, or Endangered Species	●	●	●	
Marine Habitat		●		
Migration of Aquatic Organisms		●		
Shellfish Harvesting		●		

● Existing Beneficial Use.

Source: San Diego Basin Plan, 1994.

¹ Shore and boat fishing only. Other REC-1 or Contact Water Recreation uses are prohibited at Morena Reservoir.

3.5 Prioritization of Water Quality Problems Based on Data

The previous section reviews the data considered in this analysis and generally serves to identify potential constituents of concern based on the triad decision matrix (bioassessment and MLS data) as well as current regulatory mechanisms. In this section, constituents of concern are framed in terms of their potential impact on beneficial uses and evaluated to determine short-term and long-term activities that watershed Copermittees will pursue in an effort to improve or sustain water quality and beneficial uses.

It is important to note that beneficial uses provide the context by which water quality issues are assessed. Under this framework, a single COC may lead to the identification of a water quality issue (e.g. limited recreation opportunities due to bacterial levels which exceed standards). The assessment provided here is, in general, related to a beneficial use for which attainment of water quality is the ultimate goal. The long-term objective of all efforts in the watershed is to obtain water quality that supports designated beneficial uses.

Data from the Tijuana watershed MLS for 2002-03 and supplemental data (as detailed in the previous sections) yields the following potential constituents of concern:

- Bacterial indicators (primarily fecal coliform)
- Pesticides
- Total and dissolved phosphorus
- Turbidity
- Toxicity (Non-polar organic compounds causing toxicity)
- Ammonia

Secondary or potential constituents of concern:

- Total suspended solids
- BOD
- COD
- MBAS
- Copper
- Chromium

The regulatory mechanisms yield five potential constituents of concern from the 303(d) List of Water Quality Limited Water Bodies:

- Bacterial indicators
- Dissolved Oxygen
- Eutrophication
- Pesticides
- Trash

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The COCs are evaluated and summarized to yield high priority activities and a list of potential issues to track. The comprehensive analysis that takes into account the priority of the potential constituents of concern with the impact on Beneficial Uses for the watershed indicates that the Tijuana watershed has four potential high and one low priority water quality issue/problems identified in the 2003 Water Quality Assessment process.

- Bacterial Indicators / Ammonia
- Pesticides
- Turbidity, Eutrophication, Dissolved Oxygen, TSS, and Nutrients
- Toxic substances (Trace elements and non-polar compounds)
- Trash



Compared to the 2002 list of high priority water quality issues/problems, this year's assessment yields turbidity and ammonia as new issue to address. Bacterial indicators, pesticides, eutrophication, dissolved oxygen, TSS, nutrients, toxic substances are the same. Watershed Copermittees will track other potential water quality issues that are not high priority (i.e. trash) for 2003 and re-evaluate in 2004. The evaluation of all identified water quality issues or problems for Tijuana River WMA is presented in Table 3-13.

The exact sources of COCs will be identified with greater accuracy over the next few years, pursuant to additional sampling data.

Table 3-13: Potential Water Quality Issues/Problems

POTENTIAL WATER QUALITY ISSUE(S)	CONSTITUENTS OF CONCERN ADRESSED	HIGH PRIORITY?	POTENTIAL SOURCES	COMMENTS / ACTIVITIES
Limited recreation opportunities in inland and coastal waters due to potential for pathogens	Bacterial Indicators: Fecal Coliforms, Total Coliforms, Enterococci, and Ammonia	 Yes	Human sewage from failed septic systems, sewer spills or homeless encampments; wildlife-including birds, dogs, coyotes, raccoons, etc; domestic animals-including livestock and pets	Bacteria has been identified by the Copermittees and the Regional Board as a regional priority. Bacteria is identified as a pollutant in both the existing and proposed 303(d) lists and found in the 2001-02 and 2002-03 wet weather sampling at the MLS as well as in the some of the 2002 DWS. Ammonia was found for the first time in the 2002-03 MLS and DWS. An indicator of possible raw sewage spills from the Mexican side of the border. Activity: Expand and continue water monitoring programs and attempt to reduce or eliminate the source
Limited habitat value of waterbodies	Pesticides: Diazinon, Chlorpyrifos, and <i>Malathion</i>	 Yes	Agricultural, orchards and landscaping operations; pesticide chemicals used residentially, agriculturally, and/or commercially.	Malathion is new to the list for the 2002-03 wet weather sampling at the mass loading station along with Diazinon and chlorpyrifos, which have been previously detected in the watershed. Pesticides are identified as a pollutant in the 303(d) list. Data collected in other watersheds indicates that Copermittees should consider addressing the use of pesticides in the region as an important component of proactive stormwater runoff management activities. Activity: Regional Integrated Pest Management (IPM) campaign.
Limited habitat value of waterbodies	Eutrophication, Dissolved Oxygen, TSS, Nutrients, and Turbidity	 Yes	Agricultural operations, orchards, erosion and sedimentation, construction, sewage discharges	The 303(d) listing includes Tijuana River Estuary for Eutrophication and data collected during 2002-03 wet weather monitoring at the mass loading station collaborates this finding with high levels of nutrients. Eutrophication is detrimental to aquatic habitat due to changes in the levels of oxygen as nutrient levels fluctuate.

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POTENTIAL WATER QUALITY ISSUE(S)	CONSTITUENTS OF CONCERN ADRESSED	HIGH PRIORITY?	POTENTIAL SOURCES	COMMENTS / ACTIVITIES
				<p>Increased turbidity was also observed for the first time in 2002-03. Activity: Expand and continue water monitoring programs and attempt to reduce or eliminate the source.</p>
<p>Limited habitat value of waterbodies</p>	<p>Toxic substances: Trace elements (including: zinc, copper, and chromium) and Synthetic organics</p>	<p> Yes</p>	<p>Automobiles or industrial wastes</p>	<p>Persistent toxicity to <i>Ceriodaphnia dubia</i> was observed during the 2002-03 wet weather monitoring at the mass loading station. A TIE conducted during 2003 has singled out three compounds which were consistently associated with the toxic fraction of the effluent: diazinon, methyl dihydrojasmonate, and quinoline and its products. Additionally, toxic substances, total chromium, total and dissolved copper, and total zinc were found during the 2002-03 wet weather monitoring at the Tijuana River MLS. Activity: Continue water monitoring and perform SW-846 Method 8272 screening on MLS samples for methyl dihydrojasmonate, and quinoline.</p>
<p>Limited recreation opportunities in inland and coastal waters and limit habitat value of waterbodies</p>	<p>Trash</p>	<p> No</p>	<p>Residential and commercial activities, illegal disposal</p>	<p>Trash is not currently identified as a high priority issue, but it can cause storm drain blockages and is unsightly. Activity: Maintenance activities conducted by local agencies as well as ongoing and future education and outreach will assist in addressing the trash issue.</p>

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The Watershed URMP Annual Report marks the conclusion of the Copermittees first reporting period (July 2002 to June 2003) under the Municipal Permit. As stated in the preceding chapters, the Copermittees implemented a number of new and expanded programs. An important aspect of these programs is ensuring their measurability and their nexus to changes in water quality.

Municipal Permit Section J.2.i requires that the Copermittees identify and report on measures to assess the effectiveness of implementation of their Watershed URMP. In particular, the Municipal Permit requires that the Copermittees report on their program effectiveness annually and identify strategies for assessing long-term program effectiveness. These assessments must include the use of direct and indirect measures in tracking long-term changes to improvements in water quality, and address the role of the Watershed URMP in achieving those improvements.

This section provides an initial assessment of the implementation and effectiveness of the Copermittees Watershed URMP for the period of July 2002 and June 2003. However, such an assessment is limited by the short implementation period. Since the Municipal Permit provided a 365-day period for the development and implementation of most programs, many were not fully in place for the majority of this reporting period. Because the data identified for each component reflects the result of the program's first year implementation (in most cases, reflects only five months of implementation between February 2003 and June 2003), final conclusions regarding program effectiveness on the improvement of receiving water quality cannot be made at this time. However, to help direct program improvements for future years, this assessment does report limited findings drawn in part from the quantitative and qualitative data presented.

In addition, this first annual report addresses the reporting requirements listed in Part III of the WURMP, Section 9.d, Data Collection and Reporting Requirements. Specifically, this section of the report discusses:

Are the Copermittees able to implement new methods for working together as a watershed group? Objectives 1 – 4 discussed below demonstrate that Copermittees have successfully collaborated and will continue to work together to improve water quality, increase public awareness, develop inter-jurisdictional agreements and maximize public involvement.

Are the Copermittees able to implement a community outreach program and provide a mechanism for community participation? The discussion below in Objectives 3 and 4 demonstrates that effective community outreach programs and public participation mechanisms have been implemented and continue to evolve.

Are the Copermittees able to determine the effect, if any, of programmatic activities on water quality? Program effectiveness on water quality is discussed in this section of the report. Please note that because the data identified for each objective reflects the result of the program's first year implementation, which in most cases is only five months of implementation between February 2003 and June 2003, concrete conclusions regarding program effectiveness on the improvement of receiving water quality cannot be made at this time. As we learn more about measuring productivity and effectiveness as well as develop

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and implement water quality programs, the Copermittees will be better able to produce more accurate and reliable effectiveness measures.

1.0 Effectiveness in Program Implementation

In order for a plan to be successful, clear goals and objectives must first be established, agreed to and implemented by the stakeholders. Otherwise, program activities and tasks are adopted without an understandable purpose or clear direction and trying to measure program effectiveness becomes an exercise in futility. The following is a reminder of the overall program goal of the Watershed URMP and implementing objectives.

**TO POSITIVELY AFFECT THE WATER QUALITY OF THE TIJUANA RIVER WATERSHED WHILE
BALANCING ECONOMIC, SOCIAL AND ENVIRONMENTAL CONSTRAINTS.**

Objective #1: Develop/expand methods to assess and improve water quality within the watershed (Water Quality Activities);

Objective #2: Integrate watershed principles into land use planning (Land Use Planning Activities);

Objective #3: Enhance public understanding of sources of water pollution within the watershed (Educational Activities).

Objective #4: Encourage and enhance stakeholder involvement within the watershed (Public Participation Activities).

Activities identified in the watershed program are categorized pursuant to these objectives.

As stated in the Watershed URMP, in order to measure the effectiveness of the objectives, an inference must be made that completion or expansion of the activities and tasks identified for each respective objective would either indirectly or directly impact the water quality within the watershed. The sections below present the results of the quantitative (where available) assessment of the activities conducted, categorized by the above referenced objectives. Each assessment is followed with a discussion of program strengths (areas where the Copermittees have excelled in program implementation), weaknesses (areas where the Copermittees did not see favorable results in program implementation), and finally, recommended areas for program improvement based upon the assessment. Recommendations of specific actions are discussed in Section V, Conclusions and Recommendations.

1.1 Objective #1: Water Quality Activities

The obvious purpose of a jurisdictional or watershed stormwater program is ultimately to improve the quality of the water in the watershed. In order to accomplish this, we must expand upon existing methods, or develop new methods, to improve our understanding of the processes and issues that affect receiving waters, allowing stakeholders and the Copermittees to validate water quality concerns, identify constituents of concern, and move forward with meeting the water quality objectives of this program.

1.1.1 *Program Strengths*

Expanded implementation of a regional monitoring program by the Copermittees has begun, in order to validate the constituents of concern and development of a baseline assessment of water quality issues regionally, and on a watershed-by-watershed basis. This program is designed to allow for the integration of diverse data sets, eventually allowing a relatively clear view of the water quality issues within each watershed. Further, the expanded program allows for sufficient flexibility to implement watershed-specific studies addressing watershed-specific issues, without compromising regional goals and/or programs.

Historically, individual jurisdictions implemented monitoring programs with slight variations of collection methods and/or dataset composition. During the 03-04 assessment year, the Copermittee monitoring workgroup standardized dry weather monitoring programs and coastal storm drain monitoring programs. Standardization of this and other elements of the program facilitate the long-term integration of data from multiple jurisdictional programs, as well as facilitate assessment of new data on an annual basis.

1.1.2 *Program Improvement Areas*

Direct measures are the most definitive way of determining a program's over all effectiveness. Unfortunately, such direct measures (e.g. a watershed water quality baseline) are not readily available on a watershed scale and not anticipated to be available for several years. However, in order to improve the program and effectively measure the water quality of the watershed, additional monitoring stations are needed in the central watershed and headwaters.

One of the most important goals of the program is the development of the baseline assessment through the implementation of the complete water quality monitoring program. As discussed in Section III above, this full implementation is anticipated by the end of the current permit period. A complete watershed assessment using the current data, as well as expanded data is underway.

Standardization of assessment methodologies for each element of the monitoring program will facilitate the development of this baseline. An area of improvement for the program is the development of a standard and guidance document for the maintenance and future integration of non-permit required data sets into water quality assessments. This will allow for integration of data obtained from stakeholders (through groups such as the San Diego Stream Team or the Home2Ocean sampling programs) into jurisdictional assessments. A resource tool is needed that will provide a consistent and scientific approach to conducting

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watershed water quality assessments by providing a framework for the water quality assessment and water quality problem prioritization.

1.2 Objective #2: Land Use Planning

Developed areas vastly increase urban runoff volumes and the pollutant qualities carried in the runoff. However, land use professionals (e.g. municipal, environmental, community planners, engineers, architects, etc.) can help mitigate such impacts through efficient and effective use of design tools and techniques. Through the use of regulations (e.g. general plan, zoning, design manuals, development policies, etc.) site design (clustering, street design, parking lot layout, etc.) and structural treatment devices (filters, detention/retention basins, etc.), development projects can be constructed to reduce pollutant loads before entering neighboring water bodies.

Efforts are being made to strengthen and expand jurisdictional programs to not only address surface stormwater quality resulting from new and redevelopment, but to also look at how these impacts effect down stream resources on a watershed level.

1.2.1 Program Strengths

Although adopted independently, jurisdictional land use policies and procedures work in concert with one another, collectively striving towards the betterment of the water quality in the watershed. The jurisdictions have effectively implemented a Memorandum of Understanding, which establishes guidelines for the inter-jurisdictional notification of land use and development actions that are being considered. Also, the jurisdictions have, or are in the process of amending their General Plans to include language on watershed preservation and water quality protection. Lastly, the Standard Urban Stormwater Mitigation Plan (SUSMP) is a model program adopted (in some form or another) by all the jurisdictions to address water quality impacts resulting from new and redevelopment projects. Discussion regarding the effectiveness of the SUSMP programs is discussed in the Jurisdictional URMP Annual Reports.

1.2.2 Program Improvement Areas

To date, jurisdictional and project level planning tools have been underutilized since stormwater management has largely been viewed as an engineering issue. As a result, many site design solutions rely largely on structural treatment controls like detention basins and mechanical treatment devices, which can be both expensive and maintenance intensive. However, in most cases, it is easier and cheaper to keep pollutants out of stormwater by designing the pollutant source out of the project while simultaneously preserving the site's natural filtration capacity. There needs to be a focus on the strategies that jurisdictions can consider when implementing regulations, policies and guidelines that require site designers to incorporate site design BMPs in development projects as opposed to structural BMPs. The entitlement process needs to incorporate more site design BMP strategies in new and redevelopment projects.

1.3 Objective #3: Educational Activities

The Copermittees have conducted public awareness surveys in order to develop effective public education programs that are to be founded upon community-based data and will generate locally tailored marketing strategies. These surveys were designed to measure baseline knowledge of pollution prevention/source reduction activities in the watershed communities. The surveys were divided into three essential information components: behavioral, attitudinal, and knowledge/awareness. That is to say, survey questions either determined some component of the Watershed residents' behavior pertaining to water pollution and urban runoff issues, their attitude about these issues, or their knowledge and awareness about watersheds and water pollution. The City of San Diego conducted a 2-year survey within the City jurisdiction (2001-2002), stratified by watershed. The County of San Diego also conducted a survey in 2002, designed to capture the unincorporated areas. These surveys were designed consistently with each other, containing the same basic questions. The results and Watershed URMP activity changes/modifications resulting from the survey will be incorporated into next year's annual report.

The Copermittees chose a scientifically valid telephone random sample survey (stratified by watershed) with the following objectives:

- Obtain scientifically reliable and sufficiently robust results to establish a baseline level of knowledge among residents of the watersheds;
- Determine the extent to which behaviors have been altered among activities that are known to cause water pollution and the cause of such behavioral changes;
- Obtain demographic data about the populations of the watersheds for use in descriptive analysis and cross tabulations of data that will result in optimally targeted and tailored public awareness programs.

1.3.1 *Program Strengths*

Watershed surveys not only determine whether the educational message is being heard and understood, but surveys help Copermittees target educational and outreach concepts to meet the needs of different sub-regions and associated land uses within the watershed.

1.3.2 *Program Improvement Areas*

A survey only acknowledges the effectiveness of the program by tracking the increase in knowledge or understanding of what is a watershed, what watershed we live in, and what are watershed stewardships. What a survey does not track is whether a change in knowledge translates to a change in personal behavior. It must be assumed that a consistent message regarding watershed concepts will produce a change in human behavior that improves the quality of water and thus the beneficial uses and quality of life within the watershed.

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In future assessments, watershed awareness must be compared with changes in behavior by comparing watershed survey results with water quality data. The data must be analyzed to identify needs and opportunities for impacting change.

1.4 Objective #4: Public Participation Activities

While participating jurisdictions aim to improve coordination among their own agencies, the watershed approach calls upon these agencies to engage diverse stakeholders in this process. Further, the participating municipalities recognize that no single agency has the capacity to address water quality issues on its own and broad partnerships are essential to positively affect the water resources in the watershed. It is only through a collaborative approach that we will develop a better understanding of these issues and processes affecting water quality in our watersheds and subsequently select and address priorities

1.4.1 Program Strengths

Stormwater pollution is an issue that affects, and is affected by, every person living or working in the watershed. The watershed Copermittees recognize this interdependence, and have been effective in providing, soliciting and allowing public participation in program activities.

1.4.2 Program Improvement Areas

As the program matures, the Copermittees intend to maximize the number and quality of opportunities for the public to participate. The Copermittees are always looking to improve public participation mechanisms by adjusting and expanding the types of opportunities the public has had to participate in the program. In future years, new participation opportunities need to be added through the parallel programs such as the Watershed Management Plans. In addition, Copermittee meetings have been an invaluable tool for sharing information and initiating WURMP activities. A regular WURMP Workgroup meeting schedule is needed to strengthen the program.

2.0 Amendments to the Assessment Program

To ensure the long-term viability and success of our programs, we must confront the complicated issue of assessing the implementation of overlapping municipal stormwater programs; specifically, the Jurisdictional and Watershed URMP programs. The Copermittees are currently in the process of retooling the methodology for assessing the components of the urban runoff management programs to address the assessment program's limitations.

In December 2002, a workgroup was created to collaborate on a Copermittee response to the long-term assessment strategy issue for the Jurisdictional URMPs. On April 15, 2003, the workgroup developed a scope of work and outline, which was shared with the RWQCB on June 15, 2003. The general approach to the proposed program can be found below.

- ✓ Use a “model” approach similar to the model guidance documents previously developed in 2001 (i.e., the completed assessment document should provide steps and instructions that Copermittees can follow to conduct their assessments);
- ✓ Maximize the integration of JURMP and WURMP assessment strategies to avoid duplication and ensure consistency;
- ✓ Focus assessment on the highest priority water quality issues / problems;
- ✓ Focus on assessing elements with the broadest applicability to all Copermittees (e.g., do not emphasize coastal and near-coastal monitoring data since it is not applicable to inland cities);
- ✓ Use year 4 of the Permit cycle (and every 5th year thereafter) as a baseline and regular interval for conducting long-term assessments;
- ✓ Consider building on or updating the MEC Future Monitoring Recommendations report;
- ✓ Consider supplementing efforts with “model” basin-specific studies (control vs. experimental) and/or BMP-specific effectiveness trials;
- ✓ Project expected changes in water quality given existing and future levels of development, land uses, etc. Use these projected trends as a "moving target" to assess improvement and/or decline in water quality;
- ✓ Focus on the constituents of concern (COC) that each program activity is intended to mitigate;
- ✓ Re-visit the common set of direct and indirect reporting measures initially established in the JURMPs; and
- ✓ Adequately consider costs in assessing the effectiveness (and therefore the practicability) of control programs and measures.

The Jurisdictional URMP assessment strategy, which includes general strategies to better assess the Watershed URMP programs, will be submitted to the RWQCB during the FY 03-04 reporting period (September/October 2003) and implemented in FY 04-05. Since the strategy itself was not fully developed by June 30, 2003, the program effectiveness assessment will not be discussed in this report, but will be integrated and discussed in the Tijuana River Annual Report for FY 04-05.

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SECTION V – CONCLUSIONS & RECOMMENDATIONS

As stated in the Tijuana River Watershed URMP, updates and changes to this program would be submitted as part of the annual report and would include the annual reevaluation of high priority and other potential water quality issues, description of any changes to the priority listing, and the inclusion of any revisions to the list of activities. The following sections cover these proposed changes to program priorities and activities as well as the Copermittees closing comments on this reporting period.

1.0 FY 02-03 Proposed Amendments to the Tijuana River Watershed URMP

Based upon the updated water quality data discussed on Section III of the Tijuana River Annual Report and the activity effectiveness assessment completed in Section IV of the Tijuana River Annual Report, the Copermittees propose the following changes/revisions to the Watershed URMP program.

1.1 Water Quality Priorities

This year's assessment yields Turbidity as a new constitute of concern. Turbidity still requires more data for confirmation as a COC and to determine the level of priority. For this year, turbidity will not be added to the high priority list. Bacterial indicators, pesticides, eutrophication, dissolved oxygen, TSS, nutrients, toxic substances will remain on the high priority list. Watershed Copermittees will track other potential water quality issues that are not high priority (i.e. trash) for 2003 and re-evaluate in 2004. The high priority water quality issues have not been changed to allow for the establishment of longer term temporal trends to verify constituents of concern and high priority water quality issues that have been identified in the watershed are not merely a short term variation in conditions.

Equally important, with limited funding available to tackle high priority items, it is important to allow enough time to properly implement and measure the success of those actions. The high priority water quality issues have not been adjusted because scheduled and implemented actions to address high priority water quality issues need to be implemented consistently over time to be effective. For example, education and outreach efforts will take time and repetition for a community to hear, understand and effect behavioral changes. Stopping or changing the educational messages on a frequent basis (due to changed priorities) would lead to confusion and ultimately less effective implementation results

The following activities/program improvements have been identified by the Copermittees, and will be addressed in the upcoming reporting periods.

1.2 Water Quality Activities

- ✓ As discussed in detail in Section III – Water Quality Assessment, plans are being developed to prepare a Watershed URMP Data Analysis Framework for Water Quality Assessment. The objective of the exercise is to create a document that will provide a consistent and scientific approach to conducting watershed water quality assessments. This document will provide a framework for the water quality assessment and water quality problem prioritization for the Tijuana River. Estimated completion date: Spring 2004.

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- ✓ In order to effectively measure the water quality of the watershed, additional monitoring stations are desperately needed in the central watershed and headwaters. As funding becomes available, the Copermittees would like to increase the number of monitoring stations throughout the watershed in order to more accurately measure water quality. Future grant proposals will be submitted to the state and regional board to fund additional monitoring stations in this watershed. Estimated completion date: Ongoing.
- ✓ Although new water quality concerns have been identified in the watershed, no specific new activity (beyond current program activities) has been identified as necessary at this time. The Copermittees will continue to collect data, attempt to identify and reduce sources of these pollutants of concern in an effort to identify appropriate courses of action for each. Estimated completion date: Ongoing

1.3 Land Use Planning Activities

- ✓ Complete development of a watershed planning reference manual for land use professionals use during project development and long-range planning activities. Estimated completion date: Summer 2004.
- ✓ Develop and implement a mobile seminar that is designed to introduce the planner's manual to working planners and provide a general overview of the need for planning on a watershed level in order to protect water resources as well as a description of the site design tools that are available. Development of the seminar will commence once the manual is complete (Summer 2004).

1.4 Educational Activities

- ✓ In future assessments, the Copermittees will compare watershed awareness with changes in behavior by comparing watershed survey results with water quality data. Estimated completion date: initial assessment, 2003-04 reporting period
- ✓ Survey results and monitoring data will be reviewed and evaluated in light of program outreach strategies. Emphasis will be focused toward "community direct" efforts (i.e. speaking to local community groups and using direct outreach efforts such as informational door hangers on helpful BMP tips when pollutants are found in local neighborhoods). Based on these results, additional modifications to the outreach efforts will be developed. Estimated completion date: Ongoing

1.5 Public Participation Activities

- ✓ The Copermittees are always looking to improve public participation mechanisms by adjusting and expanding the types of opportunities the public has had to participate in the program. In future years, the Copermittees will continue to add new participation opportunities (when and where

feasible) through the parallel programs such as the Watershed Management Plans. Estimated completion date: Ongoing

1.6 Assessment Program

- ✓ The Copermittees are in the process of retooling the methodology for assessing the components of the urban runoff management programs to address the assessment program's limitations. Updates and changes to the assessment program will be submitted as part of future annual reports. Estimated completion date: Ongoing

2.0 Copermittee Closing Comments

Between July 2002 and June 2003, the Copermittees with land use authority within the Tijuana River watershed made significant progress in developing and implementing programs aimed at improving surface stormwater quality in the watershed. A few of these highlights are found below:

- The Tijuana River Watershed URMP: In January 2003, the Copermittees successfully developed and initiated the implementation of a watershed-based program that addresses surface stormwater quality for the Tijuana River watershed. The work product is a compilation of assessments, activities and strategies the Copermittees and stakeholders plan to undertake over the remaining life of the Municipal Permit.
- Watershed Management Plan: The Proposition 13-funded effort to develop a watershed plan has been successfully moving forward in bringing together U.S. and Mexico representatives and stakeholders to discuss watershed issues and challenges, and to develop a watershed vision for the Tijuana River Watershed.
- Land Use Professional's Reference Manual: The County of San Diego, in cooperation with the City of San Diego, is developing a land use professional's reference manual, which focuses on site design solutions as a Best Management Practice. The Manual is structured to assist land use professionals in identifying the major types of stormwater pollution found within the county's watersheds, possible sources of stormwater pollution, and a listings of site design and programmatic tools land use professionals have at their disposal to address water quality issues at the planning level.
- Watershed Surveys. The Copermittees have started the process of developing a survey for the Tijuana River watershed in order to establish a baseline of watershed understanding. Watershed surveys not only determine whether the educational message is being heard and understood, but surveys help Copermittees focus educational and outreach concepts in order to meet the needs of different sub-regions and associated land uses within the watershed. The survey results will be detailed in the FY 03-04 Tijuana River Annual Report.

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- Water Quality Grants: The Wildlife Conservation Board approved a \$1.8 million grant in San Diego for a cooperative habitat restoration project in Goat Canyon. Part of the larger Border Field State Park, Goat Canyon's flooding has degraded water quality and habitat in the lower watershed through erosion and sedimentation. The project will construct a pair of sediment retention basins. In addition, the County of San Diego, in collaboration with several watershed stakeholders, submitted a Proposition 13/40/50 grant application for arundo and tamarisk removal along Cottonwood Creek and other upstream areas in the upper watershed. This project focuses on the water quality, habitat and flood control benefits achieved through non-native vegetation removal and riparian habitat restoration.
- Copermittee Responsibility Restructuring: On October 1, 2003, the Imperial Beach City Council authorized the transfer of the Lead Copermittee from the City to the County of San Diego, effective November 1, 2003.

Above all, the Tijuana River Watershed URMP and Annual Reports should be considered part of overall program development. The Copermittees have responded well to meet the challenges of implementing new and aggressive Municipal Permit requirements in a very short period of time. The Copermittees feel strongly that they have made significant strides in developing a comprehensive stormwater program that could serve as a model for other regions. It is also recognized that improvement and refinement is an important part of all program areas and the Watershed URMPs will need to be augmented over the long term as the Copermittees continue to develop a better understanding of the complex issues affecting the Tijuana River Watershed.

In summary, a number of important challenges have arisen during the implementation of this revised Municipal Permit. While the Copermittees have generally responded well to meet them, some requirements are not easily addressed. Continued collaboration is key to the development of quality programs that are cost-effective and responsive to the needs of our customers. Only time and continued implementation will tell whether or not the programs established pursuant to this Municipal Permit will meet the standards of water quality improvement and cost-effectiveness that together define practicability. Increased cooperation between Copermittees and the RWQCB will be necessary as we continue to move our programs forward. In some instances, the issues confronting us may be within the ability of Copermittees to resolve. In other cases, more innovative approaches, including Municipal Permit amendments, may ultimately be required. Keeping these lines of communication open is crucial to our long-term success.

A.1 Signed Certification Statements