*Santa Ana River* by William Wendt (1928)
Private Collection, courtesy of Irvine Museum

# Santa Ana Regional Water Quality Control Board (8)

# Watershed Management Initiative Chapter

**Revised February 2002**

# SANTA ANA REGIONAL WATER QUALITY CONTROL BOARD
# WATERSHED MANAGEMENT INITIATIVE CHAPTER

**February, 2002**

## EXECUTIVE SUMMARY

The water resource protection efforts of the State Water Resources Control Board and the nine Regional Water Quality Control Boards are guided by a five year Strategic Plan (updated in 1997). A key component of the Strategic Plan is a watershed management approach for water resources protection.

To protect water resources within a watershed context, point and nonpoint source discharges, ground and surface water interactions, and water quality/water quantity relationships must be considered. To do so presents considerable challenges. The State Board and Regional Boards are responding to these challenges with the Watershed Management Initiative (WMI). The WMI is designed to integrate various surface and ground water regulatory programs while promoting cooperative and collaborative efforts within watersheds. It is also designed to focus limited resources on key issues.

In the past, State Board and Regional Board programs tended to be directed at site-specific problems. This approach was reasonably effective for controlling pollution from point sources. However, to address diffuse, nonpoint sources of pollutants, a new regulatory strategy was needed. The WMI strategy is to draw solutions from all interested parties within a watershed, and to more effectively coordinate and implement measures to control both point and nonpoint sources.

During the initial implementation of the WMI, each Regional Board identified the watersheds in their Region, prioritized water quality issues, and developed watershed management strategies. These strategies and the State Board's overall coordinating approach to the WMI are contained in the *Integrated Plan for Implementation of the WMI*.

At this time, the following programs are integrated into the Santa Ana Region's WMI process:

1) Total Maximum Daily Loads (TMDLs)
2) Nonpoint Source Program (NPS)
3) Watershed Management
4) Monitoring and Assessment
5) Core Regulatory (NPDES, Waste Discharge Requirements (WDRs) and Chapter 15 WDRs)
6) Water Quality Standards/Basin Planning
7) Wetlands
8) Groundwater Resource Protection/Clean-up

Regional Board priority activities in each of these programs are described in **Section 4** of this document.

The Santa Ana Region, while the smallest of the nine regions in the State (2800 square miles), contains a wide variety of water resources, including pristine mountain streams and lakes, coastal estuaries and beaches, and effluent-dominated rivers. Most of the Region is comprised of the watershed of the Santa Ana River and its tributaries, including the San Jacinto River system. The Orange County watersheds that drain into the San Gabriel River are included in the Santa Ana Region. The Region also includes the watersheds of San Diego Creek and other tributaries to Newport Bay, as well as the coastal drainages located southeast of Newport Bay to just north of the City of Laguna Beach. While the Region is geographically small, it is the most densely populated, with almost five million residents (1993 estimate), and furthermore incorporates the Chino Basin area, which holds the highest density of dairy animals in the country, if not the world.

Considerable improvements in water quality have been achieved in the Region through the control of point source discharges such as those from sewage treatment plants and industrial facilities. However, many of the region's waterbodies remain impacted from nonpoint source inputs, such as urban nuisance flows, stormwater runoff and agricultural runoff. These inputs are diffuse in origin and variable in quality, making their control more difficult to achieve. The watershed approach is a more effective way to address nonpoint sources.

The Santa Ana Region has been divided into the following ten Watershed Management Areas (WMAs):

| | |
|---|---|
| Chino Basin | Upper Santa Ana River |
| Newport Bay | Middle Santa Ana River |
| Lake Elsinore, San Jacinto River | Lower Santa Ana River |
| Anaheim Bay, Huntington Harbour, Bolsa Chica | Newport Coast |
| Big Bear | Coyote Creek & Carbon Creek |

A brief summary of the issues and problems of each WMA is provided below. A more detailed discussion of the water quality issues in each of these watersheds is provided in **Section 3**.

In the Chino Basin WMA, groundwater quality and quantity are the primary concerns. Chino Basin groundwater is a major source of water for the Basin's cities, industry, and agriculture. This source of supply has been severely degraded, largely from historic and ongoing agricultural operations, including dairies. With recent increases in staff resources, the Regional Board has substantially increased its dairy regulatory activities. The Board is also an active participant in water resources planning for the Basin, which seeks to integrate water quality and quantity considerations with regulatory and non-regulatory management strategies. Surface water quality is also an important issue in the Chino Basin WMA. The Regional Board has initiated work on Total Maximum Daily Loads (TMDLs) for several streams in the Basin. Efforts to address both surface and groundwater quality problems in the Basin are closely related to the control of the quality of the Santa Ana River, which is an important source of recharge in the downstream Orange County groundwater basin.

The Newport Bay WMA has been the primary focus of the Region's watershed management efforts to date, given the significance of the resource to both people and wildlife. With the Newport Bay Watershed Management and Executive Committees (comprised of local stakeholders), the Regional Board developed and is now implementing TMDLs for nutrients, sediment and bacteria. In addition, technical TMDLs for diazinon and chlorpyrifos, selenium, and other toxic substances (metals, pesticides, and priority organics) are under development and expected to be established by April 2002. Implementation plans for these TMDLs will be developed in 2002 and 2003.

The Lake Elsinore/San Jacinto River WMA water quality problems concern primarily Lake Elsinore and Canyon Lake, both of which are on the Clean Water Act Section 303(d) list of impaired waters. Fluctuating water levels in Lake Elsinore and algae blooms triggered by excess nutrients have caused significant impairment of the ecology and recreational use of Lake Elsinore. Nutrients are also a source of impairment in Canyon Lake. With the help of local stakeholders, a regional monitoring program is being implemented to identify the sources. The data generated will be used in the development of TMDLs for the Lakes. Work on these TMDLs has been initiated.

The Anaheim Bay/Huntington Harbour/Bolsa Chica WMA contains significant coastal bay, estuary, and wetland resources that are threatened by metals, pesticides, and pathogens. The restoration of the Bolsa Chica wetlands site is an ongoing activity in which the Regional Board has an oversight role.

The Big Bear Area WMA has a variety of water quality problems due to historic land uses and increasing urbanization in the watershed. Big Bear Lake and its tributaries have impairments due to metals,

nutrients, siltation, and pathogens. Regional Board staff are working with local stakeholders to collect data and begin the TMDL development process.

The Upper Santa Ana River WMA is the most mountainous and least populated WMA in the Region. Consequently, the water quality problems are localized around the small mountain communities that populate the WMA.

The Middle Santa Ana River WMA groundwater and surface water quality are affected by high levels of nitrogen and dissolved minerals. Wastewater reclamation, invasive exotic species (*Arundo sp.)* , and protection of threatened and endangered species are concerns within the WMA. Strategies to address these problems include Basin-wide groundwater quality planning activities sponsored by water purveyors and waste dischargers, and participation in Basin-wide exotic species eradication efforts.

The Lower Santa Ana River WMA groundwater basins contain most of the water supply for the WMA area. Surface water problems include elevated mineral content and pathogens in a few waterbodies. The WMA also contains the Region's only municipal wastewater ocean discharge.

The Newport Coast WMA incorporates the watersheds of several small streams that flow into the Pacific Ocean along the stretch of coastline from Corona del Mar to north of Laguna Beach. The WMA includes two areas of special biological significance (ASBS): the Newport Beach Marine Life Refuge, and the Irvine Coast Marine Life Refuge. A special focus of Regional Board activities in this area is monitoring new development to ensure that waste discharges into the ASBSs do not occur.

The Coyote Creek and Carbon Creek WMA is located in the northwestern corner of Orange County. Coyote Creek forms part of the boundary between Los Angeles County and Orange County, while Carbon Creek is a tributary to Coyote Creek. Water quality problems in the WMA include nitrogen-related impairments in Coyote Creek, and channel degradation/erosion. A watershed management plan is being developed for the entire Coyote Creek watershed, including those portions in the administrative area of Region 4 (Los Angeles).

In addition to specific WMA activities, Board staff activities that are not watershed specific are described in **Section 4** of the Chapter (Regionwide Activities).

Appendices to the Chapter contain permitting and inspection schedules, TMDL schedules, nonpoint source activities, and water quality standards/basin planning issues.

For more information on the Santa Ana Region readers can visit the Santa Ana Region's website at: http://www.swrcb.ca.gov/rwqcb8

# SANTA ANA REGIONAL WATER QUALITY CONTROL BOARD
# WATERSHED MANAGEMENT INITIATIVE CHAPTER

**February, 2002**

## TABLE OF CONTENTS


**Executive Summary** **ES-1**

**Table of Contents** **i**

**Section 1.0 – INTRODUCTION** **1-1**
1.1 The Watershed Management Initiative 1-1
1.2 The Santa Ana Region 1-1
1.3 Overview of Regional Board Activities 1-2
1.4 Watershed Management Areas (WMAs) 1-3

**Section 2.0 – KEY REGIONAL ISSUES** **2-1**
2.1 Santa Ana River Nitrogen/Total Dissolved Solids Management 2-1
2.2 Dairies 2-3
2.3 Coastal Beaches 2-5
2.5 Regional Funding Priorities 2-8

**Section 3 – WATERSHED ACTIVITIES** **3-1**
3.1 Chino Basin Watershed Management Area 3-1
3.2 Newport Basin Watershed Management Area 3-6
3.3 Lake Elsinore/San Jacinto River Watershed Management Area 3-11
3.4 Anaheim B./Huntington Harb./Bolsa Chica Watershed Management Area 3-17
3.5 Big Bear Area Watershed Management Area 3-21
3.6 Upper Santa Ana River Watershed Management Area 3-26
3.7 Middle Santa Ana River Watershed Management Area 3-30
3.8 Lower Santa Ana Watershed Management Area 3-34
3.9 Newport Coast Watershed Management Area 3-38
3.10 Coyote/Carbon Creek Watershed Management Area 3-42

**Section 4 – REGIONWIDE ACTIVITIES** **4-1**
4.1 Total Maximum Daily Loads 4-1
4.2 Nonpoint Source (NPS) Program 4-3
4.3 Watershed Management 4-9
4.4 Monitoring and Assessment 4-11
4.5 Core Regulatory (NPDES, Waste Discharge Requirements [WDRs] and Land Disposal WDRs 4-15
4.6 Water Quality Standards/Basin Planning 4-17
4.7 Wetlands 4-19
4.8 Groundwater Resource Protection/Cleanup 4-21

**Section 5 – RESOURCE ALLOCATION** **5-1**

## LIST OF TABLES


| | | |
|---|---|---|
| Table 1-1 | Watershed Management Areas and Priority Activities | 1-5 |
| Table 2-1 | Funding Sources and Targeted Projects for the Santa Ana Region | 2-11 |
| Table 4-1 | Summary of NPS Pollutants by Watershed and Management Measure Category | 4-4 |
| Table 4-2 | Monitoring and Assessment Resource Needs | 4-12 |
| Table 4-3 | Monitoring and Assessment: Five Year Surface Water Ambient Monitoring Program (SWAMP) Related Monitoring Priorities | 4-13 |
| Table 4-4 | Monitoring and Assessment: Water Bodies for Data Review – No Sampling Activities Planned | 4-13 |
| Table 4-5 | Monitoring and Assessment: Water Bodies Needing More Information to Assess Water Quality | 4-14 |
| Table 5-1 | Resource Allocation | 5-2 |


## LIST OF FIGURES


| | | |
|---|---|---|
| Figure 1-1 | Santa Ana Region Watershed Management Areas | 1-5 |
| Figure 3-1 | Chino Basin WMA | 3-5 |
| Figure 3-2 | Newport Bay WMA | 3-10 |
| Figure 3-3 | Lake Elsinore/San Jacinto River WMA | 3-16 |
| Figure 3-4 | Anaheim Bay/Huntington Harbour/Bolsa Chica WMA | 3-20 |
| Figure 3-5 | Big Bear Area WMA | 3-25 |
| Figure 3-6 | Upper Santa Ana River WMA | 3-29 |
| Figure 3-7 | Middle Santa Ana River WMA | 3-33 |
| Figure 3-8 | Lower Santa Ana River WMA | 3-37 |
| Figure 3-9 | Newport Coast WMA | 3-41 |
| Figure 3-10 | Coyote Creek and Carbon Creek WMA | 3-44 |

## WMI 2002 APPENDICES


| | | |
|---|---|---|
| **Appendix A** | **Core Regulatory Program Tables** | |
| Table 1 | National Pollutant Discharge Elimination System (NPDES) Permit Re-Issuance Schedule | A-1 |
| Table 2 | NPDES Pretreatment Audits and Inspections | A-4 |
| Table 3 | NPDES Permit Compliance Inspection Schedule | A-5 |
| Table 4 | Waste Discharge Requirements (WDR) Re-Issuance Schedule | A-6 |
| Table 5 | Land Disposal WDR Re-Issuance Schedule | A-8 |
| Table 6 | WDR Compliance Inspection Schedule | A-11 |
| Table 7 | Land Disposal WDR Compliance Inspection Schedule | A-12 |
| **Appendix B** | **Water Quality Assessment Report and 303(d) Update Schedule** | B-1 |
| **Appendix C** | **Total Maximum Daily Load (TMDL) Program Tables** | |
| Table 1 | Summary Schedule for TMDL Development | C-1 |
| Table 2 | Five-Year Schedule of TMDL Activities | C-3 |
| **Appendix D** | **Standards/Basin Planning Activities** | D-1 |
| **Appendix E** | **Non-Point Source (NPS) Program Tables** | |
| Table 1 | Regional NPS Problems by Management Measure Category | E-1 |
| Table 2a | NPS Program Short Term Objectives | E-4 |
| Table 2b | Education, Outreach, and Technical Assistance | E-8 |
| Table 3 | Waivers of Waste Discharge | E-10 |
| Table 4 | Key Partners | E-11 |
| Table 5 | Proposed FY 2002/03 NPS Resource Allocation | E-12 |
| Table 6 | NPS Resource Needs: FY 2002/03 to FY 2004/05 | E-14 |

# 1.0 INTRODUCTION

## 1.1 The Watershed Management Initiative

The Watershed Management Initiative (WMI) is an integrated planning process designed to more effectively direct State and Federal funds to the highest priority water quality activities. Its distinguishing feature is the integration of the various regional, State, and United States Environmental Protection Agency (USEPA) programs on a watershed basis. The participating agencies in the WMI are the nine Regional Water Quality Control Boards (Regional Boards), the State Water Quality Control Board (State Board), and USEPA.

Implementation of the WMI is described in a document called the "*Integrated Plan for Implementation of the WMI*"(Integrated Plan), which is updated annually. The Integrated Plan is composed of individual chapters written by each of the nine Regional Boards, as well as chapters prepared by the State Board and USEPA.

### The Santa Ana Chapter of the WMI Integrated Plan

This document is the Santa Ana Region's chapter of the Integrated Plan. It describes the Santa Ana Region's approach to watershed planning and serves as a tool for making budgetary decisions. The Santa Ana Region's chapter implements the WMI by:

(1) Compiling existing water quality programs organized on a watershed basis and discussing *watershed-specific* priorities, current funded activities, and un-funded priority activities (**Section 3**).
(2) Describing *Region-wide* water quality programs, including short-term and long-term goals and resource needs (**Section 4**).
(3) Providing detailed watershed program schedules and budgets (**Appendices**).

The remainder of this introduction provides a brief description of the Santa Ana Region (**Section 1.2**), an overview of Regional Board activities (**Section 1.3**), and a brief description of the designated watershed management areas in the Santa Ana Region (**Section 1.4**).

## 1.2 The Santa Ana Region

The Santa Ana Region covers an area of approximately 2,800 square miles in Southern California. The Santa Ana River Basin makes up most of the Region (**Figure 1-1**). While it is the smallest of the nine water quality control regions in the State, the Region contains a wide variety of water resources, including pristine mountain streams and lakes, coastal estuaries and beaches, and effluent-dominated rivers.

***Boundaries:***
The San Gabriel, San Bernardino, and San Jacinto Mountains form the northern, northeastern, and eastern boundaries of the Region. The western boundary of the Region conforms roughly to the Los Angeles County line. Portions of the Santa Ana Mountains and other hills form the southern boundary of the Region. The Region includes ocean coastal waters, roughly from Seal Beach to Muddy Canyon, just north of Laguna Beach. The two coastal embayments in the Region are Newport Bay and Anaheim Bay/Huntington Harbour.

***Water Bodies:***
The Santa Ana Region contains six types of waterbodies for which beneficial uses have been identified (Water Quality Control Plan for the Santa Ana River Basin [“Basin Plan”] 1995).

Ocean Waters. The Pacific Ocean coast between Muddy Canyon in the south and the San Gabriel River in the north is included within the Santa Ana Region. Two areas in the near-shore zone have been designated as Areas of Special Biological Significance (ASBS). These are the Irvine Coast Marine Life Refuge Area and the Newport Beach Marine Life Refuge Area.

Bays, Estuaries, and Tidal Prisms. Eleven bays, estuaries, and tidal prisms are recognized along the coast. The largest of these are Anaheim Bay and Newport Bay. The Bolsa Chica Ecological Reserve and the Seal Beach National Wildlife Refuge are included in this category.

Inland Surface Streams. The two major surface streams in the Region are the Santa Ana and San Jacinto Rivers. The Santa Ana River and its tributaries drain the southern portions of the San Gabriel and San Bernardino Mountains.

Lakes and Reservoirs. Seventeen lakes and reservoirs are located within the Region. Twelve of these occur within the Santa Ana River watershed, while the remaining five, including the largest natural freshwater lake in Southern California (Lake Elsinore), are found within the watershed of the San Jacinto River.

Wetlands. The Santa Ana Region has numerous wetlands within its boundaries. Although the Basin Plan specifically identifies ten of the larger wetlands, all wetlands are protected.

Groundwater. Forty-four groundwater basins have been delineated within the Santa Ana Region. Groundwater constitutes a large portion of the water supply for many municipalities in the Region.

## 1.3 Overview of Regional Board Activities

The Santa Ana Regional Board manages a variety of programs to protect water quality and beneficial uses. Eight of the Regional Board’s water quality protection activities are currently incorporated into the WMI. These are:

1. Watershed Management (Coordination)
2. Water Quality Standards/Basin Planning
3. Monitoring and Assessment
4. Non-point Source (NPS)
5. Total Maximum Daily Loads (TMDLs)
6. Core Regulatory (NPDES, Waste Discharge Requirements [WDRs], and Chapter 15 WDRs)
7. Wetlands Protection/Regulation
8. Groundwater Protection/Clean-up

The eight programs are discussed on a WMA-specific basis in **Section 3**. Region-wide activities for each program are discussed in **Section 4**.

*Total Maximum Daily Loads (TMDLs)*
The Basin Plan for the Santa Ana Region specifies water quality objectives for each water body according to water type. The water quality objectives are intended to provide reasonable protection for the beneficial uses listed for each water body (Basin Plan, 1995).

In 1998, the Regional Board designated a list of 26 waterbodies for which water quality standards (beneficial uses and/or water quality objectives) were not being attained. The list also includes a description of the pollutant(s) causing impairment. This list, developed in accordance with Section 303(d) of the Clean Water Act (CWA), is referred to as the "303(d) list" and is updated every two years. *On October 26, 2001, a proposed, revised 303(d) list was presented to the Regional Board for submittal to the State Board The staff report presented at the Board meeting is available at the Regional Board website: http://www.swrcb.ca.gov/~rwqcb8/pdf/10-26-01/9.pdf . The State Board will compile and approve a statewide 303(d) list for submittal to the USEPA by October 2002.*

The Regional Board is required to establish numeric water quality targets for each waterbody on the 303(d) list. These targets are referred to as Total Maximum Daily Loads (TMDLs). The TMDL is the maximum load of a pollutant that can be discharged into a waterbody without impairing water quality standards. TMDLs are discussed further in **Sections 3 and 4**.

### 1.4 Watershed Management Areas

The Santa Ana Region is too large and complex to be managed as a single watershed, and it has therefore been divided into ten Watershed Management Areas (WMAs). The ten WMAs are:

1) Chino Basin
2) Newport Bay
3) Lake Elsinore, San Jacinto River
4) Big Bear Area
5) Anaheim Bay, Huntington Harbour, Bolsa Chica
6) Upper Santa Ana River
7) Middle Santa Ana River
8) Lower Santa Ana River
9) Newport Coast
10) Coyote Creek & Carbon Creek

These WMAs are largely based on the component sub-watersheds of the Santa Ana Region, although the Chino Basin WMA has been defined separately on the basis of the underlying groundwater basin. The WMAs are being used as the basis for initiating watershed planning and directing resources.

The ten WMAs in the Santa Ana Region are delineated in **Figure 1-1** and each WMA is described in detail in **Section 3**.

The water quality issues that have been identified for each WMA and priority Regional Board activities are listed in **Table 1-1**.

**Table 1-1: Priority Activities in Watershed Management Areas**

| Watershed Management Area | Primary Water Quality Concerns | Priority Regional Board Activities |
|---|---|---|
| Chino Basin | Groundwater: high TDS and N levels, solvent plume | Participation in the Nitrogen/TDS task force, implementation of the dairy regulatory program, and TMDL development for nutrients, pathogens, and suspended solids. |
| Newport Bay | Excess algal blooms (nutrients), aquatic life toxicity, bacterial quality; stream channel erosion and sedimentation in Newport Bay, wetland protection | Implementation of sediment, nutrient, and fecal coliform TMDLs, and development of TMDLs for diazinon and chlorpyrifos, selenium, and other toxic constituents (metals, pesticides and priority organics). Participation on Serrano Creek restoration projects. |
| Lake Elsinore, San Jacinto | Summer lake algal blooms and fish kills, bacterial quality, lake water level management, nitrogen and TDS in groundwater, impacts from confined animal feeding operations | Development of TMDLs for nutrients, siltation, pathogens, and unknown toxicity. Implementation of the watershed-wide NPDES permit (Order No, 01-34) for the San Jacinto watershed. Participation with local agencies on management projects for Lake Elsinore |
| Anaheim Bay, Huntington Harbour, Bolsa Chica | Toxic constituents (metals, pesticides, and petroleum products), wetland protection and restoration, bacterial quality | Water quality assessment monitoring in Anaheim Bay and Huntington Harbour, and at candidate toxic hot spot sites. Development and implementation of waste discharge requirements for sewage collection agencies to prevent system overflows and protect of beach water quality. |
| Big Bear Area | Excess sediments and nutrients, toxic constituents (metals), protection of endangered plant and animal species | Development of TMDLs for nutrients, metals, siltation, and pathogens |
| Upper Santa Ana River | Wastewater disposal problems (septic tanks) | Enforcement activities related to septic tank system prohibitions |
| Middle Santa Ana River | Wastewater reclamation (TDS and nitrogen issues), groundwater recharge and water level management, invasive plant eradication | Santa Ana River monitoring at Prado dam. Participation in the Nitrogen/TDS task force. (See Chino Basin for Santa Ana River Reach 3 TMDL activities) |
| Lower Santa Ana River | Bacterial quality, TDS and nitrogen in groundwater, coastal wetlands protection, wastewater reclamation, organic contamination | Participation in the Nitrogen/TDS task force. Review of ocean monitoring programs in conjunction with the Orange County Sanitation District waste discharge requirements |
| Newport Coast | Discharge of wastes to Areas of Special Biological Significance (ASBS) | Prevention of discharge to ASBS sites through monitoring, implementation of Cease and Desist order. Manage contract for restoration of Buck Gully. |
| Coyote Creek, Carbon Creek | Nitrogen impairment, channel erosion and aquatic habitat degradation | Development of watershed management plan |

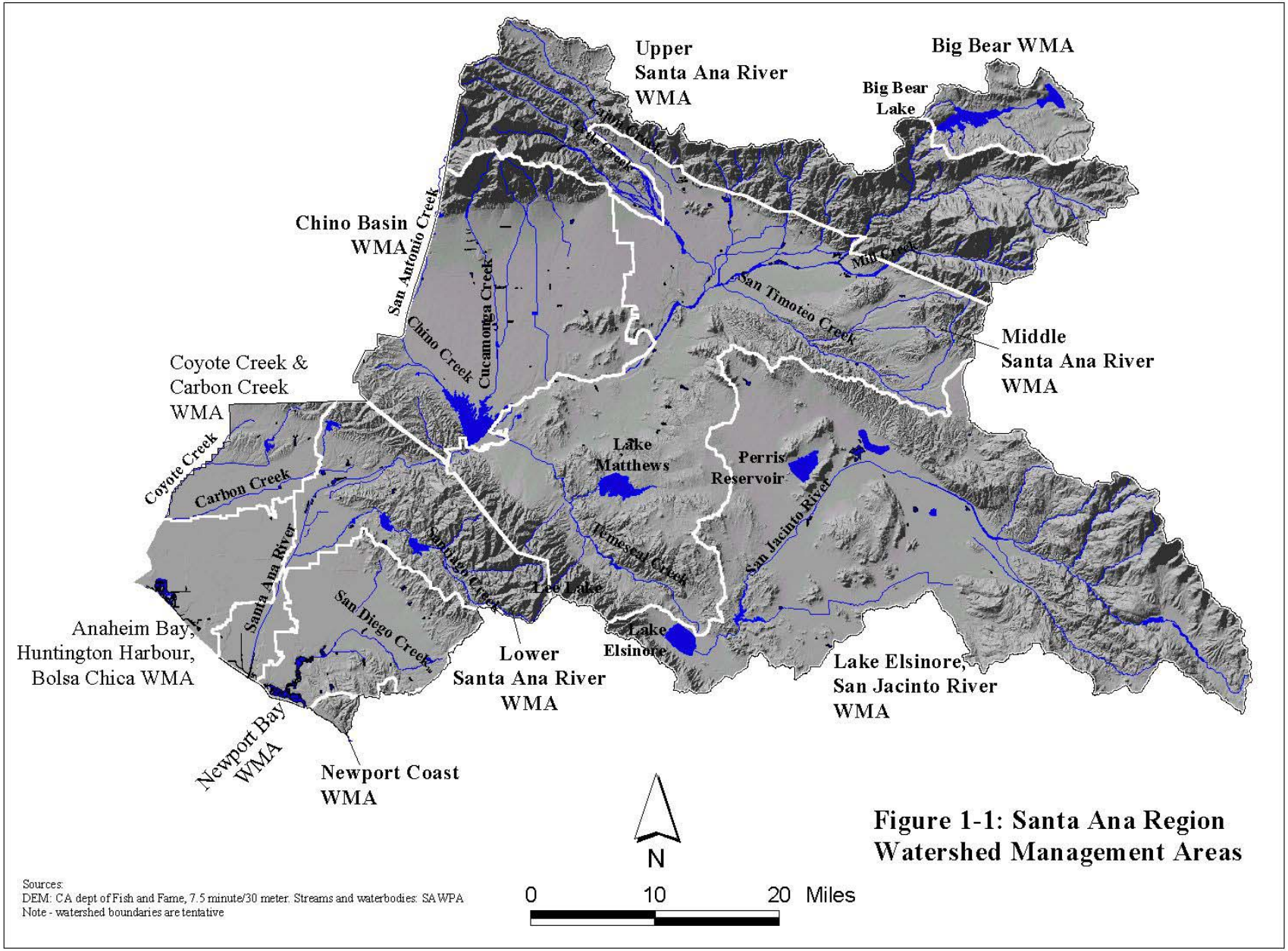



**Figure 1-1: Santa Ana Region Watershed Management Areas**

# 2.0 KEY REGIONAL ISSUES

The following sections describe some of the key issues that are of wider significance for the Santa Ana Region. These include nitrogen/TDS management in the Santa Ana River (Section 2.1), water quality problems associated with dairies (Section 2.2), and coastal beaches (Section 2.3). Funding for water quality projects is discussed in Section 2.4.

## 2.1 SANTA ANA RIVER NITROGEN/TDS MANAGEMENT

Water quality degradation due to high concentrations of nitrogen and total dissolved substances (TDS) is the most significant regional water quality problem in the Santa Ana River Watershed. Historically, the Santa Ana River likely flowed during most of the year, recharging deep alluvial groundwater basins in the inland valleys and the coastal plain. However, irrigation projects eventually led to the diversion of all surface flow in the river, and the quantity of groundwater recharge diminished greatly. Water quality issues in the Santa Ana River Watershed focus on elevated concentrations of (TDS) and total inorganic nitrogen (TIN).

***Total Dissolved Solids***
Water from the Santa Ana River is used multiple times as it moves downstream through the watershed. Each cycle of use results in increasing salt concentration, whether through addition of soluble materials, or though evaporation and evapotranspiration. Typically, each use adds 200-300 parts per million (ppm) or milligrams per liter (mg/L) of TDS.

Efforts to address the salt balance problem include the import and recharge of large volumes of low-TDS water from the State Water Project (SWP), extraction of high-TDS groundwater for transport to the ocean through the Santa Ana River Interceptor Line (the SARI line or brine line), and the construction of groundwater desalters.

***Nitrogen***
Degradation of water quality at Prado Dam due to nitrogen, was first observed in the mid-1980s. The elevated TIN concentrations in groundwater are largely due to historical agricultural practices in the Santa Ana River Watershed. From 1986 onwards, the nitrogen water quality objective (WQO) for the Santa Ana River at Prado has been exceeded. A significant increasing trend in concentrations was observed and it was recognized that the nitrogen wasteload allocations specified in the 1983 Basin Plan were no longer adequate. The Regional Board derived a new nitrogen allocation, using computer modeling, and recommended that POTW discharges be limited to 10 mg/L TIN. However, POTW dischargers argued that additional studies were required to verify the Regional Board's analysis.

In early 1988, a Nitrogen Task Force was formed to finance and oversee these studies, and its scope of work was broadened to include TDS and groundwater. In the interim, the Regional Board adopted a WQO of 10 mg/L TIN for new discharges, while requiring existing discharges to conform to their 1987 July-September average TIN concentrations. The studies conducted by the nitrogen task force were used in developing the 1995 Basin Plan.

***Current Nitrogen/TDS Study***
A new Task Force was formed in 1995 to provide oversight, supervision, and approval of a study to evaluate the impact of Nitrogen and TDS on water resources in the Santa Ana River Watershed. The study is coordinated by SAWPA, and is investigating questions related to nitrogen and TDS management in the watershed, including groundwater subbasin water quality objectives, subbasin boundaries, and regulatory approaches to wastewater reclamation and recharge.

**The members of the TIN/TDS Task Force are:**

| | |
|---|---|
| Chino Basin Water Conservation District | Jurupa Community Services District |
| Chino Basin Watermaster | Orange County Sanitation District |
| City of Colton | Orange County Water District |
| City of Corona | Santa Ana Regional Water Quality Control Board |
| City of Redlands | Riverside-Highland Water Company |
| City of Rialto | San Bernardino Valley Municipal Water District |
| City of Riverside | San Bernardino Valley Water Conservation District |
| City of San Bernardino | Santa Ana Watershed Project Authority |
| Eastern Municipal Water District | US Geological Survey – Advisory Member |
| Elsinore Valley Municipal Water District | West San Bernardino County Water District |
| Inland Empire Utilities Agency | Yucaipa Valley Water District |

The study findings recommended changes in groundwater water quality objectives and subbasin boundaries that would substantially affect the entire Santa Ana River. Basin Plan amendments to incorporate these changes will likely be considered by the Regional Board in 2002-03.

## 2.2 DAIRIES

Dairies began concentrating in the Chino Basin in the late 1950's and 1960's when they began leaving rapidly urbanizing Orange County and southeastern Los Angeles County. To provide some protection against future urban encroachment for the growing industry, a dairy preserve was created in the San Bernardino County area of the Chino Basin. Currently, all of the dairies in the Chino Basin are located in and around the preserve, in the southern portion of the Chino Basin adjacent to the Santa Ana River. About 340,000 dairy animals reside on about 300 facilities in an area of less than 40 square miles. Many of these facilities have a density of 30 to 40 cows per acre. Water quality problems associated with dairy wastes include groundwater degradation in the Chino Basin and Orange County, and adverse impacts to the Santa Ana River. The Chino Basin is the largest groundwater basin in the region and one of the largest basins in southern California. Much of the basin is heavily impacted by high levels of nitrates and other salts. In addition, nitrate-laden rising groundwater entering the Santa Ana River is threatening the water supply of Orange County.

The Regional Board began regulating dairies in 1972 by adopting individual waste discharge requirements for all dairies in the region. The WDRs limited the rate of on-site manure disposal and prohibited off-site wastewater discharges except in the event of a 24-hour, 25-year storm. However, the Board reviewed its dairy regulatory policy in 1990, and it became evident that the WDRs were not effective in protecting the water quality of the Santa Ana River and the Chino Groundwater Basin. Significant amounts of manure were still being applied to land, and many dairies were still not able to contain waste runoff from large storms. As a result, in 1994, the Board adopted a general NPDES permit for dairies. The permit required implementation of a manure tracking system and a groundwater monitoring program, and Engineered Waste Management Plans (EWMPs) were required for new operations and problem facilities. In 1999, the general NPDES permit expired, and the Board adopted a new general NPDES permit. The new permit prohibited the disposal of manure in the region, prohibited the application of manure for fertilizer in the Chino Basin (and other basins lacking assimilative capacity for dissolved salts), limited the application of manure for fertilizer in other basins to agronomic rates, and required all dairies to develop and implement an EWMP. In accordance with a time schedule included in a cease and desist order, all EWMPs must be submitted by June 2003. Currently, the Board's limited dairy regulatory program resources are focused primarily on reviewing, accepting, and overseeing the implementation of over 100 EWMPs that have already been submitted. This task will continue through 2003, when it is expected that a total of approximately 300 EWMPs will have been submitted. During this period, however, staff will also continue to conduct routine compliance inspections and complaint investigations, initiate enforcement actions, and perform other duties associated with overseeing compliance with the general NPDES permit.

However, the intense concentration of dairies in the Chino Basin, and other factors, has resulted in a situation that goes beyond the compliance problems of individual dairies to the industry as a whole. Increased herd size, lack of sufficient land to dispose of dairy wastes and flooding of dairy facilities from storm flows originating from expanding urbanization in the northern portion of the Chino Basin have resulted in the need to explore regional solutions. In addition to its regulatory program for individual dairies, the Regional Board is working with dairy industry organizations and other public entities in an attempt to forge industry-wide, regional solutions.

In 1995, the Inland Empire Utilities Agency began operating a composting facility in the Chino Basin. However, the maximum capacity of the facility has not been utilized due to difficulty in finding adequate markets for the finished product. The lack of adequate local composting capacity, and high hauling and tipping costs, has presented difficulties in removing manure from the Chino Basin. In 2000, the Santa Ana Watershed Project Authority began operating a 9 million-gallon per day groundwater desalter in the Chino Basin. Another 8 million-gallon per day groundwater desalter is expected to be operational by 2004. The goal is to have over 40 million gallons per day of groundwater desalting capacity by 2020.

With the assistance of a watershed coordinator initially funded by the Orange County Sanitation Districts, the Santa Ana River Watershed Group (SARWG) was formed in the late 1990s. Within this organizational framework, the Orange County Sanitation Districts, the Orange County Water District, the Regional Water Quality Control Board, the San Bernandino County Transportation and Flood Control District, the dairy industry, and others, are working together in an attempt to solve water quality problems associated with the dairy industry. A pilot project to sewer six dairies has been completed. There are also plans for the construction of a state-of-the-art regional organics management center that would accept a significant amount of the manure generated in the Chino Basin.

To address the uncontrolled flooding that flows through corrals and other manured areas in the Chino Basin, Congress recently provided an appropriation of approximately $20 million. This money will be spent over the next four to five years on initial projects, including several interim projects such as detention basins to help control peak flows. The urbanized areas continue to expand and it is projected that over the next twenty plus years most of the dairies will be replaced by urbanization. The total flood control project is estimated to cost approximately $130 million and the flood control district is negotiating contract approval on a $2.7 million loan from the state revolving fund administered by the SWRCB to help fund the facilities.

The Regional Board currently is using CWA Section 319 (h) Nonpoint Source Program grant funds to address the dairy issue. In July 2000, OCWD received a 319(h) grant for $210,656 to develop a dairy washwater treatment demonstration project in the Chino Basin to reduce the impacts from dairy waste on ground and surface water. The concern is the accumulation of salts and nitrates in the Chino Basin caused by the stockpiling of manure and dairy washwater storage. In addition, OCWD manages the SAR flows below Prado Dam to recharge the groundwater basin that supplies over 2 million residents with about 75% of their municipal supply.

Individual dairy facilities use between 50-100 gallons of water to wash down each cow prior to milking, generating over 20 million gallons per day of washwater in the Chino Basin. Management practices for dairy washwater currently involve long-term storage in ponds where it is left to evaporate, percolate into groundwater, or is sprayed onto crops and/or disposal lands. The purpose of the demonstration project is to implement wetlands technology to treat dairy washwater to generate a product water suitable for on-site reuse, thereby reducing the amount of contaminants entering groundwater supplies as a result of percolation of washwater stored in ponds and sprayed on disposal lands. In addition, dairies implementing the demonstrated washwater treatment should be better able to manage their on-site washwater ponds to contain and treat washwater and prevent nonpoint source discharges and overflow of ponds during major storm events or berm failures.

## 2.3 COASTAL BEACHES

There are approximately 74 miles of coastal and bay beaches within the portion of Orange County that is included in the Santa Ana Region. These beaches receive a large number of visitors and generate considerable revenue for local businesses and the municipalities.

New requirements for frequent testing of surfzone waters and stringent criteria for beach water closures went into effect in 1999 as part of Assembly Bill (AB) 411. In Orange County the testing is performed by the Orange County Health Care Agency (OCHCA) and Orange County Sanitation District (OCSD). Beach postings or closings are required when testing indicates that water quality objectives for bacteria are exceeded. These objectives are:

| | Maximum | Geometric Mean |
|---|---|---|
| Total Coliform | 10,000 | 1,000 |
| Fecal Coliform | 400 | 200 |
| Enterococcus | 104 | 35 |

*Units = MPN (most probable number) or CFU (colony forming units)*
*AB411 includes a total to fecal ratio of 10*

In accordance with AB 411, all storm drain outlets into the ocean now have permanent warning signs, informing the public that the water may be contaminated.

Monitoring data collected since 1999 (implementation of AB11) demonstrate that there is a significant public health threat from the microbial pollution problems in ocean waters along the Orange County coast. The OCHCA uses 104 miles of coastline, including beaches, within the Region's boundaries, to calculate that there have been 727.8 beach-mile-days (beach miles X number of days posted or closed) of beach water postings and closures in Orange County since 1999. AB 411 requires beach water closures if there is any evidence of sewage. When sewage spills occur, Orange County Health Care Agency takes a conservative approach and closes the beach if there is a potential for the spill to reach ocean/bay waters. Portions of Seal Beach, Sunset Beach, Bolsa Chica State Beach, Huntington Harbour, Huntington City Beach, Huntington State Beach, Newport Beach, Newport Slough, and Newport Coast were closed to body contact recreation on 42 occasions during the period from January 2000 through December 2001.

***Causes of Beach Closings/Postings***
To date, studies have indicated that beach water postings cannot be linked to any single source, although there are a number of suspected or potential sources. These may include unreported sewage spills and leaks, urban runoff, Orange County Sanitation District's ocean outfall, the AES power plant discharge at Huntington State Beach, vessel pump out stations or discharges from vessel holding tanks, septic systems, coastal wetlands and marshes and wildlife. However, all 42 beach water closures indicated above were due to sewage spills or leaks that reached, or threatened to reach ocean waters.

***Source Investigations***
During the summer of 1999, from July 1st to early September, portions of Huntington State Beach and Huntington City Beach ranging from 1 to 5 miles were closed to body contact recreation due to extremely elevated and tracking levels of total coliforms, fecal coliforms and enterococci bacteria (pre-AB411 regulations). In response, the Regional Board (Executive Officer) issued a Cleanup and Abatement Order requiring the City of Huntington Beach to conduct an investigation of its sanitary sewers and to determine the impact of any leaking sewers on the microbial pollution problems in the ocean waters. The Cleanup and Abatement Order also required the City to develop and implement a plan for repairing leaking sewers throughout the City.

The City of Huntington Beach completed the investigation of the sewer system and concluded that leaking sewers had not contributed to the beach water pollution problems at Huntington Beach, or adversely impacted ground water quality. However, these investigations and other similar studies indicated that sewage leaks and spills from deteriorated or improperly maintained sewer lines could be a significant source of near-shore microbial contamination in ocean waters.

The 1999 Huntington Beach closures resulted in intensified efforts to identify the sources of microbial contamination. The Orange County Sanitation District (OCSD) conducted an intensive survey of its sewer lines. The Executive Officer directed the County and the coastal cities, under Section 13267 of the Water Code, to conduct an investigation to identify and remediate the sources of microbial contamination.

The County in cooperation with the cities, OCSD, and the National Water Research Institute (NWRI) conducted a study of the causes of bacterial contamination in beach water (study done by the University of California at Irvine (UCI)). The OCSD, UCI (Phase 2 Report), and City of Huntington Beach studies failed to identify the source(s) of the microbial contamination.

The UCI study indicated that the Talbert Marsh might be contributing to the microbial problem in the near-shore zone. OCSD also conducted a study of its ocean discharge's elevated levels of microbial contamination. No link to date has been established between the OCSD ocean discharge and the elevated microbial levels in Huntington Beach.

The AES power plant discharge has periodic elevated bacterial levels. However, studies of this discharge preliminarily indicate that the discharge is not likely impacting the nearshore zone of Huntington Beach. Board staff requested and received $200,000 from the State Water Resources Control Board's Cleanup and Abatement Account to help support a study of the Lower Santa Ana River and Newport Slough to determine the amount of bacterial pollution from these two sources. The County, OCSD, the coastal cities, and NWRI have also contributed to this study.

The Phase 2 study looked at contributions to the microbial problem in Huntington Beach from nuisance and urban runoff, the natural environment (wildlife, wetlands, etc.), leaking sewer lines, ocean outfalls and tidal input. All of these studies indicate that a number of sources are causing or contributing to the elevated microbial counts in the surfzone in Orange County.

***Regional Board Activities to Minimize Beach Closures***

The Regional Board is taking all necessary steps to minimize beach postings and closures in Orange County, including, as indicated above, issuing Cleanup and Abatement Orders, and orders under Water Code Section 13267. In addition, the draft Orange County storm water permit is currently being renewed, and new requirements to address bacterial contamination problems resulting from urban runoff have been included such as:

- diversion of dry weather flows (already being implemented);
- best management practices to eliminate sources of bacterial contamination; and
- investigation and remediation of infiltration into MS4 systems from leaking sanitary sewer lines.

Bacterial contamination in urban runoff is an extremely difficult problem to tackle due to the diverse, and sometimes unknown, sources. Significant resources (money and personnel) are being dedicated to address this problem. Source identification methods are needed to ascertain where the bacteria are coming from and how to control their release into the channels and ocean and bays.

The Regional Board is also proposing to regulate all sewering agencies in the Orange County area by developing general waste discharge requirements (WDRs), as discussed below.

***Orange County Sanitary Sewer Overflow (SSO) Waste Discharge Requirements (WDRs)***
On December 19, 2001, the Regional Board held a public workshop to discuss Tentative Order No. 01-99. The order requires the sewage collection agencies within Orange County to develop and implement a Sewer System Management Plans (SSMP). The SSMP should include programs and policies the agency is proposing to address capacity, management, operation, maintenance, funding, and spill response. Since grease blockage has been identified as one of the major causes of SSOs, the sewage collection agencies are required to implement a grease and fat source control program.

There are 27 sewage collection agencies within the Santa Ana portion of Orange County. With the exception of the IRWD, and the El Toro Water District, all the sewage collection systems are tributary to the OCSD system, which operates major trunk line sewers throughout each service area. The agencies collect approximately 240 million gallons per day of wastewater~~,~~ from over 2 million people~~,~~ spread over more than 460 square miles. The entire sewage collection system includes almost 5,000 miles of sewers, and over 100 pump stations.

Many of these collection systems have had sewage spills that resulted in beach water closures. Over 100,000 gallons of sewage (excluding secondary treated wastewater) was spilled into near-shore ocean waters between January 2000 and December 2001. During the same period, OCHCA estimates there were a total of approximately 507 sewage spills. Most of these spills did not result in a beach water closure, but many of the spills reached other surface water bodies within the Region.

The Basin Plan prohibits the discharge of untreated sewage to any surface water stream, natural or man-made, or to any drainage system intended to convey storm water runoff to surface water streams. The California Water Code (Section 13260) and the Clean Water Act (Section 402) prohibit the discharge of pollutants to surface waters without a NPDES permit. Tentative Order 01-99 implements the Basin Plan discharge prohibition, and therefore, is not a NPDES permit.

Based on the finding that most beach water closures in Orange County are due to SSOs, and the fact that most of these SSOs are preventable, the order proposes to regulate all sewering agencies in Orange County that are within the Santa Ana Regional Board's jurisdiction. It is anticipated that upon implementation of the requirements specified in this order, beach water closures due to SSOs will be significantly reduced/eliminated.

## 2.4 FUNDING PRIORITIES

**Table 2-1**, *Funding Sources and Targeted Projects for the Santa Ana Region (8),* is an ongoing listing of water quality priorities assembled from input received by Regional Board staff and interested watershed stakeholders. The table identifies potential projects intended to restore, protect, or enhance some water quality characteristic in a watershed, or investigate or alleviate the pollution or its sources within an impaired waterbody. A smaller scale version of this table was originally distributed in the Proposition 13 and Nonpoint Source/Water Quality Planning grant application documents as the Santa Ana Region's priorities. Table 2-1 will be continually updated and revised as projects receive funding or water quality problems are resolved.

***Sources Of Funds***
Traditionally, interested parties have submitted specific proposals to request State Nonpoint Source Program and Water Quality Management Programs funding under the USEPA's CWA Sections 319(h) and 205(j) programs, respectively. The State Water Resources Control Board oversees the State Revolving Fund, a low-interest loan program that can help subsidize capital expenditure projects. The following list, excerpted from the Proposition 13 Application Reference Document, identifies several of the funding programs potentially available directly or indirectly support water quality goals. Regional Board staff has not directly verified the information provided here.

***Federal Programs***
Land and Water Conservation Fund (LWCF): The LWCF is revenue from outer continental shelf leases and royalties. Although the authorized level of funding annually is $900 million, Congress appropriates much less for the acquisition of land for conservation by the U.S. Forest Service, Bureau of Land Management, National Park Service, and the U.S. Fish and Wildlife Service. Contact your Congressional Representative or regional office of any of the federal agencies for more specific information.

National Coastal Wetlands Conservation Grants: Funds generated from excise taxes on sport fishing equipment and boat gasoline taxes are set aside in the Sport Fish and Restoration Account of the Aquatic Resources Fund for grants to state agencies for the acquisition, restoration, and enhancement of coastal wetlands systems. Grants are available to all coastal states and require a 50/50 match. Contact Verlyn Ebert with U.S. Fish and Wildlife Service at (503) 231-6128 for an application. Deadline is in June 2001.

North American Wetlands Conservation Act (NAWCA): NAWCA provides federal funds specifically to "conserve North American wetland ecosystems and waterfowl and the other migratory birds and fish and wildlife that depend on such habitats" (PL 101-233). Eligible projects include acquisition and restoration of wetlands among other activities. Proposals require a 50/50 nonfederal match and are accepted twice a year in March and August. A small grants program is also available with a December 1 deadline. These grants cannot be used to fund research or education. For an application, call (703) 358-1784.

Wetlands Reserve Program: Funds are available through the U.S. Department of Agriculture as part of the 1996 Farm Bill for the acquisition of conservation easements on agricultural lands. For more information, contact Ron Schultze at (530) 792-5656 or Allan Forkey at (530) 792-5653 or the local National Resource Conservation Service office.

Central Valley Project Improvement Act (CVPIA)/Bureau of Reclamation: A variety of funding programs are available for the acquisition, restoration and study of wetlands and water resources in the Central Valley. Contact Chuck Solomon at the Bureau of Reclamation at (916) 978-5052 or Maurice Sullivan at the U. S. Fish and Wildlife Service at (916) 414-6541. The Bureau of Reclamation also has a wetlands program with grant funding. Contact Bob Shaffer at (916) 414-6459.

CALFED Bay-Delta Program: The CALFED Bay-Delta Program is both state and federal agencies that have been charged with finding a solution to the long-standing water wars in the Delta. Ecosystem

restoration is a major component of the program and over $100 million has been allocated to date. Future RFPs will be released in January. Grants range in size from $10,000 - $2 million. Call Rebecca Fauver at (916) 654-1334 for more information.

Army Corps of Engineers/Sections 1135 & 206: Section 1135 funds are available for the restoration and acquisition of wetlands previously affected by an Army Corps project. Section 206 funds provide for the restoration of aquatic ecosystem structure and function. Projects usually include the manipulation of the hydrology in and along bodies of water, including wetlands and riparian areas. No relationship to an existing Corps project is required. For more information, contact Les Tong at the Army Corps of Engineers at (415) 977-8702.

Environmental Protection Agency (EPA): Various grants in the range of 25k-350k are available through the EPA for watershed planning, restoration and stewardship studies for state, tribal and local governments. For more information, contact Nancy Woo (Wetlands Coordinator) at (415) 744-1164, call the general EPA number at (916) 744-1702, or visit their website at www.epa.gov/epahome/grants.htm. Also refer to the Nonpoint Source information under state programs.

Partners for Fish & Wildlife Program: The U.S. Fish and Wildlife Service offers cost-share programs to restore and enhance fish and wildlife habitats on private land. Call Debra Schlafmann, Daniel Strait, or Tom Moore at (916) 414-6446 for more information or visit http://partners.fws.gov/index.htm.

U.S. Dept. of Agriculture Natural Resource Conservation Service (NRCS): Wildlife Habitat Incentives Program (WHIP) is a voluntary program for private landowners who want to develop or improve fish and wildlife habitat on their property. The Natural Resource Conservation Service (NRCS) administers the program, providing technical assistance and up to 75% of the cost of the project. NRCS also offers watershed planning services that may lead to the commitment of financial resources for project implementation. Contact your local NRCS for more information or www.nrcs.usda.gov/NRCSProg.html.

Watershed Assistance Grants (WAG): The River Network allocated funding to build capacity of existing or new watershed partnerships to protect and restore their watersheds. For more information, visit their website at www.rivernetwork.org.

***State Programs***

Coastal Conservancy: The Conservancy has grant funding for the acquisition, restoration and enhancement of significant coastal and bay resource and habitat lands. Grants are also available for the preparation of plans for the enhancement and restoration of wetlands, dunes, rivers, streams, and watersheds. State and local agencies and non-profits may apply. Contact Nadine Hitchcock at the Coastal Conservancy at (510) 286-1015.

Wildlife Conservation Board: Inland Wetlands Conservation Program and Riparian Habitat Conservation Program: WCB acquires and restores wildlife habitat throughout California. WCB also manages the Inland Wetlands program for the acquisition and restoration of wetlands in the Central Valley and Riparian Habitat conservation program focuses on protecting and restoring riparian systems throughout the state. For more information on available funding, contact the Inland Wetlands Program or Scott Clemons (Riparian) at (916) 445-8448.

Environmental Enhancement and Mitigation Program (EEM): The EEM program statute allows for $10 million a year when approved by the legislature for the supplemental mitigation for highway work in three categories, one of which is resource lands. Grants are available for projects that mitigate, directly or indirectly, the environmental impacts of new or modified transportation facilities. Grants are available for land acquisition, restoration enhancement and pollution reduction. Eligible applicants include any local, state, or federal agency, or non-profits. Deadline is in November. Contact the EEMP Coordinator, California Resources Agency, at (916) 653-5656.

Habitat Conservation Fund: The California Department of Parks and Recreation administers this grant program for local public agencies for the acquisition and restoration of wildlife habitats and significant natural areas. Deadline is in October. Contact Odell King at (916) 653-7423 or check out website at www.parks.ca.gov/grants/index/htm.

Nonpoint Source (NPS) & Water Quality Planning Program: The State Water Resources Control Board (SWRCB) offers funding (grants and loans) for projects that improve or protect water quality that is impaired or threatened by non-point source pollution through the NPS section of the SWRCB. State and local agencies and non-profits may apply. For more information, contact Paul Roggensack (loans to address water quality associated with discharges and estuary enhancement) at (916) 341-5481, Paul Lillebo [205(j) planning grants] at (916) 341-5551, or Lauma Jurkevics [Prop 13 implementation grants] at (916) 341-5498 or visit their website at www.swrcb.ca.gov/nps/npshome.html.

Transportation Enhancement Activities Program: The Federal intermodal surface transportation efficiency act of 1991 (ISTEA) required that states spend a minimum of 10% of their surface transportation program funds on "transportation enhancements" such as the acquisition of scenic lands and mitigation of water pollution due to highway runoff. The program is now called transportation equity act for the 21st century (TEA-21). Contact the Caltrans' transportation enhancement activities office at (916) 654-5275 or visit www.dot.ca.gov/hq/transenhact.

Department of Fish and Game (DFG) Fines: DFG collects fine monies for fish and game code violations. County fish and game committees typically administer these funds. Contact your local Fish and Game office for information.

Caltrans Mitigation: Caltrans frequently looks for wetlands projects that can be used to mitigate approved highway projects. Contact your local Caltrans office.

Urban Streams Restoration Program: This program is offered by the Department of Water Resources Division of Planning and Local Assistance. The objective is to assist communities in reducing damages from stream bank and watershed instability and floods while restoring the environmental and aesthetic values of streams, and to encourage stewardship and maintenance of streams by the community. For more information, check out www.dpla.water.ca.gov/environment/habitat/stream/usrp.html.

***Local***

General Obligation Bonds: Cities, counties, and recreation and Park districts have authority to issue bonds for park and open space purposes. If approved, bonds and the interest they incur are re-paid through an increase in property taxes. Current law requires passage by a 2/3 majority vote – bonds issued to fund specific, popular projects are more likely to be approved.

Assessments: An assessment may also be referred to as a "special" or "benefit" assessment and involves the levying of a charge on property owners to provide financing for public improvements. A *Landscaping and Lighting Act Assessment District* is specifically designed to fund landscaping, street lighting, and open space acquisition projects. Proposition A in Los Angeles County, which was approved by county voters in November 1992, created a countywide Landscaping and Lighting Assessment District.

Local Park Districts: Many local or regional park districts are actively involved in acquiring and restoring wetland and riparian habitat. For more information, contact your local park district office.

Flood Control Districts: The acquisition and restoration of wetlands is increasing recognized as providing both environmental and flood control benefits. Contact your local district to determine if funds are available.

San Francisco Bay Regional Water Quality Control Board: The Regional board makes an effort to direct Administrative Civil Liability fines to local projects. For more information, call Wil Bruns at (510) 622-2327 or Carol Thornton at (510) 622-2419.

***Private Organizations***

National Fish and Wildlife Foundation (NFWF): NFWF has numerous grant programs for the acquisition and restoration of wetlands and watersheds. 2:1 matching funds are required. For more information, call Anna Weinstein or Heather Dempsey at (415) 778-0999 or visit www.nfwf.org.

Ducks Unlimited (DU): DU provides technical assistance, matching funds and help in securing grants for the completion of wetland habitat restoration projects on both public and private land. Call the Western Regional Office of DU at (916) 852-2000 and ask about grants in California.

Packard Foundation: The foundation's Conserving CA Landscapes Initiatives funds habitat protection and watershed projects in the Central Valley, Sierra, and Central Coast. For more information and grant guidelines, call (650) 948-7658 or www.packard.org.

***Additional Resources***

Options for Wetland Conservation: A Guide for California Landowners - Published by the California State Coastal Conservancy, 1994. For a copy, call the Conservancy at (510) 286-1015.

Funding for Habitat Restoration Projects – A Compendium of Current Federal Programs with Fiscal Year 1996-1998 Funding Levels. Published by Restore American's Estuaries. Download from the Internet at www.estuaries.org/funding.html or call (202) 289-2380.

NOAA Funding Opportunities for Community-Based Restoration
http://www.nmfs.noaa.gov/habitat/restoration/funding.html

California Department of Fish and Game Fishery Restoration Grants Program (SB 271)
http://www.dfg.ca.gov/

# TABLE 2-1: FUNDING SOURCES AND TARGETED PROJECTS FOR THE SANTA ANA RWQCB

| Project Type and Description | SWRCB and RWQCB | | | | | DWR | | | | Dept. Parks & Rec. | | SCWRP | Wildlife Conserv. Board | | DFG | NOAA | Cal. Res. Agency | | Watershed Management Area | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Categories<br>1. Implement BMPs/Improve Water Quality<br>2. Habitat Restoration/Beneficial Use Enhancement<br>3. Research Oriented Studies<br>4. Assess Loadings and Impacts<br>5. Water Conservation and Management<br>6. Monitoring<br>7. Education and Outreach<br>8. Land Acquisition<br>9. Watershed Planning | CWA Section 319(h) Nonpoint Source | Proposition 13 (Water Quality) | Proposition 13 (Water Recycling) | CWA Section 205(j) Planning | Supplemental Env. Projects | Proposition 13 (Flood Protection) | Proposition 13 (Urban Streams) | Proposition 13 (Groundwater Recharge) | Proposition 13 (Water Conservation) | Proposition 12 (Riparian/Riverine) | Habitat Conservation Fund | So. Calif. Wetlands Recovery Project | Proposition 12 (Riparian Habitat) | Natural Heritage Tax Credit Program | Fisheries Restoration Grants | Community-based Rest. Grants | Coastal Resources Grant Program | Other potential sources | Anaheim BayHuntington Harbour/ Bolsa Chica | Lower Santa Ana River | Coyote Creek/Carbon Creek | Newport Bay | Newport Coast | Middle Santa Ana River | Chino Basin | Lake Elsinore/San Jacinto | Upper Santa Ana River | Big Bear Area |
| **1. Implement BMPs/Improve Water Quality** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| City of Seal Beach Ocean Avenue Comprehensive BMP Implementation Project | | X | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| Runoff Treatment Projects for Bolsa Chica Wetlands | X | X | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| East Garden Grove Wintersburg Channel Runoff Treatment Projects | | X | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| Bolsa Chica Channel Constructed Wetland Project | X | X | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| City of Yorba Linda Water Quality Improvement Plan | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | |
| Forest Road BMP Implementation | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Erosion control measures Implementation | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Reduce snowmelt runoff | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Desalter project | | X | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Nutrient Reducing BMP Development and Implementation | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Streambank Stabilization and Restoration Projects | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Newport Coast Low Flow Diversion Projects | | X | | | | | | | | | | | | | | | | | | | | X | X | | | | | |
| Los Alamitos Pump Station-Regional BMP | | X | | | | | | | | | | | | | | | | | | | X | | | | | | | |
| Santa Ana River Urban Watershed Project | X | X | | | | | | | | | | | | | | | | | | X | | | | X | | | | |
| Buck Gully Watershed Enhancement Project | X | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Newport Bay Watershed Natural Treatment System | X | X | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| Huntington Beach In-Line Storm Drain Runoff Treatment Structures | | X | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| Huntington Beach Stormwater Quality Maintenance Equipment | | X | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| Coastal Areas Water Quality Improvement BMP Implementation | X | X | | | | | | | | | | | | | | | | | X | X | X | X | X | | | | | |
| Santiago Creek Natural BMP Filtering System | X | X | | | | | | | | | | | | | | | | | | X | | | | | | | | |

## TABLE 2-1: FUNDING SOURCES AND TARGETED PROJECTS FOR THE SANTA ANA RWQCB

| Project Type and Description | SWRCB and RWQCB | | | | | DWR | | | | Dept. Parks & Rec. | | SCWRP | Wildlife Conserv. Board | | DFG | NOAA | Cal. Res. Agency | | Watershed Management Area | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Categories<br>1. Implement BMPs/Improve Water Quality<br>2. Habitat Restoration/Beneficial Use Enhancement<br>3. Research Oriented Studies<br>4. Assess Loadings and Impacts<br>5. Water Conservation and Management<br>6. Monitoring<br>7. Education and Outreach<br>8. Land Acquisition<br>9. Watershed Planning | CWA Section 319(h) Nonpoint Source | Proposition 13 (Water Quality) | Proposition 13 (Water Recycling) | CWA Section 205(j) Planning | Supplemental Env. Projects | Proposition 13 (Flood Protection) | Proposition 13 (Urban Streams) | Proposition 13 (Groundwater Recharge) | Proposition 13 (Water Conservation) | Proposition 12 (Riparian/Riverine) | Habitat Conservation Fund | So. Calif. Wetlands Recovery Project | Proposition 12 (Riparian Habitat) | Natural Heritage Tax Credit Program | Fisheries Restoration Grants | Community-based Rest. Grants | Coastal Resources Grant Program | Other potential sources | Anaheim BayHuntington Harbour/ Bolsa Chica | Lower Santa Ana River | Coyote Creek/Carbon Creek | Newport Bay | Newport Coast | Middle Santa Ana River | Chino Basin | Lake Elsinore/San Jacinto | Upper Santa Ana River | Big Bear Area |
| Lake Elsinore Inlet Restoration | X | X | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| In-lake Aerator Treatment | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Implementation programs to reduce pathogens, nutrients, pesticides, and sediment from agricultural fields | X | X | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Chino Basin Dairy Runoff Management Plan | X | X | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Nutrient monitoring programs implementation for TMDL compliance | X | X | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| Pathogen monitoring programs implementation for TMDL compliance | X | X | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| Urban and agricultural pesticide reduction programs | X | X | | | | | | | | | | | | | | | | | | X | | X | | | X | X | X | |
| Improve vessel waste reduction projects | X | X | | | | | | | | | | | | | | | | | X | X | | X | X | | | X | | X |
| Chino Basin Urban Runoff Management Plan | | X | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| **2. Habitat Restoration/Beneficial Use Assessment** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chino Basin habitat and Rec BU easements | X | X | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Mystic Lake restoration | | X | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Santa Ana River Sucker restoration | | | | | | | | | | | | | | | | | | | | X | | | | X | | | X | |
| Wetlands creation, enhancement, and restoration | X | X | | | | | | | | | | | | | | | | | X | X | X | X | X | X | X | X | X | X |
| Arundo/Invasive species eradication | X | X | | | | | | | | | | | | | | | | | X | X | X | X | X | X | X | X | X | X |
| Serrano Creek Reach 2 stabilization | | X | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| Balanced preservation, enhancement and restoration of Santa Ana River watershed water resources | | X | | | | | | | | | | | | | | | | | | | | | | X | X | | X | |
| Santiago Creek habitat and creek protection and enhancement programs | X | X | | | | | | | | | | | | | | | | | | X | | | | | | | | |
| **3. Research Oriented Studies** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Orange County Coastal Point Source and Non-Point Source Pollution Model | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |

# TABLE 2-1: FUNDING SOURCES AND TARGETED PROJECTS FOR THE SANTA ANA RWQCB

| Project Type and Description | SWRCB and RWQCB | | | | | DWR | | | | Dept. Parks & Rec. | | SCWRP | Wildlife Conserv. Board | | DFG | NOAA | Cal. Res. Agency | | Watershed Management Area | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Categories<br>1. Implement BMPs/Improve Water Quality<br>2. Habitat Restoration/Beneficial Use Enhancement<br>3. Research Oriented Studies<br>4. Assess Loadings and Impacts<br>5. Water Conservation and Management<br>6. Monitoring<br>7. Education and Outreach<br>8. Land Acquisition<br>9. Watershed Planning | CWA Section 319(h) Nonpoint Source | Proposition 13 (Water Quality) | Proposition 13 (Water Recycling) | CWA Section 205(j) Planning | Supplemental Env. Projects | Proposition 13 (Flood Protection) | Proposition 13 (Urban Streams) | Proposition 13 (Groundwater Recharge) | Proposition 13 (Water Conservation) | Proposition 12 (Riparian/Riverine) | Habitat Conservation Fund | So. Calif. Wetlands Recovery Project | Proposition 12 (Riparian Habitat) | Natural Heritage Tax Credit Program | Fisheries Restoration Grants | Community-based Rest. Grants | Coastal Resources Grant Program | Other potential sources | Anaheim BayHuntington Harbour/ Bolsa Chica | Lower Santa Ana River | Coyote Creek/Carbon Creek | Newport Bay | Newport Coast | Middle Santa Ana River | Chino Basin | Lake Elsinore/San Jacinto | Upper Santa Ana River | Big Bear Area |
| **4. Assess Loadings and Impacts** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Metals inputs source analysis: Big Bear Lake | | X | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Sediment inputs source analysis: Big Bear Lake | | X | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Orange County Sanitation District discharge to Huntington State Beach | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| **5. Water Conservation and Management** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Newport Bay Residential Landscape Irrigation Controllers | | X | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| Water storage basins, connections | | X | X | | | | | | | | | | | | | | | | | | | | | | X | | | |
| SBVWCD Plan B Collaborative Process | | X | X | | | | | | | | | | | | | | | | | | | | | | | | X | |
| **6. Monitoring** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volunteer Monitoring | | X | | | | | | | | | | | | | | | | | X | X | X | X | X | X | X | X | X | X |
| Chino Basin/Wetland/Stream watershed restoration assessment | | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Stormwater monitoring program | | | | | | | | | | | | | | | | | | | X | X | X | X | X | X | X | X | X | X |
| **7. Education and Outreach** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adopt-A-Watershed programs | X | | | | | | | | | | | | | | | | | | X | X | X | X | X | X | X | X | X | X |
| Partnership for Orange County watershed education program | X | | | | | | | | | | | | | | | | | | | X | | X | | | | | | |
| Urban runoff/stormwater education, outreach programs | X | | | | | | | | | | | | | | | | | | X | X | X | X | X | X | X | X | X | X |
| Orange County regional water resources education | X | | | | | | | | | | | | | | | | | | X | X | X | X | X | | | | | |
| Program to promote cooperative relationships/improve regulated community and public support in Santa Ana Watershed | X | | | | | | | | | | | | | | | | | | | | | | | X | X | X | X | X |
| Santiago Creek educational trail project | X | | | | | | | | | | | | | | | | | | | X | | | | | | | | |
| Improve organizational efficiency of Santa Ana River Watershed Resource Conservation Districts (RCDs) | X | | | | | | | | | | | | | | | | | | | | | | | X | X | X | X | X |

## TABLE 2-1: FUNDING SOURCES AND TARGETED PROJECTS FOR THE SANTA ANA RWQCB

| Project Type and Description | SWRCB and RWQCB | | | | | DWR | | | | Dept. Parks & Rec. | | SCWRP | Wildlife Conserv. Board | | DFG | NOAA | Cal. Res. Agency | | Watershed Management Area | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Categories<br>1. Implement BMPs/Improve Water Quality<br>2. Habitat Restoration/Beneficial Use Enhancement<br>3. Research Oriented Studies<br>4. Assess Loadings and Impacts<br>5. Water Conservation and Management<br>6. Monitoring<br>7. Education and Outreach<br>8. Land Acquisition<br>9. Watershed Planning | CWA Section 319(h) Nonpoint Source | Proposition 13 (Water Quality) | Proposition 13 (Water Recycling) | CWA Section 205(j) Planning | Supplemental Env. Projects | Proposition 13 (Flood Protection) | Proposition 13 (Urban Streams) | Proposition 13 (Groundwater Recharge) | Proposition 13 (Water Conservation) | Proposition 12 (Riparian/Riverine) | Habitat Conservation Fund | So. Calif. Wetlands Recovery Project | Proposition 12 (Riparian Habitat) | Natural Heritage Tax Credit Program | Fisheries Restoration Grants | Community-based Rest. Grants | Coastal Resources Grant Program | Other potential sources | Anaheim BayHuntington Harbour/ Bolsa Chica | Lower Santa Ana River | Coyote Creek/Carbon Creek | Newport Bay | Newport Coast | Middle Santa Ana River | Chino Basin | Lake Elsinore/San Jacinto | Upper Santa Ana River | Big Bear Area |
| Chino Basin Environmental/Public Education | X | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| CAFO education and outreach to reduce dairy NPS runoff | X | | | | | | | | | | | | | | | | | | | | | | | X | X | X | | |
| Farm education programs on biosolids | X | | | | | | | | | | | | | | | | | | | X | | | | | | | | |
| Educational Campaign for the Los Alamitos/East Garden Grove/Bolsa Chica Watershed | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| **8. Land Acquisition** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Santiago Creek Parkland/Open space preservation/ acquisition plan | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | |
| San Timoteo Creek Watershed Habitat Acquisition | | X | | | | | | | | | | | | | | | | | | | | | | X | | | | |
| **9. Watershed Planning** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coyote and Carbon Creeks Watershed Restoration Plan | | X | | X | | | | | | | | | | | | | | | | | X | | | | | | | |
| Westminster Watershed Restoration Program | | X | | X | | | | | | | | | | | | | | | | X | | | | | | | | |
| Talbert-Lower Santa Ana River Watershed Management | | X | | X | | | | | | | | | | | | | | | X | | | | | | | | | |
| San Diego Creek/ Newport Bay Watershed Study | | X | | X | | | | | | | | | | | | | | | | | | X | | | | | | |
| Beach closure watershed planning | X | X | | | | | | | | | | | | | | | | | X | X | X | X | X | | | | | |
| On-Site Sewage Disposal System (OSDS) evaluation throughout Santa Ana Region | X | X | | | | | | | | | | | | | | | | | X | X | X | X | X | X | X | X | X | X |
| SAWA organizational management plan | | | | X | | | | | | | | | | | | | | | | | | | | X | X | X | X | X |
| Huntington Beach Water Quality Management Plan | | | | X | | | | | | | | | | | | | | | X | | | | | | | | | |
| Participation in San Timoteo watershed management and planning efforts | | | | X | | | | | | | | | | | | | | | | | | | | X | | | | |
| Support for San Jacinto River Watershed Council | | | | X | | | | | | | | | | | | | | | | | | | | | | X | | |
| Dairy manure management program | X | X | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Chino Basin Organics Management Strategy Implementation | | X | | X | | | | | | | | | | | | | | | | | | | | | X | | | |

# 3.0 WATERSHED ACTIVITIES

The following sections provide descriptions of Regional Board activities in each of the ten watershed management areas (WMAs) identified in Section 1.0.

## 3.1 CHINO BASIN WATERSHED

**Overview**
As shown in **Figure 3-1**, the Chino Basin Watershed covers about 405 square miles and lies largely in the southwestern corner of San Bernardino County, though a small part of Los Angeles County (Pomona area) and part of western Riverside County are included. Surface drainage is generally southward, from the San Gabriel Mountains toward the Santa Ana River and Prado Flood Control Basin. Major waterbodies in the Chino Basin Watershed include:

- San Antonio Creek
- Chino Creek
- Cucamonga Creek
- Mill Creek
- Santa Ana River, Reach 3
- Chino I, II and III Groundwater Subbasins
- Cucamonga Groundwater Subbasin
- Prado Park Lake

Although originally developed as an agricultural area, the watershed is being steadily urbanized. Cities in the Chino Basin Watershed include Pomona, Chino Hills, La Verne, Upland, Montclair, Claremont, Ontario, Rancho Cucamonga, Rialto, Chino, Fontana, and Norco. In addition, there are several pockets of urbanized unincorporated county areas. The 1995 population of the watershed was approximately 1.1 million people. The principal remaining agricultural area is the Chino Dairy Preserve. Located in the south-central part of the watershed, the Preserve contains approximately 340,000 cows, which generate the waste equivalent of more than two million people. Since the Preserve is unsewered, dairy operations have significantly affected the quality of the water resources in the area.

The major water resource in the Watershed is the 5 to 6 million acre-feet of groundwater in storage in Chino Basin. Groundwater basins and sub-basins, generally, drain south toward the Santa Ana River. Groundwater bodies within the watershed include Claremont Heights, Pomona and Canyon Basins (plus the Live Oak Basin and part of the Spadra Basin), which are located primarily in Los Angeles County, and the Cucamonga and Chino Basins, which are located primarily in San Bernardino County. A small portion of Chino Basin is located in Riverside County. The Metropolitan Water District of Southern California provides imported water to the area through local wholesalers including Inland Empire Utilities Agency (IEUA), Three Valleys Municipal Water District, and Western Municipal Water District.

**Water Quality Concerns**
The quality and quantity of the area's water supply are major concerns. In 1978, the Chino Groundwater Basin was adjudicated by the California State Superior Court. The Basin serves as the primary source of water for the basin's cities, industry, and remaining agriculture. Historic and existing agricultural operations have severely degraded surface water and groundwater quality in several parts of the watershed. This degradation is a major concern for the Regional Board.

Wastewater recycling, industrial operations, hazardous materials spills and other sources of pollution have also affected groundwater quality in more localized areas. Treated wastewater is discharged to tributaries of the Santa Ana River, along with rising groundwater, non-point source discharges and seasonal rainfall runoff. The River flows into Orange County where it recharges the groundwater basin and is put through another cycle of use. To maintain a balance of use between the upper (inland) and lower (coastal) basins of the Santa Ana Watershed, the quality and quantity of water flowing in the Santa Ana River through Prado Dam is adjudicated,

Several significant studies of water quality and water supply in the Chino Basin have been completed in the past few decades. The 1975 Water Quality Control Plan (Basin Plan), produced under contract by the Santa Ana Watershed Project Authority (SAWPA), was based largely on the results of computer simulations using a model called the Basin Planning Procedure (BPP). Serious groundwater degradation was predicted unless major cleanup and management efforts were undertaken promptly. Those recommended actions were not taken. The 1983 Basin Plan basically confirmed the findings of the 1975 plan. The BPP was revised and refined, and was used in a large 1989 study which concluded that present and near-future water quality were even worse than previously thought. Consequently, the Regional Board imposed further restrictions on reclamation and wastewater recharge projects. More recently, a new computer model, the Chino Basin Integrated Ground and Surface Water Model (CIGSM), was developed as part of the Chino Basin Water Resources Management Study. The Regional Board and SAWPA have been active participants in all these studies.

SAWPA is also coordinating a study sponsored by the Nitrogen/TDS Task Force, a consortium of water supply and wastewater management agencies in the Region. The Task Force is supporting Regional Board participation in the study, which is being conducted for the Santa Ana River watershed as a whole, including the Chino Basin. The study is investigating questions related to nitrogen and TDS management in the watershed, including groundwater subbasin water quality objectives, subbasin boundaries, and regulatory approaches to wastewater reclamation and recharge. The study findings recommended changes in objectives and subbasin boundaries that would substantially affect the Chino Basin. Basin Plan amendments to incorporate these changes will likely be considered by the Regional Board in 2002-03.

Water quality issues identified for purposes of the Chino Basin Watershed Management Initiative focus on:

1) Quality and quantity of the groundwater supply,
2) Stormwater runoff and related water quality impacts,
3) Effects of wastewater recycling, and
4) Effects of agricultural operations, especially dairies, on water quality.

Making significant water quality improvements in the Chino Basin Watershed will depend on many factors, which must be thoroughly evaluated before efforts begin.

**Stakeholder Agencies:**

– Santa Ana Watershed Project Authority (SAWPA)
– Inland Empire Utilities Agency (IEUA)
– Western Municipal Water District (WMWD)
– Three Valleys Municipal Water District (TVMWD)
– Chino Basin Watermaster (CBWM)
– Chino Basin Water Conservation District (CBWCD)
– Santa Ana River Watershed Group (SARWG)
– Orange County Water District (OCWD)
– Milk Producers Council (MPC)
– Western United Dairymen (WUD)
– United States Army Corps of Engineers
– San Bernardino County Transportation and Flood Control District (SBCTFCD)
– Riverside County Flood Control and Water Conservation District (RCFCWCD)
– Cucamonga County Water District (CCWD)
– Jurupa Community Services District (JCSD)
– Monte Vista Water District (MVWD)
– Fontana Union Water Company (FUWC)
– Fontana Water Company (FWC)
– Cities of:

Ontario
Rancho Cucamonga
Chino
Chino Hills
Upland
Montclair
Rialto
Fontana
Pomona
Claremont
La Verne
Norco

**Regional Board Program Activities**
Funded activities in the Chino Basin WMA for each of the eight program areas incorporated into the WMI are listed below.

| Program | Activities |
|---|---|
| TMDLs | ▪ TMDL development and implementation tasks including monitoring and assessment, preliminary analyses, implementation planning, and stakeholder participation |
| Nonpoint Source Program | ▪ Working with stakeholders to develop potential 205(j), 319(h), and Prop 13 grant proposals and oversight/management of grants<br>▪ Work with stakeholders to develop dairy BMPs<br>▪ Develop dairy education/outreach activities<br>▪ Coordinate Prop 13 Water Bond activities for Chino Basin area |
| Monitoring &Assessment | ▪ Collect and compile surface water monitoring data maintained by stakeholder agencies including OCWD, SAWPA, Chino Basin Watermaster, Riverside County and San Bernardino County flood control districts, and local water purveyors.<br>▪ Review monitoring well data from Chino Basin Watermaster for general water quality trend analysis; especially with reference to nitrate and TDS<br>▪ Conduct periodic surface water sampling and analysis for nutrients, pathogens, and general minerals following storm events<br>▪ Groundwater sampling at private wells for chlorinated solvents and general minerals |
| Core Regulatory | ▪ Conduct regular NPDES, WDR, and stormwater inspections, reviews, and audits. Issue informal and formal enforcement actions as necessary for permit violations.<br>▪ Pursue additional CAFO enforcement actions<br>▪ Monitor manure removal from CAFOs (and basin) and management of wastewater |
| Watershed Management | ▪ Continued participation in implementing the court-ordered Chino Basin Optimum Basin Management Plan, required in part, to address NPS issues.<br>▪ Interaction with stakeholders in developing water resource and non–point source management projects. |

| Program | Activities |
|---|---|
| Standards/ Basin Planning | ▪ Regional Board expected to consider Basin Plan amendments to incorporate revised water quality objectives/subbasin boundaries |
| Wetlands | ▪ Participate in discussions with other agencies pertaining to wetlands enhancement efforts<br>▪ Coordinate with local, state, and federal agencies on endangered species and wetland permitting issues<br>▪ Develop general WDRs (equivalent to 401 water quality certification) for sediment control projects<br>▪ Process 401 Water Quality Certification requests |
| Groundwater | ▪ Solvent plumes will continue to be monitored by the SLIC unit, along with the oversight of ongoing plume investigations and cleanups. Nitrate and TDS in groundwater are being evaluated using Chino Basin Watermaster well data and GIS tools.<br>▪ The Regional Board will continue to participate in the N/TDS task force, which is evaluating issues related to N/TDS management, including groundwater quality objectives and subbasin boundaries in the Chino Basin. |

**Selected Reference Documents:**

Dairies and Their Relationship to Water Quality Problems in the Chino Basin, (Dairy Report), by Santa Ana Regional Water Quality Control Board (SARWQCB), 1990

Chino Basin Water Resources Management Study – Final Summary Report, by Chino Basin Water Resources Management Task Force, 1995

Optimum Basin Management Plan, (OBMP), by Chino Basin Watermaster, 1999

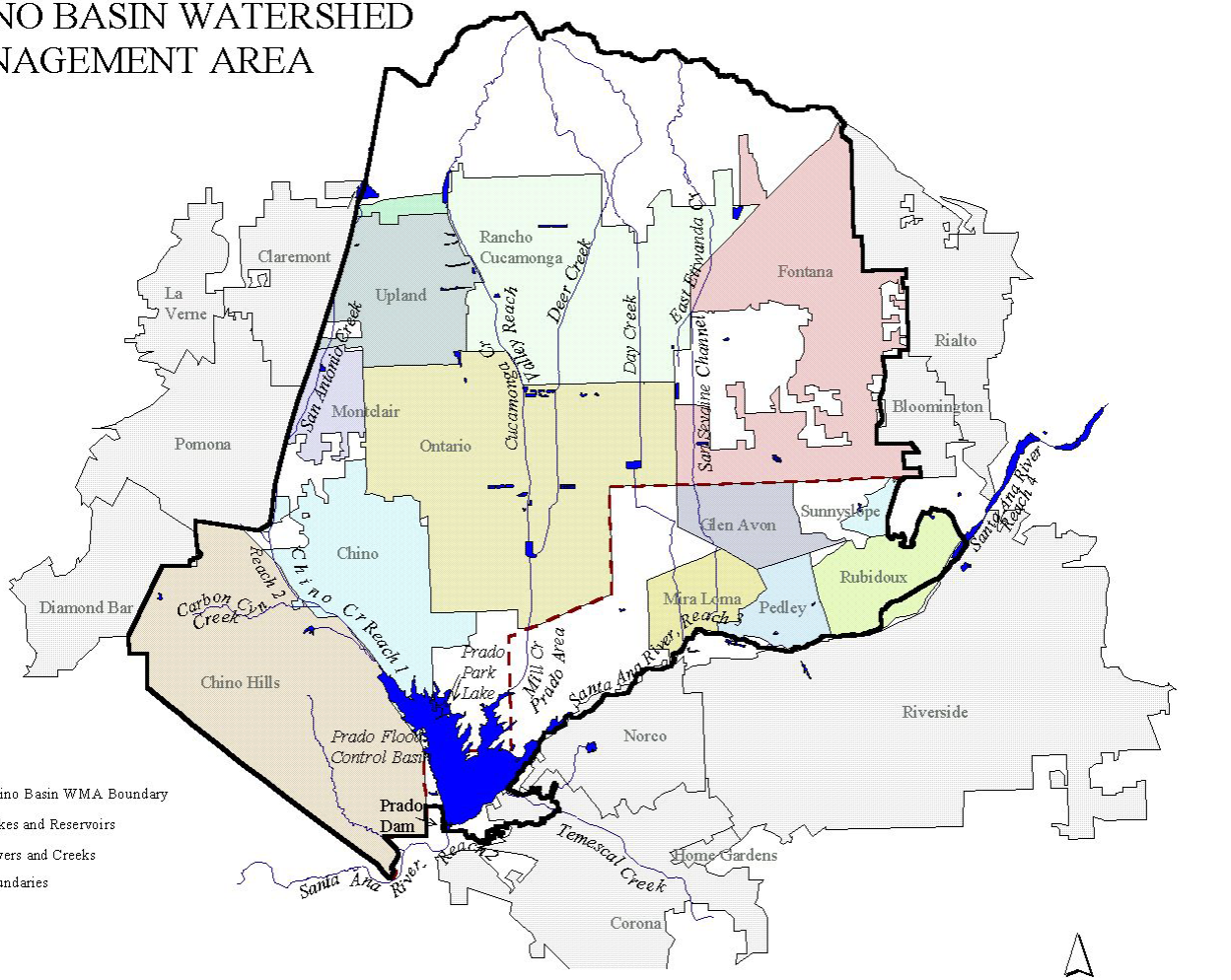
Peace Agreement – Chino Basin, by Chino Basin Watermaster, 2000

Dairy Waste Management, (Webb Report), Webb and Associates for SAWPA, 1974

**Watershed Coordinator**

The Regional Board watershed coordinator for the Chino Basin WMA is Bill Rice: (909) 782-4459.

FIGURE 3-1
CHINO BASIN WATERSHED
MANAGEMENT AREA




Data Sources:
City boundaries are from the US Dept. of Commerce Census Bureau TIGER/Line 2000 Consolidated Cities dataset.
The hydrography layer is based on USGS DLG-3 format on a 1:100,000 scale.

## 3.2 NEWPORT BAY WATERSHED MANAGEMENT AREA

**Overview**

The Newport Bay watershed encompasses an area of approximately 154 square miles (**Figure 3-2**). The watershed is bounded to the north by the Santiago Hills (Loma Ridge) and to the south by the San Joaquin Hills. The Tustin Plain, a broad alluvial valley, occupies the major portion of the watershed. It is currently estimated that about 10 percent of the land use in the watershed is agricultural, while 70 percent of the watershed area is occupied by various urban land uses. The remaining area (20 percent) is termed 'vacant'.

The San Diego Creek watershed, with an area of 119 square miles, is the largest system draining into Upper Newport Bay. The Santa Ana-Delhi Channel drains 17 square miles and Big Canyon Wash drains 2 square miles. The remaining 16 square miles are divided among several small watersheds tributary to the lower Bay. Cities in the Newport Bay Watershed include Newport Beach, Irvine, and portions of Costa Mesa, Santa Ana, Orange, Tustin, Lake Forest and Laguna Hills. The following major waterbodies are in the Newport Bay Watershed.

- Newport Bay, Lower
- Newport Bay, Upper (includes Newport Bay Ecological Reserve)
- San Diego Creek, Reaches 1 and 2
- Peters Canyon Channel
- Serrano Creek
- San Joaquin Freshwater Marsh
- Santa Ana Delhi Channel,
- Big Canyon Wash
- Irvine groundwater subbasins

Newport Bay is divided into upper and lower Bays by the Pacific Coast Highway bridge. The area surrounding Lower Newport Bay is heavily developed, and the local economy is dependent on the housing and tourist industry. Approximately 10,000 small craft are registered in Newport Bay. In contrast to the dense development in the lower Bay, Upper Newport Bay is one of the few remaining undeveloped coastal estuaries in California and is home to several federal or state-listed rare or endangered species. The California Department of Fish and Game owns and manages the upper part of Upper Newport Bay as a State Ecological Reserve.

**Water Quality Concerns**

A number of water quality problems adversely impact the designated beneficial uses of San Diego Creek and Newport Bay. These problems can be divided into four categories: sedimentation, eutrophication, bacterial contamination, and toxic contamination.

*Sedimentation*: Erosion in the Newport Bay watershed and resultant sediment deposition in the Bay is a continual threat to the designated beneficial uses of the Bay. Most deposition occurs during major storm events and originates from construction activities, channel erosion, and erosion of agricultural land. The sediment TMDL adopted by the Regional Board in 1998, requires implementation of sediment control measures to ensure that sediment discharges to Newport Bay will not significantly change the existing acreages of aquatic, wildlife, and rare and endangered species habitat, and maintain the navigational and non-contact recreational uses of the Bay.

*Eutrophication*: Newport Bay has exhibited signs of nutrient enrichment for over 25 years. The nutrient enrichment and resulting algae growth caused adverse impacts to the designated

beneficial uses of the Bay. In addition, existing numeric water quality objectives for total inorganic nitrogen in San Diego Creek were not being achieved. These factors prompted the development of a nutrient TMDL for the Newport Bay watershed. The Regional Board adopted the nutrient TMDL in April 1998. The TMDL specifies compliance schedules for implementation of the TMDL.

*Bacterial Contamination*: Bacterial objectives established to protect the designated beneficial uses of Newport Bay are rarely achieved. Because of consistently high levels of total coliform bacteria, the upper portion of Upper Newport Bay has been closed to water-contact recreation, while shellfish harvesting has been prohibited in the entire Upper Bay since 1978. A prioritized, phased approach to the control of bacterial quality in the Bay is specified in the Fecal Coliform TMDL, adopted by the Regional Board in 1999. The phased approach is intended to allow for additional monitoring and assessment to address areas of uncertainty and for future revision and refinement of the TMDL as warranted by these studies.

*Toxic Substance Contamination*: Toxic substances, including pesticides, metals, and organics, are present in the Newport Bay Watershed at concentrations that adversely impact attainment of water quality standards. In January 2001, the Regional Board published a document that reviewed available chemistry data from water column samples, sediment, fish, and shellfish tissue, and water column toxicity tests to identify the substances that were causing water quality impairments. More recently USEPA has conducted its own evaluation of the data and has formulated a list of chemicals for which TMDLs will be developed. The Regional Board is currently developing TMDLs for diazinon, chlorpyrifos, and selenium, while USEPA is developing TMDLs for the remaining metals, pesticides, and priority organics.

In addition to the water quality related concerns, there are resource-related concerns, particularly for the Upper Newport Bay Ecological Reserve and San Joaquin Freshwater Marsh. Regional Board priority activities include watershed management, toxics TMDL development, nutrient, sediment and pathogen TMDL implementation, and wetlands protection.

Serrano Creek: An area of special activity within the Newport Bay Watershed is Serrano Creek, a tributary to San Diego Creek, located in Lake Forest and Irvine, and a major contributor to the total sediment load reaching Newport Bay. Serrano Creek has sustained substantial erosion due to storms over the past decade. In particular, the 1997-98 “El Nino” storm severely impacted the creek, with substantial down-cutting, bank and stream bottom erosion, loss of vegetation, and damage to an existing recreational and flood control facilities. In 1999, businesses and homeowners formed the Serrano Creek Conservancy (SCC), with the goal of reducing erosion, enhancing the ecological resources, and restoring the aesthetic values of Serrano Creek. The SCC has conducted small restoration projects in Serrano Creek using funding obtained from federal and state competitive grant programs, and is planning to implement a larger stabilization project in 2002.

**Stakeholders**

Stakeholders in the Newport Bay watershed have organized the Newport Bay Watershed Management Committee to serve as a forum for addressing water quality issues. The committee originated during cooperative efforts to manage sediment problems in the 1980s but has since broadened its focus. The management committee meets on a monthly basis to share information and plan strategies for addressing the water quality concerns in the watershed.

**Fiscal Year 02-03 and 03-04 Program Activities**
Funded activities in the Newport Bay WMA for each of the eight program areas incorporated into the WMI are listed below.

| Program | Activities |
|---|---|
| TMDLs | ▪ Implement established nutrient, sediment, and fecal coliform TMDLs<br>▪ Develop implementation plans for chlorpyrifos, diazinon, selenium TMDLs and other metals, pesticides and priority organics |
| Nonpoint Source Program | ▪ Manage eleven 319(h), Prop. 13, and other grant contracts<br>▪ Work with stakeholders to develop potential 319 and prop. 13 grant proposals, educational materials for toxics, pathogen, nutrient and sediment control, and an education curriculum for grades k-12 |
| Monitoring &Assessment | ▪ Oversee implementation of the regional monitoring plan |
| Core Regulatory | ▪ Conduct regular NPDES,WDR, and stormwater inspections, reviews, and audits. Issue informal and formal enforcement actions as necessary for permit violations |
| Watershed Management | ▪ Continued participation on Newport Bay Watershed Committees and subcommittees, and Newport Bay Coordinating Committee and other ad-hoc groups |
| Standards/ Basin Planning | ▪ Complete review of San Diego Creek (reaches 1&2) total inorganic nitrogen Basin Plan Objective (as part of the nutrient TMDL implementation plan)<br>▪ Regional Board consideration of Basin Plan amendment, if necessary, to incorporate revised objectives |
| Wetlands | ▪ Coordinate with local, state, and federal agencies on endangered species and wetland permitting issues<br>▪ Develop general WDRs (equivalent to 401 water quality certification) for sediment control projects<br>▪ Process 401 Water Quality Certification requests<br>▪ Participate in discussions with other agencies pertaining to wetlands enhancement efforts |
| Groundwater | ▪ Develop workplan to address the nitrate, arsenic, and selenium content of shallow groundwater. |

The Regional Board is currently managing 12 projects in the Newport Bay Watershed with a total contract value of over 3 million dollars. These contracts are funded through various sources, including the state general fund, EPA grant programs, Prop 13 bond funds, and Regional Board funds derived from fines and unused program budgets.

| Title | Subcontractor | Amount | Description |
|---|---|---|---|
| SDC Metals Toxicity | SCCWRP | $70,000 | Perform toxicity tests to determine if metals are causing toxicity in San Diego Creek |
| Revise SDC TIN Objectives | SCCWRP | $115,000 | Modeling and experimental studies to better define the relationship between nutrient concentrations and macro-algal growth |
| Agricultural Management Plan | UC-Riverside | $349,793 | Improve quality/reduce quantity of agricultural runoff through education, monitoring, and BMP Implementation |
| Urban Runoff Reduction | Orange County Water District | $100,000 | Quantify water quality benefits from use of more efficient residential |

| Title | Subcontractor | Amount | Description |
|---|---|---|---|
| | | | irrigation management |
| Newport Bay Toxics Modeling | RMA | $30,000 | Model current and projected loading of toxic substances to Newport Bay under various hydrodynamic conditions |
| Shallow Groundwater Sampling | UC-Riverside | $200,000 | Sampling to determine nutrient, selenium, and arsenic concentrations in shallow groundwater and loading to surface water |
| Sediment Toxicity Study | SCCWRP | $n/a | Perform sediment and pore water toxicity tests in Newport Bay |
| Fish Bioaccumulation Study | SCCWRP | $n/a | Study bioaccumulation of toxic substances in representative Newport Bay fish species |
| Reconstruction of Sediment Basin and Weir in Lower SDC | OCPFRD | $816,259 | Modify existing weir at Jamboree Rd; modify invert and basin elevation of in-channel Basin 2 |
| Serrano Creek Stabilization | OCPFRD | $570,000 | Identify stream stabilization work for Reach 1 of Serrano Creek |
| Shedding Studies | City of Newport Beach | $400,000 | Fecal Coliform TMDL: Determine Sources of Bacterial Contamination at Beaches in Newport Bay |
| Viral Testing | --- | $250,000 | Fecal Coliform TMDL |
| | | | |
| *Department of Pesticide Regulation Water Quality Projects in the Newport Bay Watershed* | | | |
| Pesticide Sales and Use Survey | UC-Davis | $95,150 | Collect sales data, determine residential pesticide use patterns, and measure homeowner knowledge of pest management |
| Urban Runoff Reduction | Orange County Water District | $205,000 | Quantify pesticide water quality benefits from use of more efficient residential irrigation management |
| RIFA Monitoring | DPR | $n/a | Monitor runoff water quality from RIFA pesticide usage sites |

**Internet Resources**

| Organization | Website Address |
|---|---|
| County of Orange Watershed Management Programs | http://www.oc.ca.gov/pfrd/envres/watershed/ |
| Defend the Bay | http://www.defendthebay.org/ |
| Department of Pesticide Regulation RIFA Project | http://www.cdpr.ca.gov/docs/rifa/ |
| Irvine Ranch Water District | http://www.irwd.com/ |
| Regional Board Newport Bay TMDL Documents | http://www.swrcb.ca.gov/rwqcb8/html/tmdls.html |
| SCCWRP Study: Comparison of nutrient inputs, water column concentrations, and macro-algal biomass in upper Newport Bay, California | http://www.sccwrp.org/pubs/techrpt.htm |
| Corps of Engineers San Diego Creek Watershed Special Area Management Plan (SAMP) | http://www.spl.usace.army.mil/co/regulatory/samp/sd.html |
| UC South Coast Research and Extension Center, Irvine | http://danrrec.ucdavis.edu/south_coast/home_page.html |

**Watershed Coordinator:** The Regional Board watershed coordinator for the Newport Bay Watershed is Doug Shibberu: (909) 782-7959.

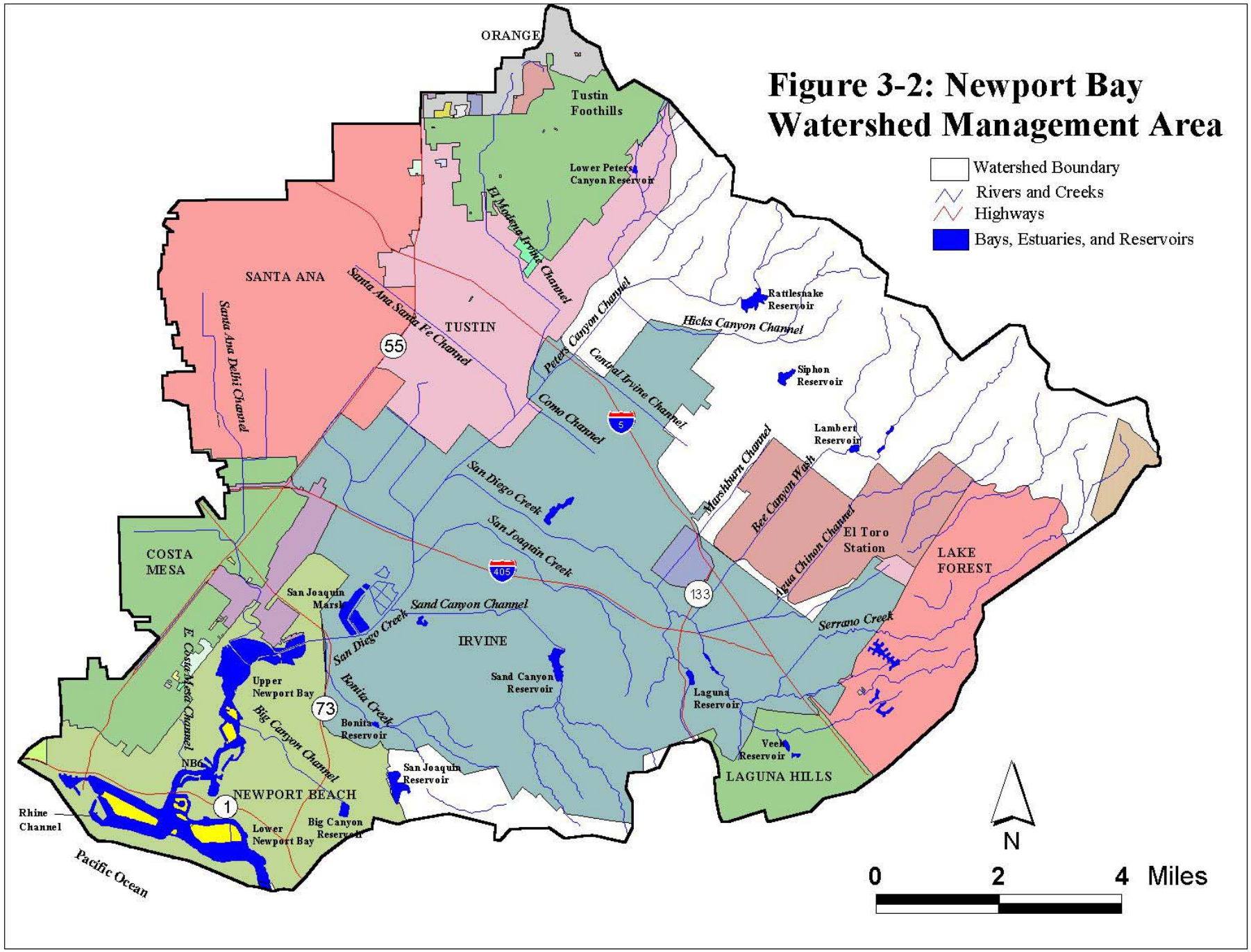


Figure 3-2: Newport Bay Watershed Management Area
Watershed Boundary
Rivers and Creeks
Highways
Bays, Estuaries, and Reservoirs
ORANGE
Tustin Foothills
Lower Peters Canyon Reservoir
El Modena Irvine Channel
SANTA ANA
Santa Ana Santa Fe Channel
Santa Ana Delhi Channel
TUSTIN
55
Peters Canyon Channel
Central Irvine Channel
Rattlesnake Reservoir
Hicks Canyon Channel
Siphon Reservoir
Como Channel
5
Lambert Reservoir
Marshburn Channel
Bee Canyon Wash
Agua Chinon Channel
El Toro Station
LAKE FOREST
San Diego Creek
San Joaquin Creek
405
133
COSTA MESA
San Joaquin Marsh
Sand Canyon Channel
Serrano Creek
IRVINE
San Diego Creek
E Costa Mesa Channel
Upper Newport Bay
Bonita Creek
Sand Canyon Reservoir
Laguna Reservoir
73
Big Canyon Channel
Bonita Reservoir
Veeh Reservoir
NBG
San Joaquin Reservoir
LAGUNA HILLS
NEWPORT BEACH
1
Rhine Channel
Lower Newport Bay
Big Canyon Reservoir
Pacific Ocean
N
0
2
4 Miles

## 3.3 LAKE ELSINORE/SAN JACINTO RIVER WATERSHED MANAGEMENT AREA

**Overview**

As shown in **Figure 3-3**, the Lake Elsinore/ Lower San Jacinto River Watershed Management Area is located in Riverside County and includes the following major waterbodies:

- Lake Elsinore
- Canyon Lake
- Fulmore Lake
- Strawberry Creek
- Lake Hemet
- San Jacinto River, all reaches
- San Jacinto Groundwater Basins

Lake Elsinore is the natural low point of the San Jacinto River watershed. The Lake acts as a sink for the River and overflows only infrequently. Over 90 percent of the Lake Elsinore watershed drains to Canyon Lake, upstream of Lake Elsinore. Almost all of the water that enters Lake Elsinore comes from overflows from Canyon Lake. Cities in the Lake Elsinore/San Jacinto River Watershed include Lake Elsinore, Canyon Lake, Hemet, Perris, Moreno Valley, San Jacinto, Lakeview, Menifee, Sun City, Idyllwild and portions of Beaumont.

The valley surrounding Lake Elsinore is bordered on the south and west by the Santa Ana Mountains and the Cleveland National Forest, and on the north and east by the San Jacinto Mountains. The bottom elevation of Lake Elsinore is 1,223 feet and its natural spill elevation is approximately 1,260 feet. Currently, Lake Elsinore has a surface area of more than 3600 acres, a maximum depth of 37 feet and a volume greater than 100,000 acre-feet at maximum capacity. The outlet channel was modified by the US Army Corp of Engineers and Riverside County Flood Control District and the sill elevation is at 1255 feet above sea level.

The semi-arid climate in southern California causes the water level of Lake Elsinore to fluctuate significantly as a result of infrequent periods of flooding, followed by prolonged periods of drying out. In turn, this hydrologic pattern causes wide swings in the lake's water quality. During dry periods, the lake levels drop, and evaporative losses cause TDS concentrations to increase well above the Basin Plan Objective. As a result of the lake level fluctuations, the Lake Elsinore Management Project was initiated. The goal of the Project is to develop strategies to achieve a stable lake level by providing make-up water and to develop projects that would minimize flooding during wet years.

Lake Elsinore is currently included on the 303(d) list of impaired waterbodies due to excessive levels of nutrients, siltation as well as unknown toxicity. The nutrients are responsible for algae blooms that cause low dissolved oxygen levels, in turn leading to numerous fish kills. The algae blooms also impair the recreational uses of the lake. The nutrients arise from nonpoint source inputs from the watershed. Sediments in the Lake serve as a significant source of nutrients as well.

Canyon Lake, which is designated MUN (municipal drinking water supply) is also included on the 303(d) list of impaired waterbodies due to nutrients and pathogens. The excessive nutrient input has caused algal blooms and low dissolved oxygen. The low DO has caused high concentration of manganese and iron. The Canyon Lake Water Treatment Plant had to be shut

down due to high algal production.The primary sources identified at this time are nonpoint sources.

There are approximately 40 confined animal feeding operations (CAFOs) within the San Jacinto River Watershed Management Area. These facilities, along with widespread agricultural operations throughout the watershed above Canyon Lake, are believed to contribute significantly to eutrophication problems in both Canyon Lake and Lake Elsinore. It is believed that failure to implement best management practices (BMPs) at these facilities continues to exacerbate water quality problems in the lower portions of the watershed.

In coordination with local stakeholders, a regional monitoring program is being implemented to assess water quality conditions and to identify and quantify sources of pollutant inputs to the lakes. A sediment study was conducted to characterize the nutrient distribution in sediment of Lake Elsinore and to quantify sources of nutrients. A water quality model was conducted to simulate the algal response to the current nutrient budget. A similar study is underway for Canyon Lake. A comprehensive toxicity monitoring program is conducted to identify the sources of toxicity in Lake Elsinore. A study to identify the trend and sources of pathogens is also being conducted. All the data collected will be used in the development of TMDLs for the lakes. Work on these TMDLs is in progress and is expected to be complete by 2004.

In the absence of TMDLs, waste discharge requirements must be established to control pollutants of concern in discharges to 303(d) listed waters. Discharges cannot cause or contribute to water quality or beneficial use impairment. To address these requirements, on January 19, 2001, a watershed-wide NPDES permit (Order No. 01-34, NPDES No. CAG618005) was adopted. This Order regulates pollutants in discharges of storm water associated with new developments (storm water discharges) to surface waters from areas tributary to Lake Elsinore and Canyon Lake (San Jacinto Watershed). Order No. 01-34 is similar to the State Water Resources Control Board's General Storm Water Construction Activity Permit (Water Quality Order No. 99-08-DWQ) (State Board's General Construction Permit) except for the following changes:

a) Monitoring and reporting requirements have been added;
b) Storm Water Pollution Prevention Plans (SWPPPs), Monitoring Programs, and post-construction Management Plans must be submitted for approval in advance of construction activities; and,
c) Offset provisions have been added.

The Hemet/San Jacinto Groundwater Association and Eastern Municipal Water District are in the process of developing a Groundwater Management Plan for the Hemet and San Jacinto subbasins. The objective of the Management Plan is to optimize use and management of groundwater resources in the Hemet and San Jacinto groundwater subbasins through the cooperative efforts of an association of the major basin pumpers. Eastern Municipal Water District is cooperating with a number of entities to collect water quality and quantity data, land use information, and data on basin hydrogeology, and to develop appropriate planning tools. A Management Plan will be developed and will include plans or programs designed to maximize the groundwater resources and ensure future water supplies.

To protect other subbasins in the San Jacinto watershed, including Perris, Menifee, Lakeview, Winchester, and San Jacinto Lower Pressure, Eastern Municipal Water District has initiated efforts to develop a Groundwater Management Plan pursuant to the requirements of Assembly Bill (AB) 3030. The goal of the program is to develop regional strategies for the protection and management of local groundwater sources. Some of the issues that will be considered include overdraft,

prevention of water quality degradation and utilization of available storage capacity to ensure adequate water supplies.

**Fiscal Year 02/03 and 03/04 Funded Activities**

Funded activities in the Lake Elsinore/San Jacinto River WMA for each of the eight program areas incorporated into the WMI are listed below

| Program | Activities |
|---|---|
| TMDLs | ▪ Conduct stakeholder group meetings<br>▪ TMDL development; focus on data analyses, problem statements, numeric target development, allocations, and implementation planning<br>▪ Develop/calibrate lake model for nutrient TMDL development for Lake Elsinore and Canyon Lake<br>▪ Develop/calibrate watershed model to assess the nutrient sources<br>▪ Conduct monitoring to identify the sources of pollutant and the response of lake ecosystem |
| Nonpoint Source Program | ▪ Grant activities including working with stakeholders to develop potential 319 and Prop. 13 grant proposals and oversight/management of grants<br>▪ Work with stakeholders to develop educational materials for toxics, nutrient and sediment control, and an education curriculum for grades k-12<br>▪ Conduct outreach activities<br>▪ Citizen monitoring |
| Monitoring &Assessment | ▪ Compile watershed monitoring data from all available sources including SAWPA, Elsinore Valley MWD, Eastern MWD, city of Lake Elsinore, and discharger self-monitor reports.<br>▪ Conduct watershed monitoring where data gaps exist<br>▪ Compile and summarize data for year 2002 update of 303(d) list and Water Quality Assessment (WQA)<br>▪ Continue monitoring/assessment activities associated with TMDL development<br>▪ Initiate monitoring program for WQA (2004) |
| Core Regulatory | ▪ Conduct regular NPDES, WDR, and stormwater inspections, reviews, and audits. Issue informal and formal enforcement actions as necessary for permit violations.<br>▪ It is expected that the Elsinore Valley Municipal Water District (EVMWD) will be applying for an NPDES permit for the discharge of recycled water into Lake Elsinore. This permit is expected to be very controversial, and will consume significant staff resources<br>▪ Pursure additional enforcement CAFOs as appropriate<br>▪ Inspect all construction projects covered under Order 01-34.<br>▪ Review and approve Storm Water Pollution Plans and review monitoring data submitted under Order No. 01-34 |
| Watershed Management | ▪ Continue to participate in the Reclaimed Water Task Force to evaluate the use of reclaimed water to stabilize the level of Lake Elsinore and reduce impairment of beneficial uses caused by excessive nutrient levels.<br>▪ Coordinate with Lake Elsinore/San Jacinto Joint Powers Authority |
| Standards/ Basin Planning | ▪ Regional Board expected to consider Basin Plan amendments to revise groundwater subbasin objectives/boundaries |
| Wetlands | ▪ Coordinate with local, state, and federal agencies on endangered species and wetland permitting issues<br>▪ Develop general WDRs (equivalent to 401 water quality certification) for sediment control projects<br>▪ Process 401 Water Quality Certification requests. Coordinate 401 requests with Order 01-34 |

| | |
|---|---|
| Groundwater | ▪ Participate in the Lakeview subbasin AB 3030 program Advisory Committee<br>▪ Review the Hemet/San Jacinto area AB 3030 groundwater study project reports/management plan |

The Regional Board is currently managing five projects in the Lake Elsinore/San Jacinto Watershed with a total contract value of approximately 370,000 dollars. These contracts are funded through various sources, including the state general fund, EPA grant programs, Prop 13 bond funds, and Regional Board funds derived from fines and unused program budgets.

| Title | Subcontractor | Amount | Description |
|---|---|---|---|
| TMDL stakeholder group meeting | SAWPA | $20,000 | Facilitate TMDL stakeholder meetings, send out meeting notices and prepare meeting notes for all TMDL meetings |
| Lake Elsinore nutrient cycles and budget | UC Riverside | $72, 292 | Conduct field and lab tests to determine the nutrient cycles, determine nutrient budget and conduct water quality modeling to simulate the algal response |
| Canyon Lake nutrient cycles and nutrient budget | UC Riverside | $57,000 | Conduct field and lab tests to determine the nutrient cycles, determine nutrient budget and conduct water quality modeling to simulate the algal response |
| Canyon Lake pathogen TMDL | UC Riverside | $20,000 | Assess the occurrence and distribution of indicator organisms in and near Canyon Lake |
| San Jacinto River watershed management plan | SAWPA | $200, 000 | Development a watershed management plan to control nutrients, provide flood control |
| **Funds Administered by Other Agencies:** | | | |
| Lake Elsinore nutrient assessment modeling | SAWPA | $181,303 | Conduct watershed modeling to assessment nutrient loads from all land use sources, calculate total nutrient load to Lake Elsinore and Canyon Lake under different hydrologic conditions |
| San Jacinto River Watershed Council | Anza-Murrieta-Elsinore RCD | $57,000 | Compile all resources list in the San Jacinto River watershed, form a watershed council that include all interest parties in the San Jacinto watershed |
| Lake Elsinore and Canyon Lake TMDL monitoring | SAWPA | $660,000 | Conduct water quality monitoring in Lake Elsinore, Canyon Lake and San Jacinto River watershed, to install stream gauging stations to support the TMDL development |

**Stakeholders**

The stakeholders that have been participating in the TMDL development efforts in the Lake Elsinore/San Jacinto Watersheds include Elsinore Valley, Eastern MWD, Cities of Lake Elsinore and Canyon Lake, Riverside County Flood Control District, Farmers Bureau of Riverside, Milk Producers Council, Western United Dairyman, Murrieta-Anza_San Jacinto RCD, and other interested individuals.

Funded by the Proposition 13, a joint power authority was formed and charged with $15 million to restore the water quality Lake Elsinore and San Jacinto Watershed. Various projects have been

proposed and environmental documents are being prepared. The proposed projects include TMDL monitoring program, Lake Elsinore fishery management, alum application, island well retrofit, aeration, and Canyon Lake Oxygenation, and de-siltation.

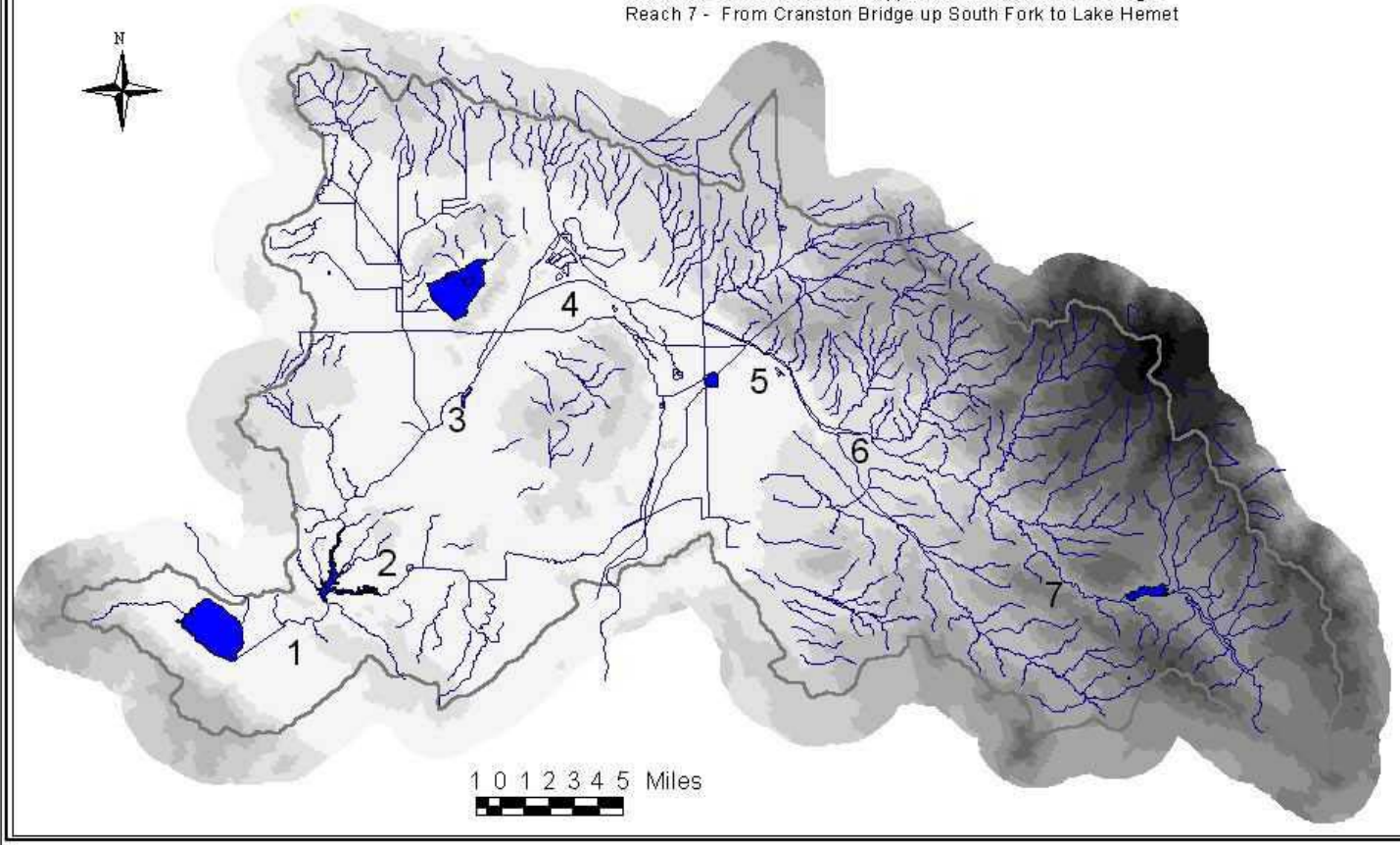
A grant from the State was obtained by the Anza-Murrieta-Elsinore RCD to compile a database of all the resources from all agencies and form a watershed council. The database is accessible on the website of SAWPA.

**Watershed Coordinator**
The Regional Board watershed coordinator for the Lake Elsinore\San Jacinto WMA is Cindy Li: (909) 782-4906.

Figure 3-3
Lake Elsinore/San jacinto River WMA

San Jacinto River

Reach 1 - Inflow to Lake Elsinore to outflow from Canyon Lake
Reach 2 - Canyon Lake (Railroad Reservoir)
Reach 3 - Inflow to Canyon Lake to Nuevo Road
Reach 4 - Nuevo Road to N-S Mid Section line, Sec. 8, T4S, R1W
Reach 5 - N-S Mid-Section line of Section 8, T4S, R1W to COnfluence with Poppet Creek
Reach 6 - Confluence with Poppert Creek to Cranston Bridge
Reach 7 - From Cranston Bridge up South Fork to Lake Hemet



## 3.4 ANAHEIM BAY, HUNTINGTON HARBOUR, AND BOLSA CHICA WATERSHED MANAGEMENT AREA

**Overview**
As shown in **Figure 3-4**, the Anaheim Bay/Huntington Harbour/Bolsa Chica Watershed Management area is located in coastal North Orange County. Waterbodies in this watershed include the following:

- Anaheim Bay-Seal Beach National Wildlife Refuge
- Anaheim Bay
- Surfside Beach
- Sunset Beach
- Huntington Harbour
- Bolsa Bay
- Bolsa Chica Ecological Reserve
- Bolsa Chica State Beach

Cities in the Anaheim Bay, Huntington Harbour, Bolsa Chica Watershed include Westminster, Seal Beach, Garden Grove and portions of Huntington beach, Fountain Valley, Santa Ana, Anaheim, Stanton, Cypress, and Los Alamitos.

*Anaheim Bay/Huntington Harbour:*
The 1998 303(d) list of impaired waters includes Anaheim Bay (for metals and pesticides) and Huntington Harbour for metals, pesticides and pathogens.

Toxics threaten the water quality and beneficial uses of the Anaheim Bay/Huntington Harbour/Bolsa Chica Watershed Management Area. Two major storm drains, the Bolsa Chica Channel and the East Garden Grove Wintersburg Channel, as well as their tributaries, drain into the Anaheim Bay/Huntington Harbour complex (**Figure 3-4**). Inputs of stormwater and urban nuisance flows via these channels appear to be significant sources of pollutants. Concentrations of trace metals have decreased over a 13-year period. In studies conducted by the Regional Board in 1992/93, metals concentrations met established water quality criteria. However, there was an unidentified nonpolar organic compound that was found to be acutely toxic to test species.

Pathogens also threaten water quality in the Anaheim Bay/Huntington Harbour complex. Anaheim Bay (inland of Pacific Coast Highway bridge) and Huntington Harbour are designated as no discharge areas for vessel sanitary wastes. Pumpout facilities are in place throughout the Harbour to facilitate compliance, however illegal vessel discharges may still occur.

Funds received from the settlement of a coastal oil spill are being used to conduct an extensive monitoring program in the Anaheim Bay/Huntington Harbour area to assess conditions and provide data needed for the development of appropriate TMDLs.

*Bolsa Chica:*
The Bolsa Chica lowlands are comprised of 880 acres of degraded wetlands. The wetlands had been developed for petroleum production, but were deeded to the State Lands Commission in 1997. The wetlands are being restored to provide mitigation for wetlands that will be lost during the expansion projects for the Port of Los Angeles and the Port of Long Beach

The Regional Board is providing oversight for the clean up of the Bolsa Chica lowlands, through an interagency agreement. The interagency agreement includes the Resources Agency of the State

of California, the California Department of Fish and Game, the California State Lands Commission, USEPA, the National Oceanic and Atmospheric Administration, and the United States Fish and Wildlife Service.

This project only affects the 880-acre Bolsa Chica lowland wetlands site deeded to the state in 1997. A grant from USEPA will fund the Regional Board's Bolsa Chica cleanup oversight activities at the rate of 1.1 PY/year, through October 2001. The overall restoration project is expected to take 15 to 20 years to complete.

The Regional Board's current role in the Bolsa Chica wetlands project, as defined in the interagency agreement, includes: serving on the technical advisory committee to the project Steering Committee, providing clean up oversight, and considering and deciding clean up related issues, through October 2001.

The Steering Committee will be selecting the preferred wetlands restoration alternative, with a goal of providing high quality tidal and inter-tidal wildlife habitat. This selection process involves coordination with Orange County and local agencies and authorities to address concerns regarding the quality and quantity of dry weather and wet weather flow entering and potentially entering the restored wetlands from the tributary watershed. The Regional Board's involvement in this project will assist in the restoration of the wetlands to robust habitat with high environmental value.

Cleanup activities in Bolsa Chica are proceeding at a much slower rate than originally anticipated. Based on an assessment of FY 98-99 expenditures, Board staff does not expect to expend all USEPA funding by October 2001. In addition, activities related to cleanup are likely to increase in 2002. Therefore, for Regional Board staff to continue in the oversight role beyond October 2001, a funding augmentation and a time extension to the USEPA agreement is needed.

**Stakeholders**

California Coastal Commission
California Department of Fish and Game
City of Huntington Beach
City of Seal Beach
County of Orange
Harbor Patrol
National Marine Fisheries
NGOs
Orange Coast Watch
Orange County Environmental Health
Orange County PFRD
Orange County Sanitation District
Orange County Sheriff
State Lands Commission
U.S. Army Corps of Engineers

**Fiscal Year 01-02 and 02-03 Program Activities**
Funded activities in the Anaheim Bay, Huntington Harbour, and Bolsa Chica WMA for each of the eight program areas incorporated into the WMI are listed below.

| Program | Activities |
|---|---|
| TMDLs | ▪ Conduct stakeholder group meetings |

| Program | Activities |
|---|---|
| Nonpoint Source Program | ▪ 319 and Prop 13. grant activities including working with stakeholders to develop potential 319 and Prop. 13 grant proposals and oversight/management of grants<br>▪ **Work with stakeholders to educate and implement NPS Management Measures**<br>▪ Conduct *Caulerpa taxifolia* presentations, create/distribute outreach material, and attend Southern California *Caulerpa* Action Team (SCCAT) meetings<br>▪ Work with stakeholders to develop education/curriculum for k-12. Work with stakeholders to develop education materials for toxics and pathogen control<br>▪ Conduct outreach activities |
| Monitoring &Assessment | ▪ Initiate monitoring and assessment activities on 3 sites identified as "Candidate Toxic Hot Spots" in the Region's BPTC program (Proposed Regional Toxic Hot Spot Cleanup Plan, December, 1997)<br>▪ Water Quality Assessment monitoring at Anaheim Bay and Huntington Harbour<br>▪ Initiate monitoring and assessment activities on 3 sites identified as "Candidate Toxic Hot Spots" in the Region's BPTC program (Proposed Regional Toxic Hot Spot Cleanup Plan, December, 1997) |
| Core Regulatory | ▪ Conduct regular NPDES,WDR, and stormwater inspections, reviews, and audits. Issue informal and formal enforcement actions as necessary for permit violations |
| Watershed Management | ▪ **Continue participation in the quarterly meetings of the Huntington Harbour Water Quality Issues Committee**<br>▪ Educate and mentor development of watershed management plans |
| Standards/ Basin Planning | ▪ No specific activities planned |
| Wetlands | ▪ Participation on the Bolsa Chica Technical Advisory Committee<br>▪ Oversight and coordination of the multi-agency Bolsa Chica Wetlands cleanup activities<br>▪ Coordinate with local, state, and federal agencies on endangered species and wetland permitting issues<br>▪ Develop general WDRs (equivalent to 401 water quality certification) for sediment control projects<br>▪ Process 401 Water Quality Certification requests |
| Groundwater | ▪ No specific activities planned |

**Selected References**

California State Water Resources Control Board, California Ocean Plan
California State Water Resources Control Board, Water Quality Control Policy for Enclosed Bays and Estuaries of California

**Watershed Coordinator**

The Regional Board watershed coordinator for the Anaheim Bay, Huntington Harbour, And Bolsa Chica WMA is Stephanie Gasca: (909) 782-3221.

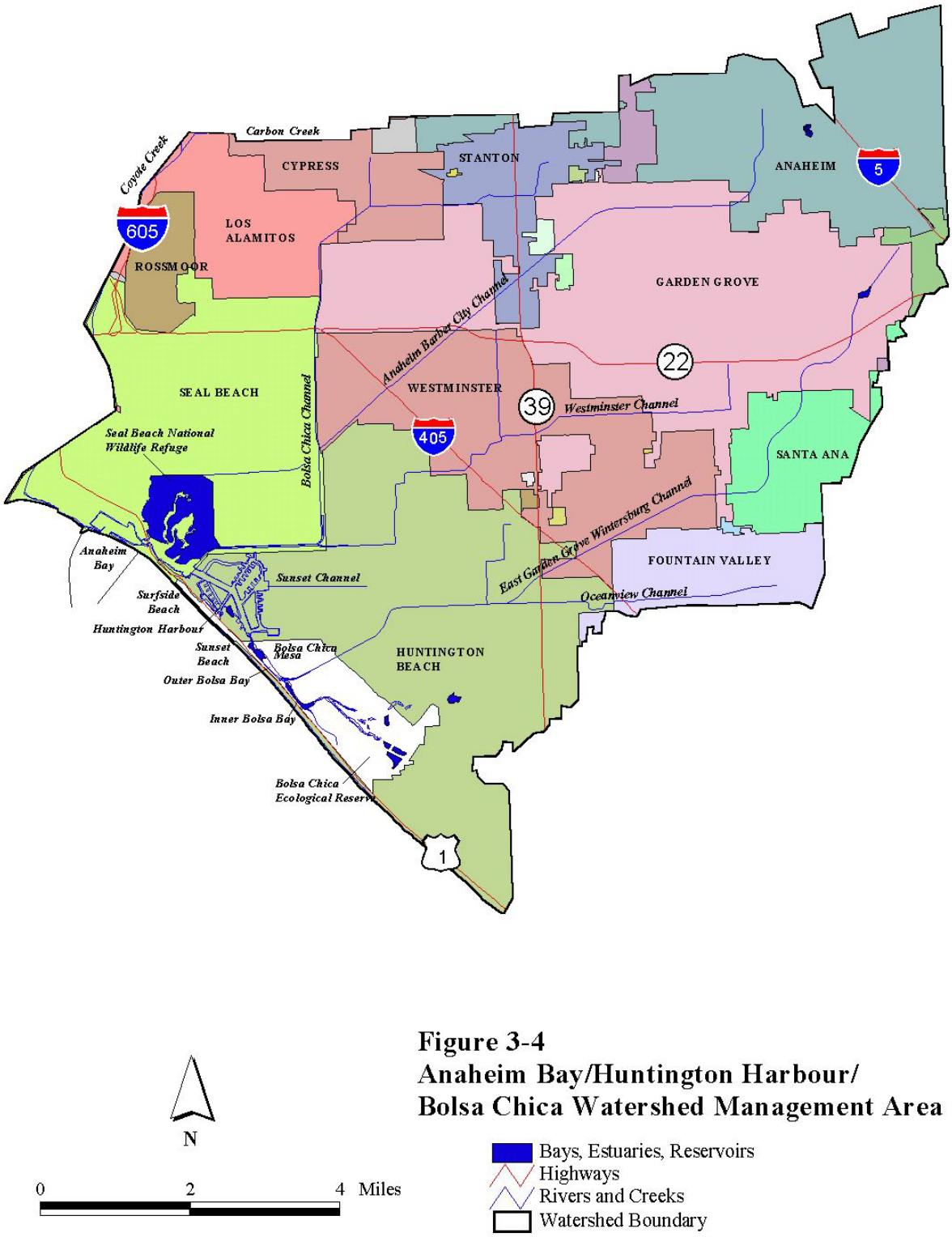



**Figure 3-4**
**Anaheim Bay/Huntington Harbour/**
**Bolsa Chica Watershed Management Area**

## 3.5 BIG BEAR AREA WATERSHED

**Overview**
As shown in Figure 3-5, the Big Bear Area watershed is located in the San Bernardino Mountains. Major waterbodies in this watershed include:

Big Bear Lake
Baldwin Lake
Stanfield Marsh
Shay Meadows
Rathbone (Rathbun) Creek
Summit Creek
Grout Creek

Cities in the Big Bear Area Watershed include Big Bear Lake and Big Bear City.

Big Bear Lake is a high mountain reservoir occupying a relatively small, east to west oriented basin. The lake was created in 1885 by the construction of a single arch dam across Bear Creek, a tributary to the Santa Ana River. The dam was enlarged to its present size in 1911. The spillway altitude is 6,744 feet and the lake has a surface area of 3,000 acres, a storage capacity of 73,300 acre-feet and an average depth of 24 feet, with the deepest point of 72.3 feet at the dam.

The Big Bear Lake drainage basin encompasses about 38.5 square miles and is drained by more than ten streams. Most tributaries to Big Bear Lake have lengths of one to two miles with the exception of Grout and Rathbone (Rathbun) Creeks which are over three miles long. Baldwin Lake has no through-flowing streams and is an ephemeral lake. The Baldwin Lake drainage basin encompasses approximately 34.3 square miles. Precipitation varies widely from west to east. The west end near the dam receives an average of 38 inches/year, while easterly of Baldwin Lake the average is 10 inches/year.

The Big Bear Lake basin is dominated by yellow pine and white fir, with pinon pine and junipers on the higher slopes. The area supports a variety of sensitive habitats, including wet meadows containing several endangered plant species that are remnants of the glacial episodes of the region. The lake itself supports habitat for endangered Bald Eagles during the winter season.

The Big Bear Lake basin supports a large number of recreational activities. Lake recreational activities include fishing, swimming, boating and water skiing. Areas adjacent to the lake are used for camping, skiing, hiking, equestrian trails and other outdoor activities.

In addition to the 15,000 permanent residents in Big Bear Valley, over 4 million people visit Big Bear Valley annually. In 1990, a total of 8,681 boat permits were issued to permanent residents and seasonal and daily visitors. Summer sports, as well as the operation of two major ski areas, make Big Bear Valley a highly utilized year-round resort; 120,000 to 180,000 visitors come to this area every weekend.

The 1998 303(d) list designated the following waterbodies as impaired: Big Bear Lake, due to nutrients, copper, mercury, metals, and siltation; Grout Creek for metals and nutrients; Summit Creek due to nutrients; Knickerbocker Creek for pathogens and metals; and Rathbone Creek due to nutrients and siltation. The problem pollutants have been identified as coming from nonpoint sources. In conjunction with local stakeholders, work is underway to develop TMDLs for these pollutants. The TMDLs are expected to be complete by 2004/2005.

Studies conducted from 1968 to the present have found that Big Bear Lake is moderately eutrophic. During the summer months, deeper water may exhibit severe oxygen deficits. Increased shallow areas resulting in greater light availability have lead to an increased abundance of nuisance aquatic plants which have impaired the fishing, boating, and swimming uses of the lake. These plants uptake nutrients from the sediment and during die-off, release nutrients and organics. Phosphorus has been identified as the nutrient limiting algae growth. Approximately 42% of the phosphorus load emanates from Rathbone Creek as identified in 1992 in the Clean Lakes Study. The large amount of precipitation in Southern California during 1993 resulted in more runoff from the Big Bear Lake tributaries and an increased input of nutrients. For instance, the total phosphorus load increased between 1992 to 1993 by a factor of 2, and the total nitrogen load increased by a factor of 100. To control the vegetation in the Lake mechanical harvesters are used to remove aquatic plants, including the roots. However, given the increasing abundance of nuisance aquatic plants, harvesting of aquatic vegetation may not be effective much longer. It is therefore appropriate to implement methods to control and limit the growth of nuisance aquatic plants and to implement control measures for reducing the input of nutrients from the major tributaries, Rathbone Creek, Summit Creek and Grout Creek. In addition, internal loading of nutrients needs to be estimated and controlled.

Toxics may be entering the Big Bear Lake watershed and accumulating in aquatic organisms and bottom sediments at concentrations that are of concern, not only for the protection of aquatic organisms, but for the protection of human health as well. Past Toxic Substances Monitoring Program data have indicated the presence of copper, lindane, mercury, and zinc in fish tissue. Mercury and copper concentrations measured in the Lake and in several of the tributaries (1992-93 Clean Lake study) exceeded water quality criteria. Additionally, zinc and manganese sediment concentrations exceeded proposed sediment guidelines for most of the lake and tributary stations during the 1992 monitoring. At the same time, however, chronic toxicity bioassays were inconclusive as to whether the presence of metals was causing a toxic response in test organisms. Additional investigations should be done to both pinpoint the source(s) of metals into the Lake and determine if metal concentrations are causing toxicity. Once that is accomplished, appropriate source control measures can be implemented. Fish tissue sampling conducted between November 8 and November 10, 2000 showed that both fish flesh and fish livers contained low concentrations of metals. These concentrations were well below amounts documented as leading to reduced survival rates or growth. Future fish sampling will be conducted to determine if the results from November 2000 are representative of the conditions in the lake. Also planned in the next year are sediment analyses for both metals and nutrient constituents that will enable determinations of internal loading.

In September 2000, local Big Bear Lake stakeholders retained a consultant to assist Regional Board staff in the development of the Big Bear Lake TMDLs. The stakeholders and consultants have spent the first half of the fiscal year developing cooperative agreements and funding strategies. The second half of the fiscal year will be spent conducting monitoring. Therefore, some of the activities of the Board staff have been modified as a result of stakeholder participation. Staff's activities have been modified to reviewing proposed monitoring plans, assisting in monitoring activities, coordinating and attending meetings with stakeholders, contract management, and summarizing historical data.

The Big Bear Watershed Management Council consists of Big Bear Municipal Water District, City of Big Bear Lake, San Bernardino County Flood Control District, Snow Summit Ski Resort, Bear Mountain Ski Resort, California Department of Fish and Game, East Valley Resource Conservation District, Santa Ana Regional Water Quality Control Board, Big Bear Area Regional

Wastewater Agency, Big Bear Community Services District, CalTrans, US Forest Service and other local agencies and community members.

**Fiscal Year 02/03 and 03/04 Funded Activities**
Funded activities in the Newport Bay WMA for each of the eight program areas incorporated into the WMI are listed below. Currently unfounded activities include monitoring for the Big Bear Lake Water Quality Assessment (2004).

| Program | Activities |
|---|---|
| TMDLs | ▪ Conduct stakeholder group meetings<br>▪ Conduct watershed modeling<br>▪ Initiate development of TMDL, identify numeric targets, allocations, and implementation program<br>▪ Evaluate feasibility of appropriate lake model for nutrient TMDL development |
| Nonpoint Source Program | ▪ Grant activities including working with stakeholders to develop potential 319 and Prop 13 grant proposals and oversight/management of grants<br>▪ Participation on the Rathbone Creek Technical Advisory Committee<br>▪ Participation in the Big Bear Lake CRMP meetings<br>▪ Work with stakeholders to implement ski MMs and erosion MMs<br>▪ Conduct outreach activities |
| Monitoring &Assessment | ▪ Monitoring associated with TMDL development<br>▪ Compile and summarize data for year 2002 update of 303(d) list and the Water Quality Assessment |
| Core Regulatory | ▪ Conduct regular NPDES,WDR, and stormwater inspections, reviews, and audits. Issue informal and formal enforcement actions as necessary for permit violations |
| Watershed Management | ▪ Participation in the Big Bear Lake TMDL and Rathbone creek TAC meetings |
| Standards/ Basin Planning | ▪ No specific activities planned |
| Wetlands | ▪ Coordinate with local, state, and federal agencies on endangered species and wetland permitting issues<br>▪ Develop general WDRs (equivalent to 401 water quality certification) for sediment control projects<br>▪ Process 401 Water Quality Certification requests |
| Groundwater | ▪ No specific activities planned |

**Selected references for the Big Bear Area Watershed:**

Ball, Orville P., and Associates. 1987. *Lake management and rehabilitative recommendations – Big Bear Lake.* El Cajon, CA.

City of Big Bear Lake. 1999. *General Plan*. Big Bear Lake, CA.

Courtier, Michelle and Hope Smythe. 1994. *Investigation of toxics and nutrients in Big Bear Lake*. Santa Ana Regional Water Quality Control Board, Clean Lakes Study –Phase I Final Report.

Irwin, G.A. and M. Lemons. 1974. *A water quality reconnaisance of Big Bear Lake, San Bernardino County, California, 1972-73*. USGS Water Resources Investigations, Rept. No. 276-01.

Neste, N.A., J.R. Brudin, and R.V. Stone. 1975. *Draft EIR. Wastewater facilities plan Big Bear area, collection, treatment, disposal and reclamation for Big Bear Area Regional Wastewater Agency*. San Bernardino, CA.

Pearson, Elmer G., and George A. Irwin. 1972. *Limnological studies of Big Bear Lake, California*. USGS Water Resources Division, Open-File Report.

Siegfried, Clifford A., Perry L. Herrgesell, Alan P. Pickard, John R. Gustafson, and William E. Loudermilk. 1977. *Limnological studies of Big Bear Lake California: November 1976-April 1977*. California Department of Fish and Game, Big Bear Lake Limnological Laboratory, Report No. 77-1.

Siegfried, C. A.,William E. Loudermilk, Alan P. Pickard, and Perry L. Herrgesell. 1978. *Limnology of Big Bear Lake in 1977, A drought year*. California Department of Fish and Game, Big Bear Lake Limnological Laboratory, Report No. 78-1.

Siegfried, Clifford A., Perry L. Herrgesell, and William E. Loudermilk. 1979. *The aquatic macrophytes of Big Bear Lake.* California Department of Fish and Game, Big Bear Lake Limnological Laboratory, Technical Paper No. 79-4.

Siegfried, C. A. and P. L. Herrgesell. 1979. *Macronutrients in the Big Bear Lake ecosystem*. Calif. Dept. Fish and Game, Big Bear Lake Limno. Lab., Technical Paper No. 79-5.

**Watershed Coordinator**

The watershed coordinator for the Big Bear Area Watershed Management Area is Heather Boyd and can be reached at hboyd@rb8.swrcb.ca.gov or (909) 320-2006.

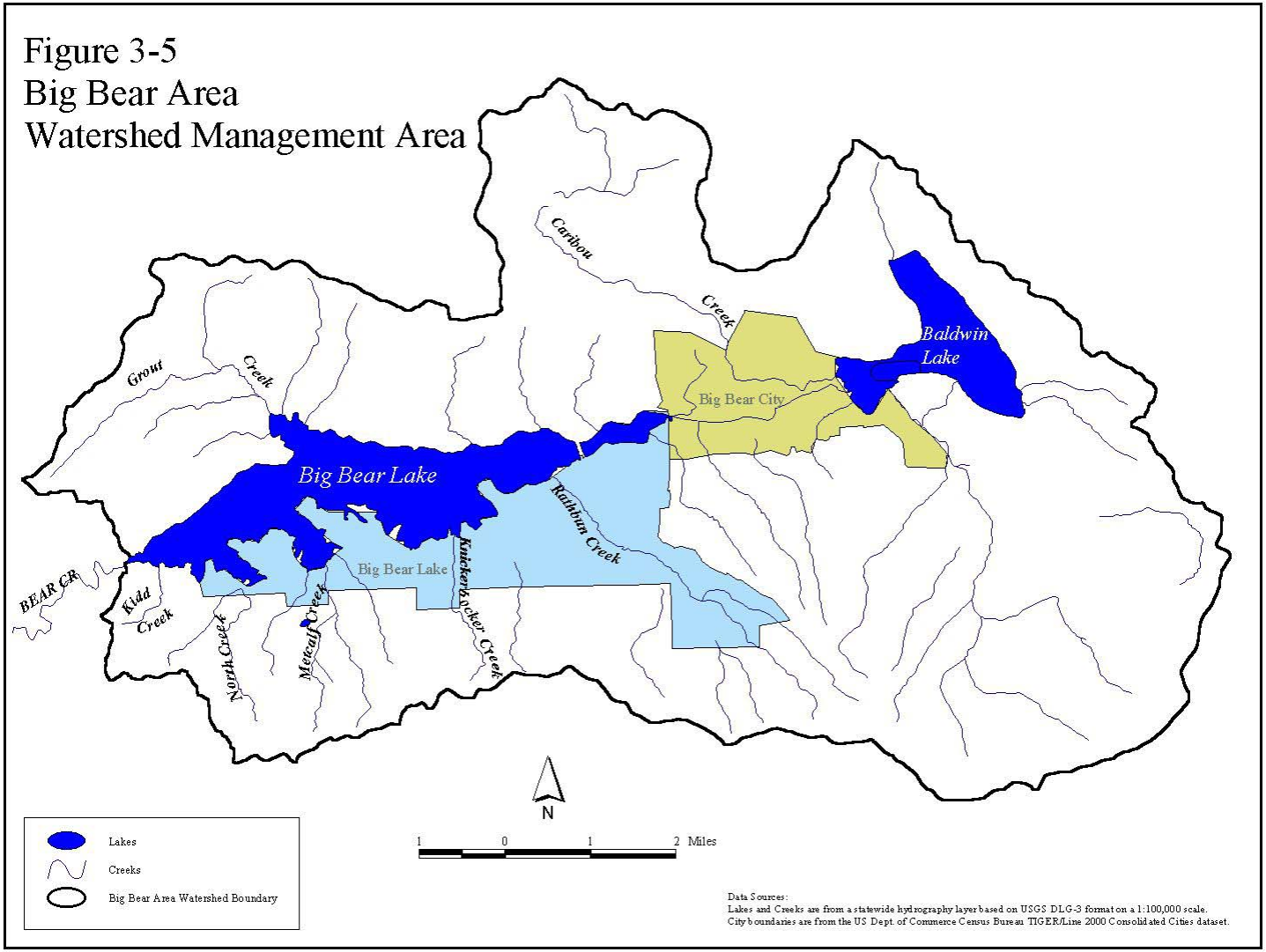


Figure 3-5
Big Bear Area
Watershed Management Area
Caribou
Creek
Baldwin
Lake
Big Bear City
Grout
Creek
Big Bear Lake
Rathbun Creek
Big Bear Lake
Knickerbocker Creek
BEAR CR
Kidd
Creek
North Creek
Metcalf Creek
N
1
0
1
2 Miles
Lakes
Creeks
Big Bear Area Watershed Boundary
Data Sources:
Lakes and Creeks are from a statewide hydrography layer based on USGS DLG-3 format on a 1:100,000 scale.
City boundaries are from the US Dept. of Commerce Census Bureau TIGER/Line 2000 Consolidated Cities dataset.

## 3.6 UPPER SANTA ANA RIVER WATERSHED MANAGEMENT AREA

**Overview**

The Upper Santa Ana Watershed Management Area consists of the following drainages located in the San Bernardino Mountains: the uppermost (mountain) reach of the Santa Ana River (reach 6), mountain reaches of several tributaries to the Middle Santa Ana River Watershed, and Mill Creek and its tributaries. In addition, Lytle Creek and Cajon Creek, originating in the San Gabriel Mountains, are considered part of the Upper Santa Ana Watershed Management Area. (The Big Bear/Baldwin Lake Drainage Area, while part of the Upper Santa Ana River Drainage, is considered as a separate Watershed Management Area. This area contains the most populated communities in the Upper Santa Ana River Drainage, as well as Big Bear Lake Reservoir and the ephemeral Baldwin Lake, and, as a result, has unique water quality issues that are discussed under the Big Bear Lake Watershed Management Area Section in this document.) Major waterbodies in the Upper Santa Ana Watershed Management Area include:

- Santa Ana River, Reach 6.
- Bear Creek, which flows from Big Bear Lake to Reach 6 of the Santa Ana River.
- Siberia Creek, which flows into Bear Creek.
- Forsee Creek, Deer Creek, Barton Creek, and Fish Creek which flow into Reach 6 of the Santa Ana River.
- The mountain reach of Mill Creek.
- Tributaries to Mill Creek including Mountain Home Creek, Mountain Home Creek East Fork, and several smaller creeks.
- The mountain reaches of Cajon Creek, Cable Creek, Devil Canyon Creek, Waterman Canyon Creek, East Twin and Strawberry Creeks, City Creek, and Plunge Creek.
- The mountain reaches of Lytle Creek.

In this Management Area there are several smaller tributaries to the above listed water bodies. In addition, there are several mountain meadows and other minor streams.

The geography of the area is typified by tall peaks, steep slopes, and rugged canyons. Elevations range in the San Gabriel Mountains from 10,064 feet above sea level (feet) on Mount San Antonio and 8859 feet on Cucamonga Peak, to approximately 2200 feet where the tributaries reach the valley. In the San Bernardino Mountains, elevations range from 11,502 feet on Mt. San Gorgonio to approximately 1,500 feet where City Creek flows into the valley near the City of San Bernardino. Precipitation, often consisting of heavy snowfall at higher elevations in the winter, is much greater than in the adjacent valley areas. The higher elevations are covered with coniferous forests; lower elevations and south facing slopes support the chaparral plant community. Some of the waterways support federally and state listed rare, threatened, or endangered species such as the mountain yellow-legged frog, the speckled dace, and the slender-horned spineflower.

The area is generally contained in the San Bernardino National Forest under the jurisdiction of the United States Forest Service. However, there are several areas of private property located in the watershed area. The economy of the area is generally based on recreation. There are numerous church, school, and other group camps located throughout the area, as well as private vacation cabins. In addition, a substantial number of residents live year round in the area. Recreational activities include hiking, camping, picnicking, site seeing, cross country skiing, and general snow play. In addition, hunting and fishing are popular in the area. Several of the larger streams support native and stocked rainbow trout, as well as introduced brown trout. Communities in the area include Lytle Creek, Running Springs, Angelus Oaks, and Forest Falls.

The Seven Oaks Dam has been recently constructed on the Santa Ana River at the base of the San Bernardino Mountains to control flooding and is operated by the United States Army Corps of Engineers.

Water is diverted on several of the streams in the watershed and used for municipal and agricultural uses. On Lytle Creek, Reach 6 of the Santa Ana River, and Mill Creek, water is diverted to produce hydroelectric power, as well.

**Stakeholders**
Stakeholders include governmental agencies, citizen groups, water agencies, and a hydro-electric producer.

Government agencies include the United States Forest Service, the County of San Bernardino, United States Army Corps of Engineers, California Department of Fish and Game, United States Fish and Wildlife Service, and the Regional Water Quality Control Board.

Citizen groups include Audubon Society, Cal Trout, Fish Resource Volunteer Crew, and the Lytle Creek Community Citizen Group.

The producer of hydro-electric power is Southern California Edison. Water agencies include the following: Fontana Union Water Company and West San Bernardino County Water District, which receive water from Lytle Creek; Bear Valley Mutual Water Company, Crafton Water Company, City of Redlands, North Fork Water Company, Lugonia Water Company, and San Bernardino Valley Municipal Water District, which receive water from Mill Creek and the Santa Ana River; Plunge Creek Mutual Water Company, which owns the water rights to this creek; Running Springs Water District, which receives some of its water supply from local wells and operates a sewage treatment plant near Fredalba Creek; and East Valley Water District, which receives water from City Creek.

**Water Quality**
The water quality in this watershed area is generally good. Precipitation falls in this mostly rural area and flows as groundwater and surface flow through granitic soils creating water of high quality.

However, there have been impacts to water quality resulting from faulty subsurface sewage systems in some of the mountain communities. Mill Creek, Reach 1 and 2, and Mountain Home Creek, and Mountain Home Creek East Fork were listed (in 1998) as impaired water bodies (for pathogens) under the Clean Water Act Section 303 (d).

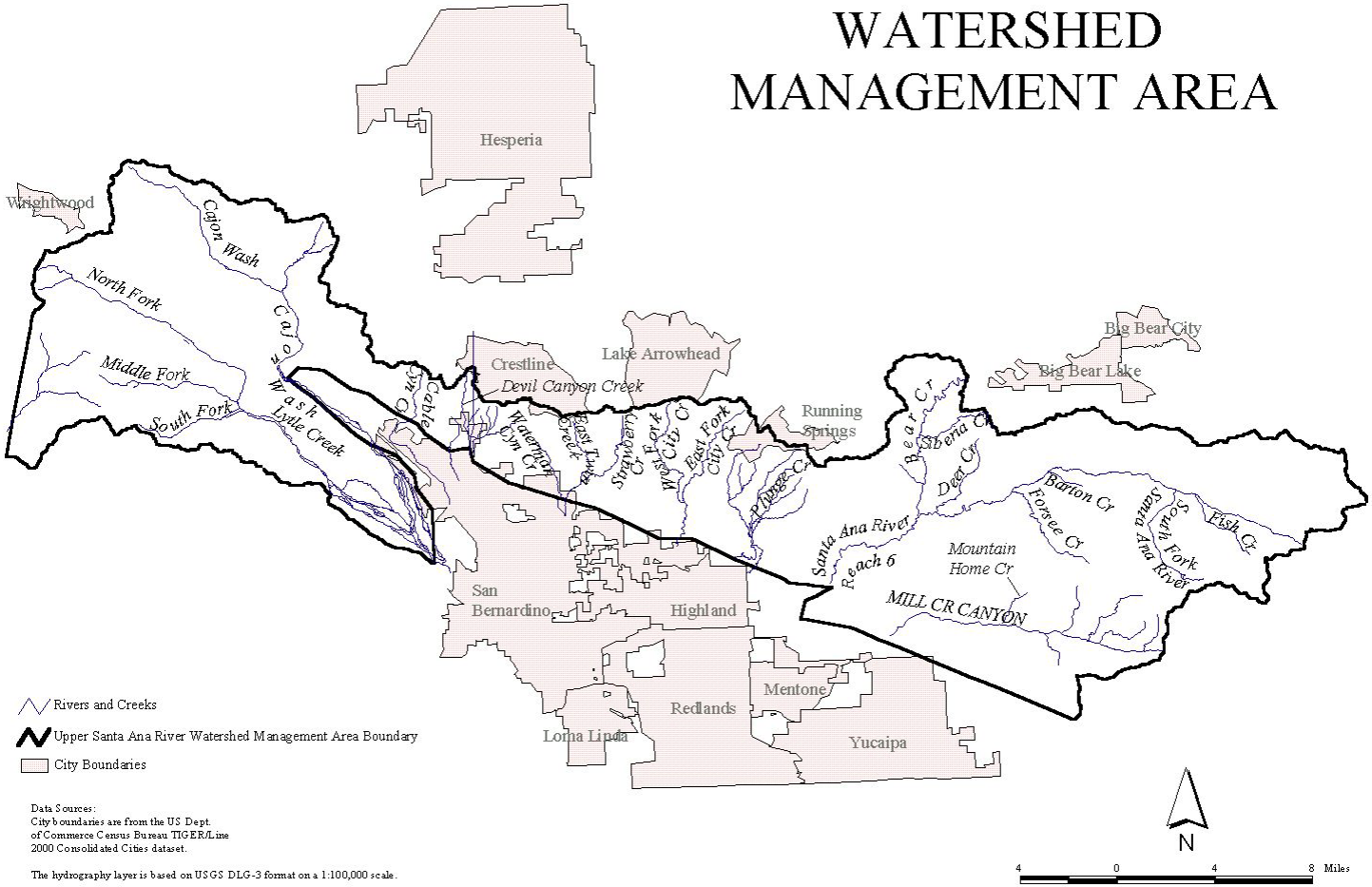
**Fiscal Year 02-03 and 03-04 Program Activities**
Funded activities in the Upper Santa Ana WMA for each of the eight program areas incorporated into the WMI are listed below.

| Program | Activities |
|---|---|
| TMDLs | ▪ No specific activities planned |
| Nonpoint Source Program | ▪ No specific activities planned |
| Monitoring &Assessment | ▪ No specific activities planned |

| Program | Activities |
|---|---|
| Core Regulatory | ▪ Conduct regular NPDES, WDR, and stormwater inspections, reviews, and audits. Issue informal and formal enforcement actions as necessary for permit violations |
| Watershed Management | ▪ No specific activities planned |
| Standards/ Basin Planning | ▪ No specific activities planned |
| Wetlands | ▪ Coordinate with local, state, and federal agencies on endangered species and wetland permitting issues<br>▪ Develop general WDRs (equivalent to 401 water quality certification) for sediment control projects<br>▪ Process 401 Water Quality Certification requests |
| Groundwater | ▪ Enforcement activities related to septic system prohibitions |

**Watershed Coordinator:**
David G. Woelfel (909) 782-7960

# FIGURE 3-6
# UPPER SANTA ANA RIVER WATERSHED MANAGEMENT AREA



## 3.7 MIDDLE SANTA ANA RIVER WATERSHED MANAGEMENT AREA

**Overview**

As shown in **Figure 3-7**, the Middle Santa Ana River Watershed Management Area extends from Prado Dam to the foothills of the San Bernardino and San Gabriel Mountains and includes the following major waterbodies:

| | |
|---|---|
| Santa Ana River, Reaches 3, 4 and 5 | San Timoteo Basin |
| Temescal Creek | Bunker Hill Basin – I, II, and Pressure |
| San Timoteo Creek | Rialto–Colton Basin |
| Mill Creek – Reach 1 | Riverside Basin – I, II, and III |
| Lytle Creek | Arlington Basin |
| Warm Creek | Temescal Basin |
| Plunge Creek | Bedford Basin |
| City Creek | Lee Lake Basin |
| Yucaipa Creek | Coldwater Basin |
| Reche Canyon Creek | |

Cities in the Middle Santa Ana River Watershed include Corona, Norco, Riverside, Colton, San Bernardino, Grand Terrace, Highland, Loma Linda, Redlands, Calimesa, Yucaipa, and portions of Beaumont.

The 1975, 1983 and 1995 Basin Plans reported that the most serious problem in the Santa Ana River Basin is the buildup of dissolved minerals, or salts, in the ground and surface waters. Sampling and computer modeling of groundwaters showed that the levels of dissolved minerals (TDS) were exceeding water quality objectives or would do so in the future unless appropriate controls were implemented. Nitrogen levels in the Santa Ana River, largely in the form of nitrate, were likewise projected to exceed objectives. These high levels of TDS and nitrate adversely affect the beneficial uses of ground and surface waters. In addition, mineralization problems in the Middle Santa Ana River WMA significantly affect the potential of reclamation activities.

As discussed in Section 2.1, SAWPA is coordinating a study sponsored by the Nitrogen/TDS Task Force, a consortium of water supply and wastewater management agencies in the Region. The Task Force is supporting Regional Board participation in the study, which is being conducted for the Santa Ana River watershed as a whole. The Task Force is investigating questions related to nitrogen and TDS management in the watershed, including groundwater subbasin water quality objectives, subbasin boundaries, and regulatory approaches to wastewater reclamation and recharge. The Task Force recommends changes in objectives and subbasin boundaries that would substantially affect the Middle Santa Ana River. Basin Plan amendments to incorporate these changes will likely be considered by the Regional Board in 2001-02.

Non–native plants, specifically Giant Reed (*Arundo donax*) (hereafter Arundo) and Saltceder (*Tamarix sp.*), have significantly affected the beneficial uses of the Santa Ana River and its tributaries. Throughout the Santa Ana River Watershed, particularly the middle portions, Arundo and Saltcedar have invaded and destroyed riparian, endangered species, and aquatic habitat. Arundo's effect is more serious because it consumes water at a much higher rate than native species. Approximately 8,000 acres of Arundo have been identified along the Santa Ana River watershed. To address the Arundo problem, a number of local, federal and state agencies have formed "Team Arundo", with the intent to develop an Arundo eradication management plan and to initiate the eradication process. Education of local landowners and the nursery and landscape industry is also an important component of the eradication process.

**Stakeholders**

– Santa Ana Watershed Project Authority
– San Bernardino Valley Municipal Water District
– San Bernardino County Transportation and Flood Control District
– Riverside County Flood Control and Water Conservation District
– San Bernardino Valley Water Conservation District
– Metropolitan Water District of Southern California
– East Valley Resource Conservation District
– West San Bernardino County Water District
– Western Municipal Water District
– Inland Empire Utilities Agency
– US Army Corps of Engineers
– Fontana Water Company
– Fontana Union Water Company
– Cucamonga County Water District
– Riverside Highland Water Company
– San Gorgonio Pass Water Agency
– Western Heights Water Company
– East Valley Water District
– Upper Santa Ana Water Resources Association
– San Bernardino Regional Water Resources Authority
– Santa Ana Watershed Association of Resource Conservation Districts
– Team Arundo

– Cities of San Bernardino, Riverside, Corona, Norco, Redlands, Yucaipa, Beaumont, Highland, Grand Terrace, Colton, Rialto, Loma Linda, Calimesa, Fontana.

**Fiscal Year 02-03 and 03-04 Program Activities**

Funded activities in the Newport Bay WMA for each of the eight program areas incorporated into the WMI are listed below.

Unfunded activities include reconsideration of site-specific objectives (SSOs) for the middle Santa Ana River and certain tributaries for copper, cadmium, lead and un-ionized ammonia to address new scientific information. These SSOs are included in the 1995 Basin Plan but the USEPA has reserved action on their approval, given the new scientific information indicating that the objectives may be inappropriate.

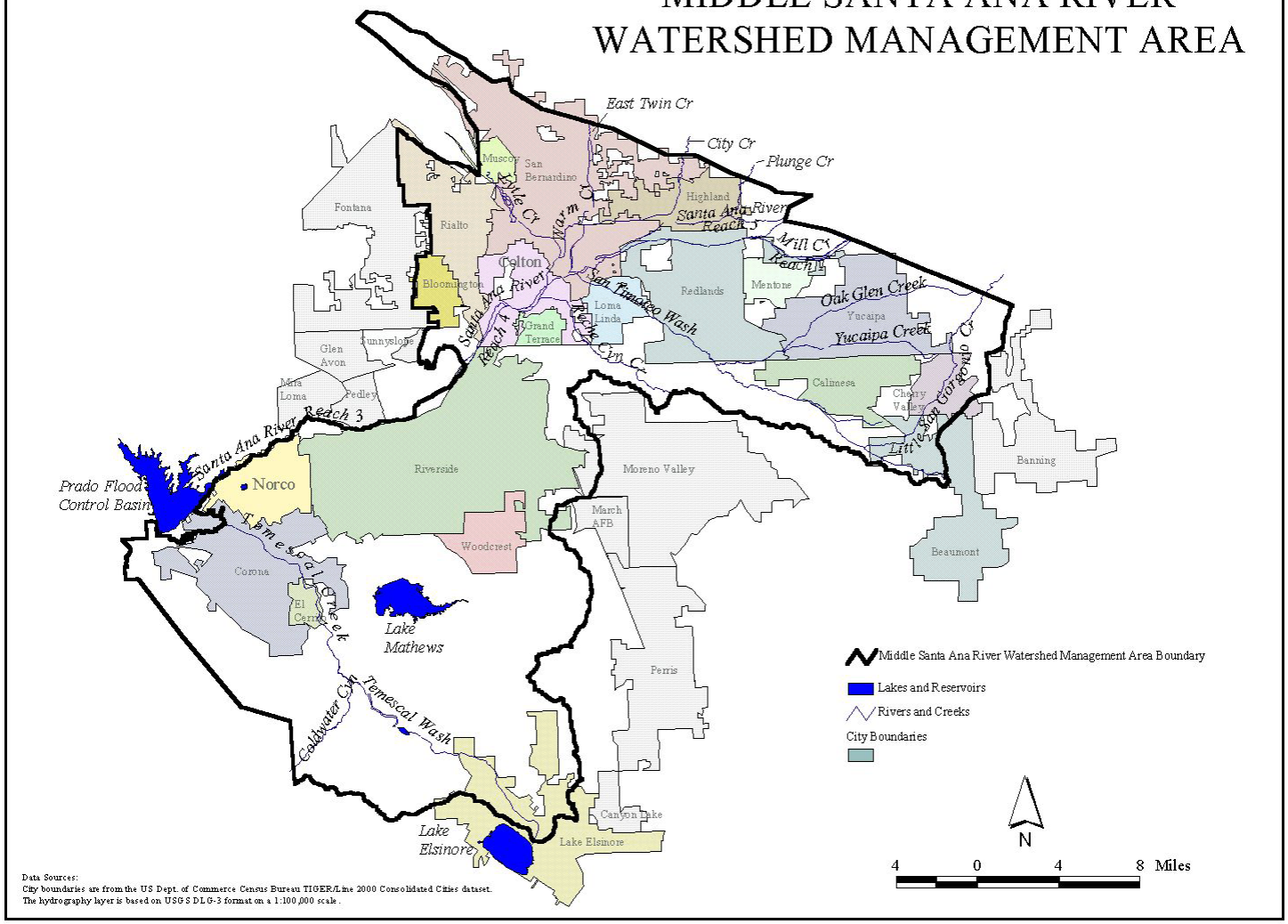
| Program | Activities |
|---|---|
| TMDLs | ▪ (See Chino Basin activities for Santa Ana River – Reach 3 TMDL activities) |
| Nonpoint Source Program | ▪ Grant activities involve working with stakeholders to develop potential 205(j), 319(h), and Prop 13 grant proposals and oversight/management of grants<br>▪ Work collaboratively with the Resource Conservation Districts and San Bernardino County to address and develop education/outreach material<br>▪ Conduct outreach activities |
| Monitoring &Assessment | ▪ Conduct Santa Ana River monitoring at Prado Dam (pursuant to Basin Plan) and prepare assessment report for the Board and public |

| Program | Activities |
|---|---|
| Core Regulatory | ▪ Conduct regular NPDES,WDR, and stormwater inspections, reviews, and audits. Issue informal and formal enforcement actions as necessary for permit violations |
| Watershed Management | ▪ Participate in the Santa Ana Watershed Association (SAWA)<br>▪ Interaction with stakeholders in developing water resource management projects.<br>▪ Participate in Santa Ana Sucker coordination meetings |
| Standards/ Basin Planning | ▪ Regional Board expected to consider Basin Plan amendments to incorporate revised water quality objectives/subbasin boundaries |
| Wetlands | ▪ Coordinate with local, state, and federal agencies on endangered species and wetland permitting issues<br>▪ Develop general WDRs (equivalent to 401 water quality certification) for sediment control projects<br>▪ Identify and assess wetlands in middle Santa Ana River<br>▪ Wetland monitoring<br>▪ Process 401 Water Quality Certification requests |
| Groundwater | ▪ Groundwater issues include development, by the Nitrogen/TDS Task Force, of guidelines for recycled water recharge projects that could affect groundwater. |

**Watershed Coordinator**

The Regional Board designated watershed coordinator for the Middle Santa Ana River WMA is Bill Rice: (909) 782-4459.

# FIGURE 3-7
# MIDDLE SANTA ANA RIVER WATERSHED MANAGEMENT AREA



## 3.8 LOWER SANTA ANA RIVER WATERSHED MANAGEMENT AREA

**Overview**

As shown in **Figure 3-8**, the Lower Santa Ana River Watershed Management Area (Lower SAR WMA) extends from Prado Dam to the Pacific Coast but specifically excludes the Newport Bay Watershed and the Anaheim Bay, Huntington Harbour, and Bolsa Chica WMA. The major waterbodies found in the Lower SAR WMA include all or a portion of the:

- Santa Ana River, Reaches 1 and 2
- Santiago Creek
- Carbon Canyon Creek
- Santa Ana Forebay groundwater subbasin
- Santa Ana Pressure groundwater subbasin
- Santa Ana River Mouth Estuary
- Talbert Marsh

The cities in the Lower Santa Ana River Watershed include all or portions of Yorba Linda and Anaheim Hills, Orange, Villa Park, Anaheim, Garden Grove, Santa Ana, Fountain Valley, Huntington Beach, and Costa Mesa.

A portion of the lower reach of the Santa Ana River (River) directly below Prado Dam is diverted to recharge the Orange County groundwater subbasins. Rapid percolation basins located in the Santa Ana River streambed are operated and maintained by Orange County Water District (OCWD). OCWD also owns and operates a number of other recharge pits, ponds, and basins in the Santa Ana Forebay area that are supplied with Santa Ana River water via pipelines.

Groundwater comprises approximately 63% of the total water supply distributed within the OCWD territory. The River and several small tributaries provide about half of the recharge water into the groundwater subbasins. Orange County Water District (OCSD) is currently conducting studies on the effects of Santa Ana River recharge on the receiving groundwater subbasin, and is also evaluating the feasibility of recharging with high quality recycled water from the OCSD.

As discussed in **Section 3.1**, the Santa Ana Watershed Project Authority (SAWPA) is coordinating a study sponsored by the Nitrogen/TDS Task Force, a consortium of water supply and wastewater management agencies located within the Santa Ana Region. The Task Force is supporting Regional Board participation in the study, which is being conducted on the Santa Ana River watershed as a whole. A key study objective is to investigate water quality questions relative to nitrogen and TDS management in the watershed, including groundwater subbasin water quality objectives, subbasin boundaries, and regulatory approaches to wastewater reclamation and groundwater recharge. The study recommended revisions to the water quality objectives and subbasin boundaries that would substantially affect the Lower Santa Ana River. Basin Plan amendments to incorporate these changes will likely be considered by the Regional Board in the years 2002-03.

The OCSD has been conducting an extensive ocean monitoring program in conjunction with the issuance of their Clean Water Act Section 301(h) waiver (which defers the requirement to provide full secondary treatment) since 1985. The monitoring program has been structured since its inception to evaluate the potential environmental and public health effects resulting from the discharge of about 230 million gallons per day of treated wastewater to the Pacific Ocean approximately 4.5 miles off shore from Huntington Beach at a depth of 198 feet. The District's ocean monitoring program was enhanced during FY 97-98 when their ocean discharge NPDES

permit was re-issued. The monitoring program was modified to require the District to conduct strategic process studies and to participate in the regional monitoring activities coordinated by the Southern California Coastal Water Research Project (SCCWRP). The additional monitoring activities, which extend beyond the core monitoring program designed to evaluate regulatory compliance, is intended to determine the potential impacts of the District's discharge in context of other municipal wastewater discharges and nonpoint source inputs to coastal waters.

SCCWRP has also provided its member agencies and the regulatory community with important scientific information about the sources, fates, and effects of wastewater and storm water discharged into the southern California Bight. In addition to their normal research activities, SCCWRP staff helped coordinate the summer 1998 ocean monitoring program efforts of 41 agencies into the second Bight-wide regional ocean monitoring survey. One goal of this second survey was to add to the data collected in the first survey completed in 1994. Another objective was to sample Bight locations not investigated in 1994 in order to answer questions about the health of the coastal ocean waters adjacent to Southern California. The planning for this survey required that the ocean dischargers and the regulatory community work closely together to utilize the available monitoring resources in a coordinated fashion. In addition to ocean monitoring, SCCWRP plans to implement an enclosed bays and estuary monitoring program.

**Fiscal Years 02-03 and 03-04 Funded Activities**

Funded activities in the Upper Santa Ana WMA for each of the eight program areas incorporated into the WMI are listed below.

| Program | Activities |
|---|---|
| TMDLs | ▪ No specific activities planned |
| Nonpoint Source Program | ▪ CWA 319 and Prop. 13 grant activities including working with stakeholders to develop potential nonpoint source-related grant proposals; thereafter, oversight/management of those grants<br>▪ Conduct outreach activities |
| Monitoring &Assessment | ▪ Coordinate with SCCWRP in the development and implementation of the Coastal Waters Monitoring Program<br>▪ Coordinate the Region's Coastal Waters Monitoring and Assessment Program activities, which include a fish contamination study and shellfish harvesting bed study<br>▪ Coordinate with the State Water Resources Control Board on beach/coastline water quality issues |
| NPDES Program | ▪ Conduct regular NPDES, WDR, and stormwater inspections, reviews, and audits. Issue informal and formal enforcement actions as necessary for permit violations |
| Watershed Management | ▪ Provide technical support to cities in understanding the State's water quality planning programs<br>▪ Conduct outreach to the cities located within the smaller watersheds to determine interest in developing watershed plans based upon specific water quality concerns. |
| Standards/ Basin Planning | ▪ Participate in the OCWD Santa Ana River Water Quality Study meetings |

| Program | Activities |
|---|---|
| Wetlands | ▪ Study beach closure and wetlands issues and coordination<br>▪ Identify and assess wetlands in lower Santa Ana River<br>▪ Identify potential wetlands restoration and/or preservation projects<br>▪ Coordinate with local, state, and federal agencies on endangered species and wetland permitting issues<br>▪ Develop general WDRs (equivalent to 401 water quality certification) for sediment control projects<br>▪ Process 401 Water Quality Certification requests |
| Groundwater | ▪ See Standards/Basin Planning activities above |

**Watershed Coordinator**
The Regional Board watershed coordinator for the Lower Santa Ana River WMA is Wanda Smith: (909) 782-4468.

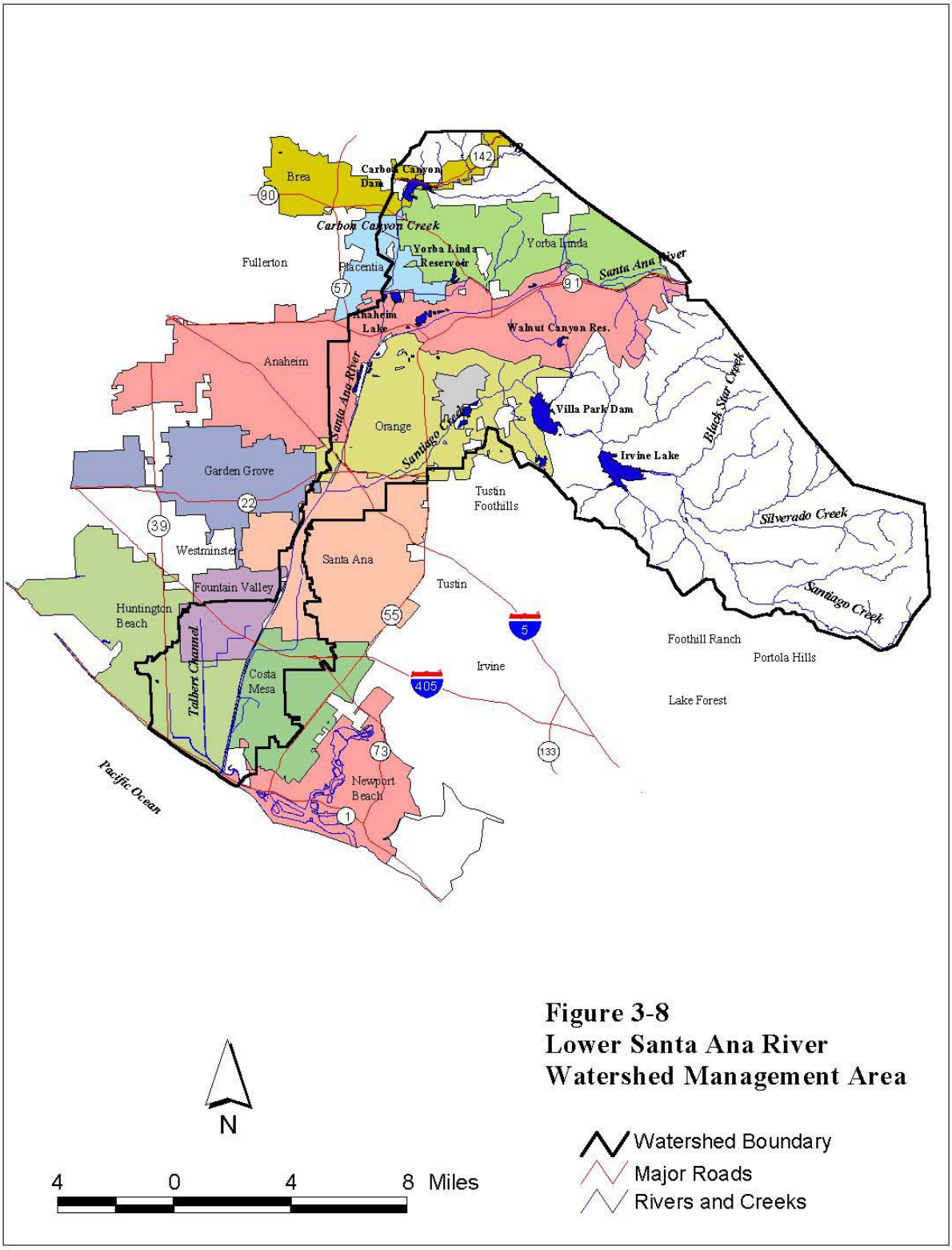



**Figure 3-8**
**Lower Santa Ana River Watershed Management Area**

## 3.9 NEWPORT COAST WATERSHED MANAGEMENT AREA

**Overview**
The Newport Coast watershed extends along Pacific Coast Highway from Corona Del Mar Beach to north of Laguna Beach. Cities in the Newport Coast Watershed include portions of Newport Beach, Corona Del Mar, Irvine, and an unincorporated portion of Orange County. The Newport Coast Watershed is comprised of a number of subwatersheds. The following waterbodies are included in the Newport Coast Watershed:

- Corona Del Mar Beach
- Little Corona Beach
- Morning Canyon
- Buck Gully Creek
- Newport Beach Marine Life Refuge, Area of Special Biological Significance (ASBS)
- Irvine Coast Marine Life Refuge Area, ASBS
- Pelican Point Creek
- Pelican Point Middle Creek
- Pelican Hill Waterfall
- Los Trancos Creek (Crystal Cove Creek)
- Muddy Creek

Buck Gully Creek, Pelican Point Creek, Los Trancos (Crystal Cove Creek) and Muddy Creek are impaired due to total and fecal coliform. Each of these waterbodies are in violation of one or more of the following beneficial uses: REC 1, REC 2, and MUN. The source of the pollutants are unknown, however, urban runoff is a possible source.

The Newport Coast Watershed coastline is entirely bounded by two areas of special biological significance (ASBS). This watershed has the regions only two ASBS sites, Newport Beach Marine Life Refuge and Irvine Coast Marine Life Refuge Area. Left untreated, the entire watershed could ultimately drain into the ASBS. The ASBS sites are designated by the State Water Resources Control Board as requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. The California Ocean Plan states that discharges of wastes into an ASBS designated area is prohibited.

On November 16, 2000 the Santa Ana RWQCB issued Cease and Desist Order (CDO) No. 00-87 to the Irvine Company, California Department of Parks and Recreation, and the California Department of Transportation. The above-mentioned parties were in violation of the California Ocean Plan for discharging wastes into ASBS designated areas. The CDO requires the existing discharges of wastes to the ASBS to be eliminated two years from the date of issuance of the CDO and prohibits new discharges of waste, including storm water and non-storm water runoff from developed areas to discharge into ASBS sites.

*Buck Gully*:
The Buck Gully subwatershed (part of the larger Newport Coast Watershed) is approximately 1,190 acres. It starts at Signal Peak and extends four miles towards the ocean. Buck Gully has two outlets; the major fork discharges onto Little Corona Beach, meandering its way through the sand to the ocean. The second discharge is at Morning Canyon Beach. In May 2001, the State Water Resources Control Board awarded the City of Newport Beach $222,025 for their proposed project "Little Corona/Buck Gully/Badham Marine Reserve Water Improvement Project". The overall goal of this project is to reduce health risks to bathers and negative impacts on marine life

by improving the water quality in Buck Gully. The methodology by which this project will be executed will be by creating a series of filtering ponds, revegetating the creek banks with native plants, improving and adding a recreation area for hiking and trails, and installing storm drain filters.

*Newport Coast Planned Community*:
The Newport Coast Planned Community (NCPC) is a 9,493 acre project in the unincorporated coastal foothills of southwestern Orange County (extending into San Diego RWQCB jurisdiction). The NCPC is located in the coastal zone between the Newport Beach to the north, the San Joaquin Hills to the east, the city of Laguna Beach to the south, and the Pacific Ocean to the west. The NCPC includes residential and commercial development, public facilities, open space, and the Pelican Hill Golf Club. The NCPC is currently underway developing Phases IV-3 and IV-4, which consists of residential units, private recreational facilities, associated roadways, open space, trails, and drainage channel modifications, including detention basins. The Santa Ana RWQCB has required The Irvine Community Development Company to execute a detailed monitoring and reporting program for the runoff associated with this current phase of development (Phases IV-3 and IV-4). Monitoring will occur at various points in Los Trancos Creek, Muddy Creek, Emerald Creek (San Diego RWQCB jurisdiction), Basin 6, Basin 2, and Area 3A of the proposed development. Sampling for water quality, marine ecology, and microbiology will yield results that dictate the developments effect upon water quality and micro and marine organisms. The results will provide data about the developments impacts on the associated creeks and ASBS.

*Crystal Cove State Park*:
Crystal Cove State Park, located along the coastline between Newport Beach and Laguna Beach, is currently comprised of 2,791 acres of undeveloped wooded canyons and open bluffs, and 3.25 miles of beach. The offshore waters are designated as an underwater park. The Crystal Cove Historic District lies within Crystal Cove State Park at the midpoint of the State Park's 3.25-mile coastline. Located at the mouth of Los Trancos Canyon, the Crystal Cove Historic District is 12.3 acres, comprised of natural open space terraces and coastal bluffs. The Department of Parks and Recreation is currently working on the *Crystal Cove Historic District Preservation and Public Use Plan*. This Plan will suggest recommendations to restore and preserve the cultural and natural resources of this area. The overall plan will take into consideration, the State Parks mission and purpose, socio-economic, natural and cultural resources, regulatory, financial, and programmatic constraints. In the mean time, CDPR is the lead agency for the *Crystal Cove Historic District Investigations and Interim Protection Plan* that will manage the Crystal Cove Historic District for the interim while the Preservation *and Public Use Plan* is being developed. The Santa Ana RWQCB is providing comments on both the *Crystal Cove Historic District Preservation and Public Use Plan* and the *Crystal Cove Historic District Investigations and Interim Protection Plan*.

**Stakeholders**

California Coastal Commission
California Department of Fish and Game
California Department of Parks and Recreation
City of Newport Beach
County of Orange
Irvine Ranch Water District
Orange County Coastkeeper
Orange County Health Care Agency
Orange County Sanitation District
Surfrider-Newport Beach Chapter
The Irvine Company
U.S. Army Corps of Engineers

**Fiscal Year 02-03 and 03-04 Program Activities**
Funded activities in the Newport Bay WMA for each of the eight program areas incorporated into the WMI are listed below. Unfunded activities include work with stakeholders to implement NPS Management Measures and to develop and implement education/outreach material.

| Program | Activities |
|---|---|
| TMDLs | ▪ Conduct stakeholder group meetings |
| Nonpoint Source Program | ▪ Oversight and management of Buck Gully Prop. 13 grant; meet with stakeholders to develop potential 319(h) and Prop. 13 grant proposals two NPS contracts<br>▪ Work with stakeholders to educate and implement Management Measures<br>▪ Work with stakeholders to develop and implement education/outreach material<br>▪ Conduct outreach activities |
| Monitoring &Assessment | ▪ Monitor Crystal Cove development runoff at Los Trancos Creek and Muddy Creek |
| Core Regulatory | ▪ Conduct regular NPDES,WDR, and stormwater inspections, reviews, and audits. Issue informal and formal enforcement actions as necessary for permit violations |
| Watershed Management | ▪ Continue participation with the Newport Harbor Water Quality Citizens Advisory Committee<br>▪ Educate and mentor development of watershed management plans |
| Standards/ Basin Planning | ▪ Include Morning Canyon, Buck Gully Creek, Pelican Point Creek, Pelican Point Middle Creek, Pelican Hill Waterfall, Los Trancos Creek (Crystal Cove Creek), Muddy Creek in the Basin Plan and assign the following beneficial uses to the waterbodies: MUN, REC 1, REC2, and WARM |
| Wetlands | ▪ Coordinate with local, state, and federal agencies on endangered species and wetland permitting issues<br>▪ Process 401 Water Quality Certification requests |
| Groundwater | ▪ No specific activities planned |

**Available References**
California State Water Resources Control Board, Areas of Special Biological Significance, 1976
California State Water Resources Control Board, California Ocean Plan, 1997
State of California Regional Water Quality Control Board Santa Ana Region, *Cease and Desist Order No. 00-87*, 2000

**Watershed Coordinator**
The Regional Board watershed coordinator for the Newport Coast WMA is Stephanie Gasca: (909) 782-3221.

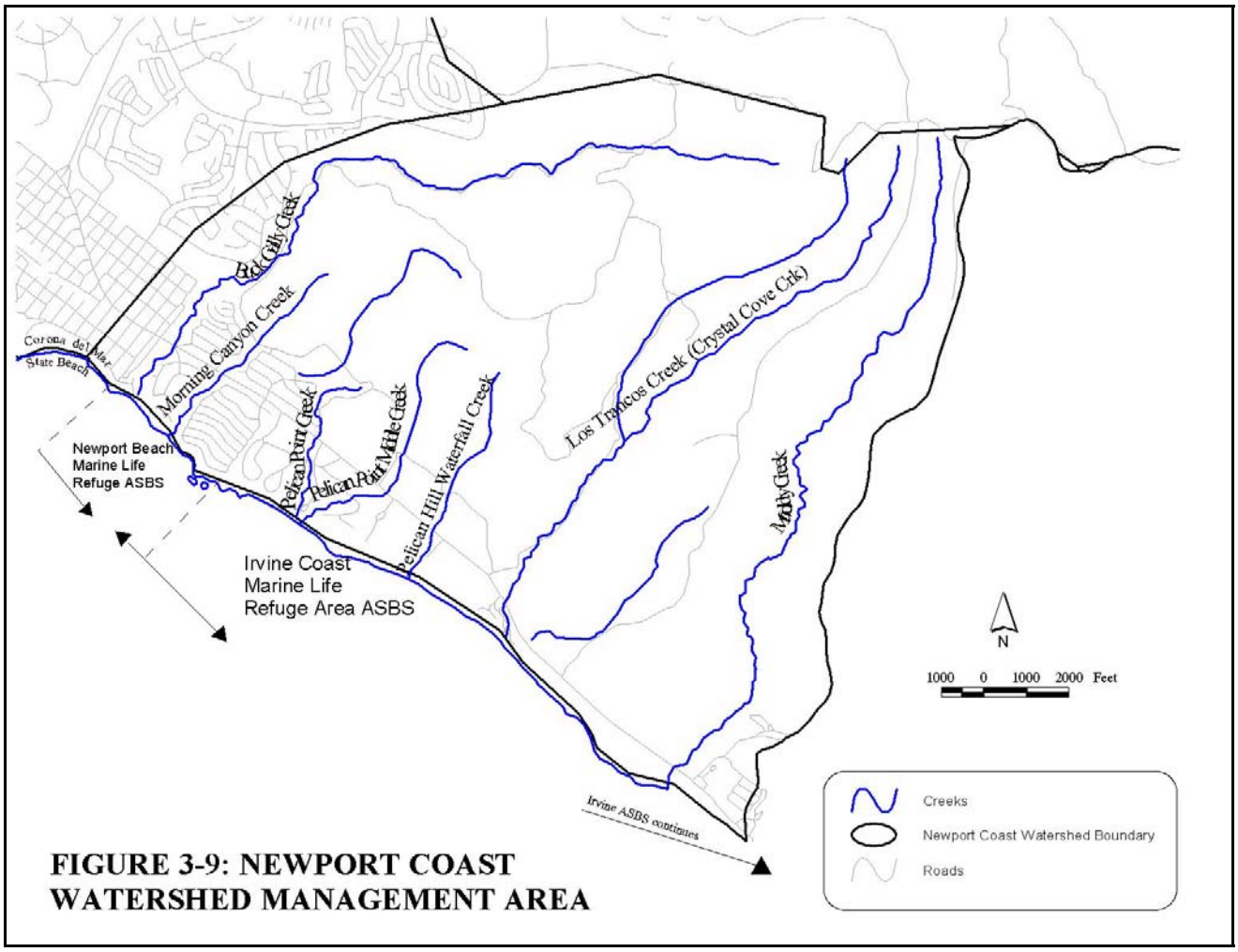



**FIGURE 3-9: NEWPORT COAST WATERSHED MANAGEMENT AREA**

## 3.10 COYOTE / CARBON CREEK WATERSHED MANAGEMENT AREA

**Overview**

The Coyote / Carbon Creek Watershed Management Area lies in the northwestern corner of Orange County and adjacent Los Angeles County. Major waterbodies in Orange County include Coyote Creek, Brea Creek Channel, Fullerton Creek Channel, Imperial Channel, and Carbon Creek. These water ways drain the cities of La Habra, Brea, Fullerton, Buena Park, La Palma, and parts of Placentia, Anaheim, Los Alamitos, and Cypress. Coyote Creek, for most of its length, flows along or near the Los Angeles County/Orange County line. Several tributaries to Coyote Creek drain the Los Angeles County cities of La Mirada, Cerritos, eastern section of Norwark, Whittier, La Habra Heights, and sections of Diamond Bar. Any area located in Los Angeles County is under the jurisdiction the Los Angeles Regional Water Quality Control Board and therefore is not considered in the Santa Ana Regional Water Quality Control Board's Coyote Creek Watershed Management Area.

The geography of the Coyote Creek Watershed Management Area includes hills in the northern section and coastal plains in the southern section. Surface drainages generally originate in the East Coyote Hills, West Coyote Hills, and the Puente Hills and flow towards the southwest eventually joining the main stem of Coyote Creek. Coyote Creek empties into the San Gabriel River in Los Angeles County just west of the city of Los Alamitos. There are several flood control and retarding basins located along several of the waterways. These include Fullerton Reservoir, Brea Dam, Raymond Retarding Basin, Crescent Basin, and Gilbert Retarding Basin. The Management Area is largely urbanized, however, the hilly, northern area contains some areas of open space, which are mostly in oil production.

The Coyote Creek Watershed Management Area suffers from several water quality standards related problems. These include poor water quality, lost aquatic species, lost and degraded wetlands, in-stream and terrestrial habitats, channel degradation and erosion, reduced natural recharge, infestation of invasive species, flood damage, and devalued recreation experience. The creek is listed as an impaired water body for nitrogen and related effects (such as pH, alga growth, etc.) under the Clean Water Act Section 303 (d).

Stakeholders of this watershed include the Army Corps of Engineers, Los Angeles and Orange Counties, local cities, California Department of Fish and Game, United States Fish and Wildlife Service, the Los Angeles (Region 4) and the Santa Ana (Region 8) Regional Water Quality Control Boards, the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, the Los Angeles and San Gabriel Rivers Watershed Council, the Friends of the San Gabriel River, the County Sanitation Districts of Los Angeles, local water and sewer agencies, Los Angeles and Orange County flood control departments, among others.

The Coyote Creek Watershed Management Plan funded by Proposition 13 will soon be initiated for the entire Coyote Creek Watershed. The objective of the plan is to develop a Watershed Management Plan to maintain, restore and enhance a healthy Coyote Creek Watershed. The project applicants are the County of Orange Public Facilities and Resources Department (PFRD) and the Los Angeles County Department of Public Works. The project director is Kathie Matsuyama of the County of Orange PFRD. She can be reached at (909) 834-6662.

**Fiscal Year 02-03 and 03-04 Program Activities**

Funded activities in the Upper Santa Ana WMA for each of the eight program areas incorporated into the WMI are listed below

| Program | Activities |
|---|---|
| TMDLs | ▪ No specific activities planned |
| Nonpoint Source Program | ▪ No specific activities planned |
| Monitoring &Assessment | ▪ No specific activities planned |
| Core Regulatory | ▪ Conduct regular NPDES, WDR, and stormwater inspections, reviews, and audits. Issue informal and formal enforcement actions as necessary for permit violations |
| Watershed Management | ▪ No specific activities planned |
| Standards/ Basin Planning | ▪ No specific activities planned |
| Wetlands | ▪ Coordinate with local, state, and federal agencies on endangered species and wetland permitting issues<br>▪ Process 401 Water Quality Certification requests |
| Groundwater | ▪ No specific activities planned |

**Watershed Management Area Coordinator:**
David G. Woelfel (909) 782-7960.

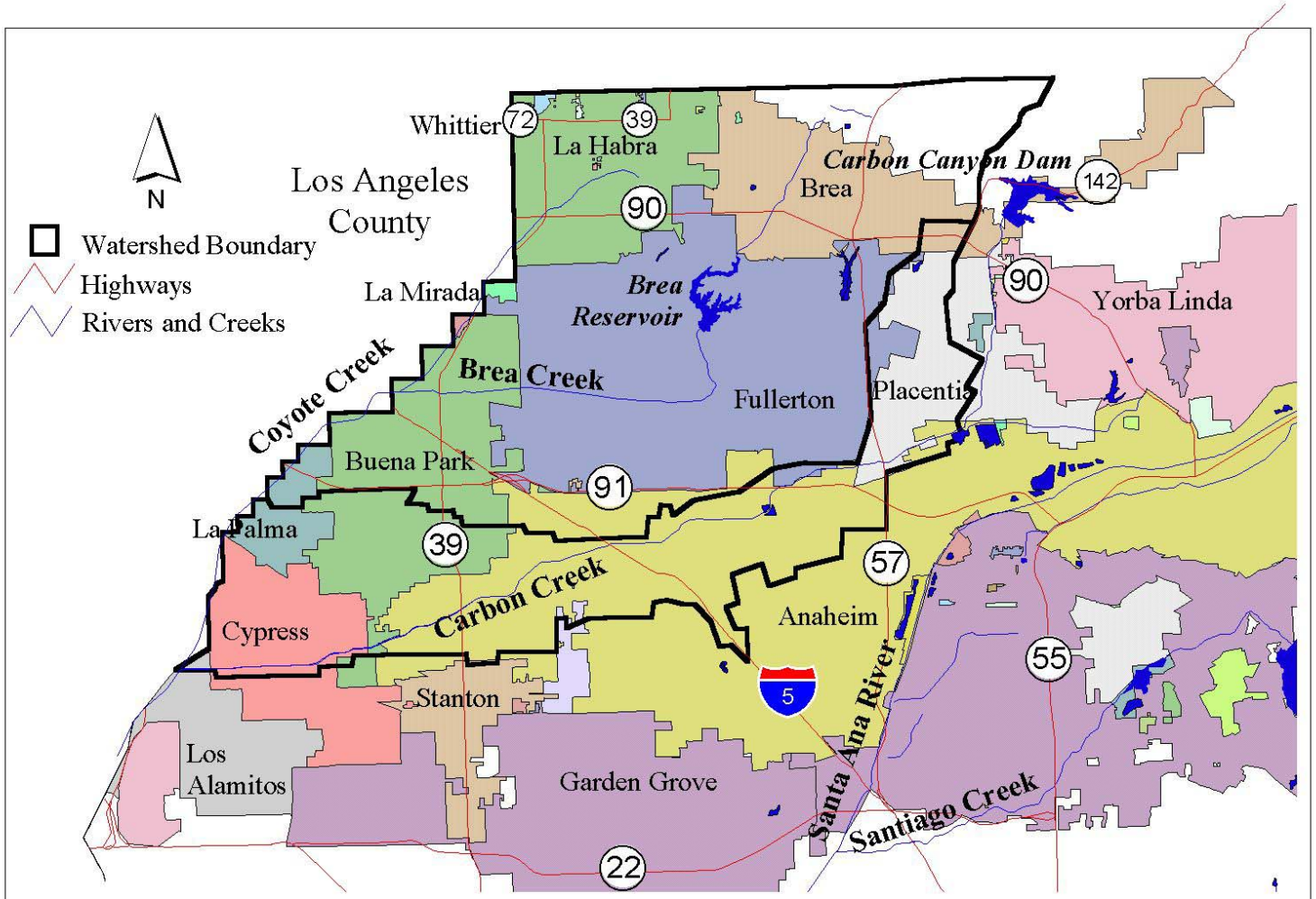



**Figure 3-10: Coyote Creek & Carbon Creek Watershed Management Area**

# 4.0 REGIONWIDE ACTIVITIES

The Santa Ana Regional Board directly regulates through the following eight priority programs including: TMDLs, NPS, Watershed Management, Monitoring & Assessment, Core Regulatory, Water Quality Standards/Basin Planning, Wetlands, and Groundwater Resources/Cleanup. These programs are discussed in context of their application on a region-wide basis in this section of the WMI chapter.

## 4.1 TOTAL MAXIMUM DAILY LOADS (TMDLS)

Section 303(d) of the Clean Water Act requires that every two years the State update the list of waterbodies for which water quality standards (beneficial uses and water quality objectives) are not attained, or are not expected to be attained, with the implementation of technology-based controls. The list includes a description of the pollutants causing impairment and a schedule for developing a Total Maximum Daily Load (TMDL) for each pollutant. The TMDL is the maximum load of a pollutant that can be discharged from point and nonpoint sources without impairing water quality standards. A TMDL must include waste load allocations for point source discharges, load allocations for nonpoint source discharges, and a margin of safety.

The Regional Board last updated the 303(d) list and TMDL development schedules in March, 1998. Regional Board staff review and update of the 303(d) list are expected to occur during SFY01-02 (the change from the requisite biennial schedule is being made to accommodate new TMDL regulations promulgated by the USEPA.). The Region's current 303(d) list includes 26 waterbodies and 62 pollutants or stressors (some waterbodies have multiple stressors). Appendix C Table 1 includes the 303(d) listed waterbodies and schedule of TMDL activities. Appendix C, Table 2 is a 5-year schedule of TMDL activities in the Region.

An increasingly resource intensive task is the annual development of the federal and state TMDL workplans. In addition to workplan development, Regional Board staff also prepares periodic status reports to the State Board and USEPA on the regional TMDL activities. State Board management recently developed and approved the TMDL Initiatives document that outlined a number of steps to be taken by the State Board and Regional Boards to develop TMDLs. One of the provisions of the Initiatives document is the formation of TMDL pollutant specific workgroups (e.g., pathogens, nutrient). These workgroups are charged with developing protocols that can be used statewide by Regional Board staff to develop TMDLs. The intent is to streamline TMDL development protocols and methods. Approximately 6 of the current 8 TMDL Regional Board staff will be involved in these TMDL workgroups.

***TMDL Development:***
In 1995, the Regional Board identified the development of TMDLs for a number of constituents in the Newport Bay watershed as a high priority. The Regional Board has developed TMDLs for nutrients, pathogens, and sediment. Technical TMDLs for specific toxic constituents are currently being developed (see the Newport Bay Watershed section) by both Regional Board staff and USEPA staff. Over the next 2-year period, staff anticipates incorporation of these technical TMDLs into the Basin Plan.

In addition to the Newport Bay TMDLs, Regional Board staff is developing TMDLs for waterbodies in Chino Basin, Big Bear Lake, and Lake Elsinore. Staff resources, monitoring resources, and modeling resources are key needs in the all watersheds (see Big Bear Lake Watershed section, and Lake Elsinore/San Jacinto River Watershed section).

One aspect of the TMDL program that needs to be emphasized is that it does not stop with TMDL development. TMDLs need to be incorporated into the Basin Plan through adoption by the Regional

Board and State Board, and approval by the Office of Administrative Law and USEPA. These have been, and likely will continue to be, time consuming and staff resource intensive steps. Once fully approved, the TMDLs must be implemented.

***TMDL Implementation:***
TMDL development and implementation are integrated with other Regional Board programs. Strategies such as the management measures developed for the Plan for California's Nonpoint Source Pollution Control Program and the Nonpoint Source Management Plan's three tier approach (voluntary compliance, regulatory encouragement, issuance of waste discharge requirements), are and will be utilized to develop effective TMDL implementation programs for nonpoint source discharges. Modification of NPDES permits, either urban stormwater permits or permits for individual facilities, watershed planning, and the involvement of stakeholders are also important parts of effective TMDL development and implementation.

Point source discharges are controlled effectively through implementation of the Regional Board's core regulatory program. Nonpoint source discharges remain the most significant source of pollutants in many of the Region's waters. TMDLs are an important part of the Regional Board's regulatory program for assessing and controlling nonpoint source contributions to pollutant loads.

Once a TMDL has been incorporated into the Basin Plan, the Regional Board is responsible for ensuring TMDL implementation and effectiveness. The implementation and monitoring phase requires just as many staff resources (if not more) as were used to develop the TMDL itself. Even if local agencies or private interests are responsible for implementing components of the TMDL, Regional Board resources are required for: reviewing and negotiating specific implementation strategies; providing oversight of the implementation program (which could include enforcement); monitoring and assessment of the TMDL effectiveness; and revision of the TMDL, if necessary. TMDL implementation resource needs for the next two fiscal years are identified in the appropriate watershed section in Section 2.

**Short and Long Term Goals and Resource Needs**
The following table identifies the short and long term TMDL program goals and resource needs.

**TMDL Short/Long Term Goals**

| Time Frame | TMDL Program Goals | Resource Needs | |
|---|---|---|---|
| | | PYs | Contract Dollars |
| **Short Term (FY 02-03)** | • Develop and implement TMDLs in Newport Bay, Chino Basin, Big Bear Lake, and Lake Elsinore watersheds (see Appendix C3).<br>• Contract dollars would be used for reviewing water quality objectives in the Newport Bay watershed and monitoring or modeling in the Big Bear Lake and Lake Elsinore watersheds.<br>• Participate in the statewide TMDL workgroup<br>• Participate in the TMDL Pollutant Workgroups<br>• Report to State Board and US EPA on status of TMDL activities (pursuant to 104/106 grants) and state funding requirements<br>• Miscellaneous training | **10.25** | **$800,000** |
| **Long Term (FY 03-04 to 06-07)** | • Complete all 41 TMDLs in four priority WMAs and gradually shift majority of resources to next set of WMAs/TMDLs in FY 05-06 | **11.25 to 12.75** | **$200,000 to $300,000** |

## 4.2 NON-POINT SOURCE (NPS) PROGRAM

Nonpoint Source (NPS) pollution is the leading cause of water quality impairment in California, and nationwide. Unlike pollution from discrete discharge points, NPS pollution comes from many diffuse sources that may be difficult to identify. Typical non-point sources include a variety of land uses and human activities, e.g., agriculture, urban development, marinas and recreational boating and hydromodification- the alteration of water courses. NPS pollutants degrade and impair ground and surface waters, including critical coastal areas.

Considerable improvement in water quality in the Santa Ana Region has been achieved through the control of point source discharges through traditional regulatory processes. Management of NPS inputs is in more difficult to achieve, since it requires various control techniques tailored to local watershed conditions. Furthermore, until recently, there was little funding available to address NPS discharges.

### 4.2.1 NPS PROBLEMS

Significant NPS problems within RWQCB 8 that have been, or are being, addressed include:

- Urban/agricultural runoff
- Confined animal feeding operations (CAFOs)
- On-site disposal systems
- Construction related erosion and sedimentation
- Excessive nutrient loading and eutrophication

In the following watersheds, water quality impairment due to NPS pollution is being addressed through the application of TMDLs and watershed-wide monitoring and implementation programs:

- Newport Bay, Big Bear Lake, Lake Elsinore and Anaheim Bay/Huntington Harbour/Bolsa Chica (toxic substances)
- Chino Basin and San Jacinto (confined animal feeding operations (CAFOs))
- Big Bear Lake, Lake Elsinore and San Jacinto (nutrients and sediment)
- Chino Basin and the Lower Santa Ana River (pathogens)

Changes in land use typically contribute to an increase in NPS pollution. Discharges of wastes and pollutants from new uses of land, particularly when land is developed for agricultural, residential or commercial use, threaten or degrade nearby water bodies, including critical coastal areas. New development also increases impermeable areas, which decreases groundwater recharge and increases the volume and velocity of runoff. NPS discharges from developed areas carry a wide range of pollutants, including herbicides, pesticides, pathogens, metals, other chemicals, and oil and grease to storm drains that flow directly into surface waters, and eventually, the ocean. This includes discharges from discrete and focused activities, such as mobile operators providing motor vehicle detailing and fleet-washing, building and carpet cleaning, and pressure washing services.

Outreach efforts to educate the public about NPS issues are an important element of the NPS program. Regional Board staff outreach efforts are limited by available staff and supporting resources. More public outreach is needed to educate: 1) the general public; 2) educators and students; 3) business owners and their employees (especially those in restaurant, automobile mechanical repair/body shop, and mobile business sectors); and 4) public officials who issue and enforce a variety of land-use related permits.

Pollutants impairing waters in RWQCB 8 include metals, nutrients, pathogens, pesticides, and sediment. Other impairments are due to low dissolved oxygen, toxicity of unknown source, exotic terrestrial plants and noxious aquatic plants. These are summarized by watershed in **Table 4-1**, and shown in detail in Appendix E, Table 1. High quality waters and waters of special significance, including Critical Coastal Areas (CCAs), are also shown in Table 1 of Appendix E.

**Table 4-1: Summary of NPS pollutants by watershed and Management Measure (MM) Category**

| Watershed or Surface Water | Pollutant / Impairment | MM Category |
|---|---|---|
| Anaheim Bay, Huntington Harbour, Bolsa Chica | Metals, pesticides, pathogens, noxious aquatic plants | urban, marinas/boating |
| Big Bear Lake | Metals, nutrients, sediment, pathogens, low dissolved oxygen | urban, marinas/boating |
| Lake Elsinore | Nutrients, sediment, pathogens, unknown toxicity, low dissolved oxygen | agriculture, urban |
| Newport Coast | Sediment, nutrients, pesticides | urban, hydromodification |
| Newport Bay | Metals, priority pollutants, nutrients, pesticides, pathogens, sediment, unknown toxicity | agriculture, urban, marinas/boating, hydromodification |
| Chino Basin | Nutrients, pathogens, high coliform, suspended solids | agriculture, urban |
| Upper Santa Ana River | Pathogens | urban |
| Middle Santa Ana River | Nutrients, pathogens, sediment, TDS/salinity/chloride | agriculture, urban, hydromodification |
| Lower Santa Ana River | TDS/salinity/chloride, pathogens | urban |
| **Groundwater Basins:** | | |
| Upper Santa Ana River | Nitrogen, TDS/salinity/chloride, organic chemicals | agriculture, urban |
| Orange County | Organic chemicals | urban |

Notes:
1) Management Measure Categories taken from, "Plan for California's Nonpoint Source Pollution Control Plan," SWRCB and California Coastal Commission, January 2000.
2) A problem statement identifying the specific toxic pollutants of concern in the Newport Bay watershed was drafted in December, 2000. The USEPA is conducting additional review to refine the list of toxic pollutants for which TMDLs are required.

### 4.2.2 NPS STRATEGY

The Plan for California's Nonpoint Source Pollution Control, SWRCB and California Coastal Commission, January, 2000 (NPS Plan) outlines the statewide approach for managing NPS pollution. The NPS Plan's long-term goal is to, "…improve water quality by implementing the management

measures identified in the California Management Measures for Polluted Runoff Report (CAMMPR) by 2013." A key element of the Plan is implementing these management measures using a "three-tiered approach," in which the first tier, self-determined implementation, is favored. The second and third tier of implementation incorporate escalating regulatory involvement to achieve program objectives.

***Objective/Goals:***
The objective of the RWQCB 8's NPS program is to identify, reduce, and prevent impacts to water quality standards from pollutant sources within the Region, by attaining these goals:

**Goal 1** – Implement, track and monitor priority[1] Management Measures (MMs) to identify, prevent, and reduce NPS pollution
**Goal 2** – Develop new TMDLs
**Goal 3** – Implement and track effectiveness of TMDLs
**Goal 4** – Increase education/outreach programs, including volunteer monitoring and outreach for CWA 319(h) and Proposition 13 grants
**Goal 5** – Bring awareness of NPS issues into the initial phases of development project planning (through the CEQA and 401water quality standards certification application review process), thereby encouraging NPS prevention and reduction measures in new projects.

[1]priority refers to those MMs listed in the NPS Plan

Short-term objectives include implementation of priority MMs listed in the NPS Plan. These are detailed in Table 2a of Appendix E, and are correlated with the long-term goals listed above. (Implementation of all MMs is funding dependent.)

***Tiered Strategy Approach:***
The NPS Plan and RWQCB 8 encourage the Tier One approach of "self-determined" implementation of MMs. This is accomplished through public education/outreach to promote voluntary compliance with MMs and best management practices (BMPs), and by soliciting, advocating and managing CWA 319(h) and state Proposition 13 grants to fund NPS control projects. Tier Two (participation in regulatory-based programs) and Tier Three (regulation through waste discharge requirements & enforcement) are also used. The RWQCB 8 programs that currently apply the Tier I, II, and III approach are listed below.

<u>Tier I Programs</u>

- Public education/outreach programs to local agencies, such as resource conservation districts, and stakeholder groups (county and city watershed councils and committees, environmental groups, schools, youth groups, etc.)
- CWA 319(h) grant proposal solicitation and support and grant contract management
- Implementation and tracking of MMs, including establishment of a region-wide monitoring program (for water quality assessment, TMDLs, and tracking MM effectiveness).

<u>Tier II Programs</u>

- Encouraging and facilitating participation of agricultural and urban dischargers, including nurseries, to develop and implement nutrient monitoring programs in Newport Bay watershed (Nutrient TMDL).
- Encouraging and facilitating participation of agricultural and urban dischargers to develop and implement control measures to reduce fecal coliform levels in Newport Bay and to track the effectiveness of those measures (Fecal Coliform TMDL).

- Encouraging land developers to design and implement long term plans to control sediment loadings that affect beneficial uses of water bodies (Sediment TMDL)
- Encouraging land developers to design and implement long term monitoring programs to assess the impact of projects on Critical Coastal Areas and/or critical inland wetlands.
- Facilitating developers' participation in *Arundo donax* removal programs as mitigation for stream and wetland impacts, when appropriate.
- Encouraging and facilitating Orange County area urban dischargers to develop monitoring programs to evaluate sources of fecal coliform affecting REC1 beneficial uses of Orange County beaches.
- Through comments on draft CEQA documents, and conditions in CWA Section 401 water quality standards certifications, encouraging developers to address potential NPS impacts of new development projects while projects are still in planning stages.

<u>Tier III Programs</u>
- Urban runoff – *NPDES municipal separate storm sewer (MS4) permit program*
- CAFOs – *NPDES dairy general permit and Dairy Regulatory Strategy; OCSD's manure management strategy*
- On-site disposal systems – *Basin Plan waste discharge prohibitions and Minimum Lot-Size Criteria*
- Wholesale plant nurseries – *waste discharge requirements for nutrients*
- Construction sites – *SWRCB's NPDES Construction Activities Storm Water General Permit and RWQCB 8's Construction Activities Storm Water General Permit for the San Jacinto Watershed*
- Sanitary Sewer System Overflows – *draft General Waste Discharge Requirements for Sewage Collection Agencies in Orange County, within the Santa Ana Region*

### 4.2.3 NPS ACTIVITIES

RWQCB 8 staff participates in NPS implementation in a variety of ways:

- As NPS program manager, involved in NPS program activities statewide, including the overall implementation of the NPS Plan and coordination of Proposition 13 and 319(h) grants;
- As NPS coordinators, engaged in NPS public education and outreach within the Region, and implementation of MM activities;
- As monitoring coordinator, developing monitoring programs to assess the Region's water quality, helping to identify and quantify NPS inputs to those waters, and coordinating the volunteer monitoring program;
- Planning staff involved in development and implementation of TMDLs, with review of CEQA documents and 401 water quality standards certification applications, and with selection and contract management of 319(h) and Proposition 13 grants;
- Storm water staff involved with oversight of storm water quality education programs and NPDES storm water permit compliance;
- Dairy program staff implementing RWQCB 8's general dairy permit.

<u>NPS Activities Program</u> – Identified by Goals and Tiers.

*Implementation of Management Measures and Effectiveness Tracking (Goals 1,2,5 – Tier I, II)*

- Identify priority MMs and implement pending funding (Appendix E: Table 2a).
- Identify priority areas for MM implementation, such as Critical Coastal Areas,
- Develop and implement programs that monitor NPS discharges (in lieu of WDRs)
- Water quality assessment activities.

- Coordinate NPS/CZARA activities to address NPS issues at the project planning stage.

RWQCB 8 staff continues to coordinate with the SWRCB, Coastal Commission, and other RWQCBs to implement the NPS Plan and Implementation Program. A primary focus is to implement and track the effectiveness of MMs utilized in RWQCB 8's various programs. Toward this end, RWQCB 8 staff has created data management tools for use within the Region, and continues to participate in statewide efforts to development elements within the System for Water Information Management, Phase II (SWIM II) to capture, utilize and manage NPS program-related data.

*TMDL Development and Implementation (Goals 2,3 – Tier II)*

Development
- Continue work on TMDLs for toxic substances in the Newport Bay watershed
- Continue work on multiple TMDLs for Big Bear Lake and Lake Elsinore/San Jacinto watersheds.
- Initiate multiple TMDLs for Chino Basin
- Initiate multiple TMDLs for Anaheim Bay/Huntington Harbour, which is a Critical Coastal Area.

Implementation
- Implement TMDLs for nutrients, sediment, fecal coliform in the Newport Bay watershed.

*Enforcement of Regulatory Programs related to CAFOs, urban runoff and Onsite Subsurface Disposal Systems (OSDS) (Goal 1 – Tier III)*

RWQCB 8 staff continues to implement the NPDES general dairy permit, three MS4 permits, and the Basin Plan prohibitions and requirements concerning use of OSDS. Ongoing implementation activities include conducting inspections, reviewing management measures, reviewing and updating monitoring program requirements, water quality monitoring, and enforcement activities. The Board's criteria for waiving waste discharge requirements (Resolution No. 96-09) are being reconsidered; staff is contemplating whether to drop the waiver criteria in favor of general waste discharge requirements for minor discharges now eligible for waivers under the current criteria. The current waiver criteria are listed in Table 3 of Appendix E.

*Public education/outreach (Goals 1,2,3,4,5 – Tier I)*

Consistent with all MMs, Regional Board staff will continue an education/outreach program, and provide assistance to potential NPS grant applicants and manage 319(h) grant contracts. Regional Board staff will also continue to review CEQA documents and 401 water quality standards certification applications and provide NPS-specific comments to project proponents. Specific education/outreach activities are listed in Table 2b of Appendix E. Projects targeted for 319(h) and state revolving funds in FY02-03 are listed in Tables 5 and 6 of Appendix E, respectively.

### 4.2.4 Monitoring, Assessment and Tracking of Management Measure Implementation

The development of a statewide system for monitoring and tracking NPS MM implementation continues to be a long-term program goal. The NPS Interagency Coordinating Committee (SWRCB, RWQCBs, other state and federal agencies with responsibilities outlined in the NPS Plan) has investigated development of such a system. SWRCB and RWQCB staffs advocate including NPS MM tracking in SWIM II. It is expected that a SWIM II- based NPS MM tracking will be deployed within the next two fiscal years.

| Time Frame | NPS Program Goals | Resource Needs | |
|---|---|---|---|
| | | PYs | Contract Dollars |
| **Short Term (FY 02-03)** | • Implement, track and monitor priority MMs to identify, prevent, and reduce NPS pollution | **1.0** | **0** |
| | • Develop new TMDLs | **7.4** | **$50,000** |
| | • Implement and track effectiveness of TMDLs developed to date | **1.0** | **$75,000** |
| | • Increase education/outreach programs, including volunteer monitoring and outreach for 319(h) and Proposition 13 grants | **1.5** | **$35,000** |
| | • Increase awareness of NPS issues in project planning stages (CEQA, 401 certifications) to incorporate methods for NPS prevention and reduction into new projects. | **1.0** | **0** |
| **Long Term (FY 03-04 to 06-07)** | • Implement, track and monitor priority MMs to identify, prevent, and reduce NPS pollution | **3.0** | **???** |
| | • Develop new TMDLs | **22.2** | **???** |
| | • Implement and track effectiveness of TMDLs developed to date | **4.5** | **???** |
| | • Increase education/outreach programs, including volunteer monitoring and outreach for 319(h) grants | **4.5** | **???** |
| | • Increase awareness of NPS issues in project planning stages (CEQA, 401 certifications) to incorporate methods for NPS prevention and reduction into new projects. | **3.0** | **???** |

## 4.3 WATERSHED MANAGEMENT PROGRAM

Watershed planning has been the normal practice for more than twenty years in the Santa Ana Region, as the Regional Board and various local agencies have cooperatively addressed TDS and nitrate water quality problems. While the watershed plans developed to date have accounted for nonpoint source inputs of TDS and/or nitrate, the focus of the implementation programs has been on controlling discharges from point sources.

We now recognize that our point source control programs are effective, but not our non-point source controls. This reflects the difficulty inherent in dealing with non-point sources, including inadequate funding and legal authority. Federal funding through EPA for water quality programs has traditionally been program-specific, with certain products or deliverables tied to each program. EPA is now interested in providing the states more flexibility in how they spend this money, which should greatly benefit the Regional Board's approach to water quality protection. From the Santa Ana Regional Board's perspective, this flexible approach to targeting funds would allow the various water quality problems that are not program-specific (primarily non-point source problems) to be addressed. Thus, a primary goal of watershed planning in this region will be to address the water quality impacts of non-point source discharges, as well as point source discharges, on a watershed basis.

To implement watershed planning, the Regional Board has integrated a number of federal, state, regional and local programs carried out by the Regional Board and other agencies to identify and prioritize water quality problems, and will develop implementation strategies to address those problems on a watershed basis. At the Regional Board, the functions of the water quality assessment, water quality standards, planning, non-point source control and where appropriate, the stormwater, surveillance, permit writing and SLIC (Spills, Leaks, Investigations and Cleanup) programs have been folded into watershed planning activities.

A successful watershed strategy cannot be developed or implemented without the involvement of local entities that have a major responsibility for regulation of non-point sources. For this reason, it is imperative that we have local participation and coordination in these watershed management activities.

In general, the regional approach for developing and implementing watershed planning (described in detail below) involves identifying Watershed Management Areas (WMAs) in the region and rotating focused watershed and water quality planning efforts through each of the identified WMAs in four to six year cycles. Once the majority of the effort is completed in a watershed and the need for resources is not as great, watershed planning in the next priority watershed can be initiated.

### Short and Long Term Goals and Resource Needs

Staff resources will be used to coordinate watershed management activities both within the Regional office and with outside entities. The Region has a Watershed Management Coordinator whose duties will include participation in the WMI Workgroup, coordinating TMDL development and implementation in four watersheds, coordinating watershed management activities with other programs, and outreach activities. The following table identifies the short and long-term watershed management program goals and resource needs.

| Time Frame | Watershed Management Program Goals | Resource Needs | |
|---|---|---|---|
| | | PYs | Contract Dollars |
| **Short Term (FY 02-03)** | • Participate in the WMI workgroup; includes monthly coordination meetings and various workgroup assignments<br>• Prepare 104/106 or other grant proposals and applications<br>• Coordination with local watershed stakeholder groups (see description under NPS program)<br>• Update WMI chapter; in-house coordination of WMI training and issues | **1.0** | **$0** |
| **Long Term (FY 03-04 to 06-07)** | • Continuation of program duties with an emphasis on realigning programs to a watershed focus | **1.0** | **$0** |

## 4.4 MONITORING AND ASSESSMENT

Assembly Bill (AB) 982 and subsequent Water Code Section 13192 requires the State Water Resources Control Board to prepare a proposal for a comprehensive surface water quality monitoring program for the state. Fiscal year (FY) 2001-02 will mark the first year of the coordinated implementation of the Surface Water Ambient Monitoring Program (SWAMP). A description of the site-specific monitoring effort that will be implemented through SWAMP is presented in Section V of the report to the Legislature titled "Proposal for a Comprehensive Ambient Surface Water Quality Monitoring Program".

Consistent with AB 982, a comprehensive monitoring program is needed to determine if the water quality objectives and / or beneficial uses are being met in the receiving water bodies in the Santa Ana Region. This effort is part of the statewide SWAMP and will be coordinated with the State Water Resources Control Board to ensure that it meets the goals of SWAMP. In the past, monitoring programs used to prepare the water quality assessments have used sampling and analytical protocols that did not address large-scale questions of the entire water body. Some of these questions involve defining the number of acres, or percent of acreage of that water body, that meets a water quality objective (regulatory threshold). An appropriate monitoring program design that defines the percent area meeting a threshold has been used in offshore and other bay/harbor regions of Southern California. This monitoring design is a stratified-random sampling design with a spatially systematic component. This design randomly allocates sample sites throughout the water body of interest resulting in an unbiased representation of water quality. Stratification within the water body enables us to compare one sub-region (sub-population or stratum) to another. Consequently, the study design was chosen for the assessment of ambient water quality in Anaheim Bay, Huntington Harbour, Lake Elsinore, Canyon Lake and Big Bear Lake. The overall goal of the study is to provide the information necessary to adequately assess the ambient water quality in these water bodies and to provide a baseline for future studies. The Southern California Coastal Water Research Project (SCCWRP) developed the study design.

Implementation of the Surface Water Ambient Monitoring program for the Santa Ana Regional Board for the fiscal years 2000 through 2005 involves sampling, using the sampling design described above, in Anaheim Bay, Huntington Harbor, Lake Elsinore, Canyon Lake, and Big Bear Lake. The sampling activities that will take place in these water bodies will enable Regional Board staff to determine whether the beneficial uses in these water bodies are being attained and the overall effectiveness of the various water quality control programs that have been implemented. The data will be used to prepare the Santa Ana Region's 305 (b) report and for updating the region's 303 (d) list and to determine the need to do focused studies in the future. For more specific information on the monitoring studies, please see the Workplan and Quality Assurance Project Plan (QAPP) prepared for each water body.

Section 305 (b) of the Clean Water Act requires the State to prepare and submit to EPA a report on the status of the state's ambient water quality. Each regional board prepares a regional water quality assessment (WQA), which then becomes a chapter in the statewide 305(b) report. The WQA identifies a list of the water bodies assessed, the pollutants of concern, and the potential pollutant sources. Water bodies identified in the 305(b) report as not supporting one or more beneficial uses are considered "impaired" and are then placed on the Clean Water Act Section 303 (d) list of impaired water bodies. Once included on the 303(d) list, the Clean Water Act requires that total maximum daily loads (TMDL) be developed to address the parameters responsible for impairment. Regional Boards prioritize the water bodies included in the 303(d) list for development of a TMDL. Water bodies are prioritized based on the degree of impairment, the number and type of beneficial uses impaired. The 305(b) report aims to answer the percent of area of a water body that meets the given standard.

**Table 4-5** includes the priority of the monitoring activities in the Santa Ana Region and the objectives associated with each monitoring study.

As stated, the first water bodies studied were Anaheim Bay and Huntington Harbor. Sampling at these water bodies are funded with SWAMP funds allocated to the Santa Ana Region for fiscal year 2001-2002. Lake Elsinore is the next water body to be studied. Sampling in Lake Elsinore will be funded with SWAMP funds allocated to the Santa Ana Region for fiscal year 2001-2002.

**Specific Activities Planned for FY 2002-03:**
On water bodies being studied, monitoring studies will be developed based on proper data review and analyses. In addition, data review on water bodies not being sampled will need to be done. Even though the next 305 (b) and 303 (d) List update is planned for 2004, this data review is necessary because it will enable Regional Board staff to detect early water quality standard exceedances in monitored and non-monitored water bodies. The data to be reviewed will be solicited from the various entities conducting water quality monitoring in the region. These data sources include ambient water quality data from state wide monitoring programs such as Coastal Fish Contamination Program, Toxic Substances Monitoring Program, State Mussel Watch Program; and regional and federal monitoring programs such as Coastal Bight Monitoring, National Ambient Water Quality Assessment, EMAP; and local monitoring programs headed by the various water districts, volunteer monitoring groups, and dischargers. **Table 4-7** includes a listing of those water bodies for which no sampling is planned, but data will be reviewed.

**Long Term Activities Planned for FY 2003 and beyond:**
The 2002 update of the 303 (d) List of Impaired Water Bodies yielded a list of several water bodies that need further monitoring data to properly assess their water quality (i.e. compliance with objectives and other regulatory thresholds). As a result, these water bodies will be monitored as funding becomes available and no later than the schedule listed on **Table 4-8**. A workplan and a QAPP will be prepared for each one of these studies detailing the question that needs to be answered and the associated sampling methodologies.

**Table 4-2: Monitoring and Assessment Resource Needs**

| Fiscal Year | Monitoring and Assessment Activity | Contract dollars needed | Status |
|---|---|---|---|
| 00-01 | • Anaheim Bay and Huntington Harbor dry season monitoring | ------ | Completed |
| 01-02 | • Anaheim Bay and Huntington Harbor wet season monitoring;<br>• Lake Elsinore wet season monitoring;<br>• Data review for Anaheim Bay, Huntington Harbor, Lake Elsinore and Canyon Lake.<br>• Volunteer monitoring, TSMP, Mussel Watch and Coastal Fish Contamination data review and planning.<br>• Santa Ana River at Prado monitoring | $575,000 | Planning stages; Funding needed |
| 02-03 | • Lake Elsinore and Canyon Lake dry season monitoring;<br>• Data review for Big Bear Lake, Buck Gully Creek, Crystal Cove, Muddy Creek data review for fecal coliform;<br>• Data review and monitoring for Knickerbocker, Metcalf and Boulder Grout and Rathbun Creeks for nutrients;<br>• Volunteer monitoring, TSMP, Mussel Watch and Coastal Fish Contamination Data review and planning.<br>• Santa Ana River at Prado Monitoring | $500,000 | Planning stages; Funding needed |
| 03-04 | • Canyon Lake and Big Bear Lake wet season monitoring;<br>• Buck Gully Creek, Crystal Cove, Muddy Creek monitoring for fecal coliform.<br>• Data review for Santa Ana River and Cucamonga Creek for dibromochloromethane and bromodichloromethane;<br>• Update of 303 (d) List of Impaired Water Bodies; | $650,000 | Planning stages; Funding needed |

**Table 4-2: Monitoring and Assessment Resource Needs**

| Fiscal Year | Monitoring and Assessment Activity | Contract dollars needed | Status |
|---|---|---|---|
| | • Volunteer monitoring, TSMP, Mussel Watch and Coastal Fish Contamination data review and planning.<br>• Santa Ana River at Prado Monitoring | | |
| 04-05 | • Big Bear Lake dry season monitoring;<br>• Santa Ana River and Cucamonga Creek data review and monitoring for dibromochloromethane and bromodichloromethane;<br>• Data review for San Timoteo Creek for general water quality indicators;<br>• Data review for San Jacinto River reaches 6 and 7 and Strawberry Creek for hardness, TDS, Chloride and Sodium;<br>• Volunteer monitoring, TSMP, Mussel Watch and Coastal Fish Contamination Data review and planning.<br>• Santa Ana River at Prado Monitoring | $650,000 | Planning stages; Funding needed |

**Table 4-3: Monitoring and Assessment: Five Year SWAMP Related Monitoring Priorities**

| Fiscal Year: | *A. Water Bodies to be Monitored:* | *B. Beneficial Uses:* | *C. Monitoring Objective:* |
|---|---|---|---|
| 2000-01 | Anaheim Bay and Huntington Harbor | Anaheim Bay: contact and non-contact recreation; navigation; biological habitat of special significance; wildlife habitat; rare, threatened or endangered species habitat; fish spawning; and marine habitat<br>Huntington Harbor:<br>Navigation; contact and non contact recreation; wildlife habitat; rare, threatened or endangered species habitat; fish spawning; and marine habitat | Are aquatic populations , communities protected? Does the water quality meet the non- body contact beneficial use? Does the water quality meet the body contact beneficial use? |
| 2001-02 | Completion of Anaheim Bay, and Huntington Harbour and beginning of sampling work for Lake Elsinore | Lake Elsinore: body contact and non-body contact recreation, warm fresh water habitat, and wildlife habitat | Does the water quality meet the body contact, non body contact , and habitat beneficial uses? |
| 2002-03 | Completion of Lake Elsinore and beginning of Canyon Lake sampling work | Canyon Lake: Municipal water supply, agricultural water supply, ground water recharge, body contact and non-body contact recreation, warm water habitat, and wild life habitat. | Does the water quality meet the body contact, non-body contact, and habitat beneficial uses? Does the water quality meet the municipal water supply beneficial use? |
| 2003-04 | Completion of Canyon Lake and beginning of Big Bear Lake sampling work | Big Bear Lake: Municipal water supply; agricultural water supply; ground water recharge; body contact and non-body contact recreation; warm water habitat; rare, threatened or endangered species habitat; and wild life habitat. | Does the water quality meet the body contact, non-body contact, and habitat beneficial uses? Does the water quality meet the municipal water supply beneficial use? |
| 2004-05 | Completion of Big Bear Lake sampling work | N/A | N/A |

**Table 4-4: Monitoring and Assessment: Water Bodies for Data Review – No sampling Activities Planned**

| Water Body | Activity | *Fiscal Year* | Possible Data Sources |
|---|---|---|---|
| Santa Ana River | Data review | 04/05 | NAWQA study, Orange County PFRD, San Bernardino County, Riverside County |
| Hemet Lake | Data review | 04/05 | Lake Hemet Municipal Water District |
| Perris Lake | Data review | 04/05 | Metropolitan Water District |
| Temescal Creek | Data review | 04/05 | Elsinore Valley Municipal Water District |

**Table 4-5: Monitoring and Assessment: Water Bodies Needing More Information to Assess Water Quality**

| Water Body | Water Quality Indicator of Concern | Schedule for Monitoring (years) |
|---|---|---|
| Buck Gully Creek | Fecal coliform | 2003 |
| Crystal Cove | Fecal coliform | 2003 |
| Muddy Creek | Fecal coliform | 2003 |
| Santa Ana River | dibromochloromethane | 2004 |
| Cucamonga Creek | bromodichloromethane | 2004 |
| Anaheim Bay | Mercury, and p, p DDE | 2001 |
| San Timoteo Creek | General water quality indicators | 2005 |
| San Jacinto River Reaches 6 & 7 | Hardness, TDS, Chloride and Sodium | 2005 |
| Knickerbocker Creek | TIN | 2002 |
| Metcalf Creek | TIN | 2002 |
| Boulder Creek | TIN | 2002 |
| Grout Creek | TIN | 2002 |
| Rathbun Creek | TIN | 2002 |
| Strawberry Creek | Hardness, TDS, Chloride and Sodium | 2005 |

## 4.5 CORE REGULATORY

One of the Regional Board's principal means of achieving water quality objectives, and thereby protecting beneficial uses, is through the development, issuance and enforcement of waste discharge permits. The Regional Board may issue Federal National Pollutant Discharge Elimination System (NPDES) permits for discharges to surface waters or Waste Discharge Requirements (WDRs) for discharges to land. Regional Board staff activities include issuance of new permits, updating existing permits, compliance inspections, review of self-monitoring reports, response to spills and complaints, and associated enforcement. Responding to appeals and/or litigation is also a resource intensive activity.

### 4.5.1 NPDES

The primary mechanisms for controlling discharges of pollutants to receiving waters are effluent limits. Under the NPDES program, effluent limits are developed based on applicable technology and water quality standards. After technology-based effluent limits are applied, if the permitting authority determines that a discharge has the reasonable potential to cause or contribute to the exceedance of a water quality standard, then a water quality based effluent limit (WQBEL) must be included in the permit.

NPDES permitting has been incorporated into the WMI where both individual and general permits are scheduled for re-issuance in accordance with a five-year plan (Appendix A).

As of November 2001, the Regional Board NPDES non-stormwater permit status was as follows:

| NPDES Permit Category | Number of Permits |
|---|---|
| Major Individual Permits | 18 |
| Minor Individual Permits | 24 |
| | |
| General Permits: | |
| DeMinimus Discharges | 106 permittees |
| Groundwater Cleanup | 146 permittees |
| Dairies | 316 permittees |
| Utility Vault Discharges | 7 permittees |

### 4.5.2 Storm Water

The stormwater unit at the Santa Ana Region is divided into a coastal and an inland section. The two stormwater sections are responsible for storm water permitting, compliance, inspections, and enforcement.

Storm water discharges are regulated under the following permits:

| | |
|---|---|
| Individual Storm Water | 15 |
| Municipal Separate Storm Sewer Systems (MS4) | 4 |

1. Orange County MS4, NPDES No. CAS618030: approximately 31 co-permittees
2. Riverside County MS4, NPDES No. CAS618033: approximately 10-15 co-permittees
3. San Bernardino County MS4, NPDES No. CAS618036: approximately 20 co-permittees
4. Cal Trans MS4, NPDES No. CA8000279
5. Individual storm water permittees: 15 permittees

6. General permit for storm water discharges from construction sites, NPDES No. CAS000001: 1,400 permittees
7. General permit for storm water discharges from construction sites, NPDES No. CAS000002: 1,200 permittees
8. San Jacinto Permit

Storm water compliance reviews include the review of annual reports submitted by each of the MS4 permittees and each of the facilities covered under the general permits for industrial facilities and construction sites. Annual compliance inspections are conducted for the MS4 permittees, while individual stormwater permittees are inspected twice annually. Standard stormwater inspections, reviews, and audits conducted in all the Watershed Management Areas include:

- Inspect 30% of General Construction Storm Water permittees
- Inspect all Construction Notice of Termination Requests (approx. 20% of permittees)
- Inspect 30% of General Industrial Storm Water permittees
- Inspect all Industrial Notice of Termination Requests (approx. 6% of permittees)
- Review all General Industrial Storm Water Permit annual reports
- Inspect Caltrans facilities and construction sites
- Audit/inspect MS4 permit compliance of municipal permittees
- Review MS4 Annual Reports from municipal permittees
- Issue informal and formal enforcement actions as necessary for violations of individual Storm Water NPDES permits, General Storm Water permits, and Municipal Storm Water permits

### 4.5.3 Waste Discharge Requirements (WDRs)

The Waste Discharge Requirements (WDR) program regulates discharges to land, other than those covered under the Land Disposal program. Discharges regulated under this program include those from wastewater treatment plants to percolation ponds and those from industrial/commercial facilities to septic tanks. The WDR program also oversees the production and use of recycled water. Waste discharge requirements are categorized by the potential threat to water quality that the discharge poses. Category 1 discharges pose the most threat, while Category 3 discharges pose the least threat. As of November 2001, the Regional Board's WDR status was:

| Permit Category | Number of Permits |
|---|---|
| Category 1 | 1 |
| Category 2 | 51 |
| Category 3 | 46 |

### 4.5.4 Land Disposal

Waste discharge requirements are categorized by the potential threat to water quality that the discharge poses. Category 1 discharges pose the most threat, while Category 3 discharges pose the least threat. As of November 2001, the Regional Board's Land Disposal status was:

| Permit Category | Number of Permits |
|---|---|
| Category 1 | 17 |
| Category 2 | 12 |
| Category 3 | 26 |

## 4.6 WATER QUALITY STANDARDS

As part of the State's Continuing Planning Process, the Santa Ana Region's Water Quality Control Plan (Basin Plan) is reviewed and updated as new data and information become available. California Water Code Section 13240 requires that Basin Plans be reviewed periodically and Clean Water Act Section 303(c) requires states to review water quality standards every three years (Triennial Review) and to revise them if necessary. In FY 98-99, the Regional Board conducted the Triennial Review and identified a number of priority Basin Planning issues to focus work for the next three years. In most cases, work on these issues was already in progress.

The FY 01-02 Triennial Review process began in earnest in January 2001 and will identify and prioritize Basin Planning issues to be undertaken during the next several years. The draft FY 01-02 Triennial Review list includes continuation of work on a number of issues identified in the FY 98-99 Triennial Review, as well as issues raised by USEPA and other agencies, and by Board staff. Board staff efforts will be revised to address priority issues, as determined by the Regional Board after work shops and public hearings.

FY 02-03 Standards/Basin Planning issues identified in the current triennial review list are tabulated in **Appendix D**. Resource intensive Basin Planning activities include:

- review of the chlorine residual water quality objective;
- based on finding of the seven year Nitrogen/TDS Study, update of the nitrogen/TDS water quality objectives and groundwater subbasin boundaries;
- review of nutrient water quality objectives for San Diego Creek; and,
- revising water quality objectives for REC-1 and REC-2 uses of surface waters, based on USEPA's national criteria and BEACH initiatives, requirements of AB 411, and Title 22 Reclamation Criteria regulations.

In addition to the specific tasks shown in Appendix D, where resources allow, Regional Board staff serves in an advisory capacity for a number of planning studies and efforts being conducted by other agencies, including the invasive species eradication program (Team Arundo), the Orange County Water District Santa Ana River Water Quality Study and the Lake Elsinore Reclaimed Water Task Force. These Standards/Basin Planning activities are briefly described in the respective watershed section or in the Regionwide section activities.

As with monitoring, the Regional Board's Standards/Basin Planning funding level has decreased in recent years, resulting in a decrease in basin planning and standards review activities in the region. As shown in Appendix D, the estimated total PYs needed to complete or participate in each activity during SFY02-03 (approximately 12 PYs), far exceeds the total available Basin Planning resources for the next fiscal year (approximately 1.6 PYs). This situation is not likely to improve with the development of a revised Triennial Review list. A number of programs that the Regional Board will be developing and implementing, including TMDL development, CZARA implementation and watershed plan development, will result in Basin Plan amendments -- either revision of water quality standards or amendments to the implementation plan. There are also a number of other agency studies and planning efforts that Regional Board staff are not involved in, because of resource constraints. Thus, there is a need for additional basin planning resources.

**Un-funded and Under-funded Priority Activities (FY 02-03 and 03-04)**
(see Appendix D)

- participation in standards development issues such as review of the ANPR and criteria development for effluent dominated streams
- (complete) total residual chlorine water quality objective review
- review / revise beneficial use designations for a number of water bodies in the region

- addition of wetlands to the Basin Plan
- addition of water bodies to the Basin Plan
- develop criteria for wetlands impact mitigation
- review ammonia objective (recommended by USEPA)
- withdraw site specific objectives for copper cadmium and lead for central reaches of the Santa Ana River, in favor of USEPA's California Toxics Rule
-

| Time Frame | Standards/Basin Planning Program Goals | Resource Needs | |
|---|---|---|---|
| | | PYs | Contract Dollars |
| **Short Term (FY 02-03)** | • Address high priority triennial review tasks with limited resources<br>• Build program capacity in modeling and GIS capabilities | **12** | **$175,000** |
| **Long Term (FY 03-04 to 06-07)** | • Perform Basin Plan updates and triennial review tasks | **21** | **$200,000** |

## 4.7 WETLANDS

The Region's waters include wetlands, as well as rivers, streams, lakes, estuaries and coastal waters. Generally, wetlands include swamps, marshes, bogs, sloughs, wet meadows, savannas, and vernal pools. Wetlands serve a number of important functions, including dampening floodwater peaks, shoreline erosion control, and water quality improvement through the removal of pollutants. They also provide habitat for many plant and animal species (including a large percentage of protected or endangered species) and have important aesthetic, recreation, scientific, and education values.

The 1995 Basin Plan lists some of the Region's wetlands and estuaries, and designates their beneficial uses. In addition, where numeric water quality objectives have been developed, they are specified. Additional wetland resources will be identified in the Basin Plan and specific numeric water quality objectives developed and implemented as part of the ongoing Basin Planning process.

Natural wetlands are valuable resources within the Region. Additional wetlands have been created, either incidentally, as the result of the construction of dams or levees, or purposefully, as mitigation for development projects located elsewhere. Examples of created wetlands include those in the Prado Basin, which resulted from the construction of Prado Dam, and the San Joaquin Freshwater Marsh, created for development mitigation purposes. A third type of wetlands, constructed wetlands, is also present in the Santa Ana Region. The Orange County Water District reconstructed approximately 500 acres of wetlands ponds in the Prado area and is operating these ponds to provide substantial nitrogen removal from the Santa Ana River flows. The City of Riverside has constructed and operates the Hidden Valley wetlands to provide additional nitrogen removal for the City's effluent.

In August 1993, the "California Wetlands Conservation Policy" was announced by the Governor. The Policy's three principal objectives are: to ensure no overall net loss of wetlands and achieve a long-term gain in the quantity, quality, and permanence of wetlands acreage and values; to reduce procedural complexity and confusion in the administration of wetlands conservation programs; and to make cooperative planning efforts and landowner incentive programs the primary focus of wetland conservation and restoration.

The Regional Board's wetlands program supports and implements the Governor's wetlands policy. Through the Clean Water Act Section 401 Water Quality Certification program, the Regional Board ensures that there is no net loss of wetlands as a result of dredge or fill operations.
This is accomplished through the practice of avoiding impacts to wetlands and waters, second, minimizing impacts to waters, and third, mitigating for unavoidable impacts by re-creating the functions and values of the impacted wetland or waterbody.

Secondly, the Regional Board, in coordination with the Statewide 401 Program Coordinating Committee and other agencies, is working towards permit streamlining and permit coordination and enforcement activities.

One of the region's major wetlands efforts is the Regional Board's participation on the Southern California Wetlands Recovery Project. The Wetlands Recovery Project (WRP) was formed in 1997 through the signing of a 'memorandum of understanding' (MOU) by several State and Federal agencies, including the Santa Ana Regional Board. The WRP is tasked with the goal of developing and implementing a plan of regional priorities for the acquisition, restoration, and enhancement of southern California's coastal wetlands and watersheds. The WRP project area consists of the coastal watersheds of Orange, Los Angeles, San Diego, Ventura, and Santa Barbara counties. The Wetlands Recovery Project implements the Governor's Wetlands Policy by providing a comprehensive strategy for the acquisition and restoration of coastal wetlands. Because upstream activities result in the continuing degradation of coastal and inland wetlands resources, the WRP has determined that

management of an entire watershed should be an integral part of the Wetlands Recovery Project. While Regional Board staff sees the Wetlands Recovery Project concept as applied to coastal wetlands as a good initial step for protecting these resources, it is believed that additional efforts are necessary to include inland wetlands in the Recovery Project process.

The WRP organization is headed by a Board of Governors responsible for setting the policies that direct the activities of the Wetland Managers Group (WMG), the Public Advisory Committee, five County Task Forces, and the Science Advisory Panel. A Santa Ana Regional Board Member sits on the WRP Governing Board and a Board staff on the Regional Wetlands Managers Group. An Orange County official chairs that County's Task Force. The WRP developed a Regional Strategy, available through the WRP website (www.coastalconservancy.ca.gov/scwrp). The Strategy specifies the WRP goals and priorities, incorporates their first 5-year Implementation Plan, annual Work Plan, and a database of potential projects. Six acquisition, restoration, or planning projects lie within the portion of Orange County that is in the Santa Ana Region. The projects include the San Joaquin Marsh Enhancement Program at UC Irvine, Serrano Creek Stabilization/Restoration, two San Gabriel River projects, and several potential Huntington Beach wetland property acquisitions. The WRP agencies have also conducted an inventory of coastal wetlands from Santa Barbara to the U.S.-Mexico border.

**Short and Long Term Goals and Resource Needs**

The staff resources in FY 02-03 will be used to manage the Section 401 Water Quality Certification program for the Region. The majority of this task is processing requests for 401 Certifications. Additional staff resources will be used to coordinate wetlands assessments with the Monitoring and Assessment staff and to participate in regulatory coordination meetings with other agencies, the 401 Roundtable, and the Southern California Wetlands Recovery Project.

| Time Frame | Program Goals | Resource Needs | |
|---|---|---|---|
| | | Pys | Contract Dollars |
| **Short Term (FY 02-03)** | Wetlands Planning:<br>• Develop new waste discharge requirements to deal with discharges of dredge or fill material into Waters of the State<br>• Add wetlands standards (designation of beneficial uses, and narrative and/or numerical water quality objectives)<br><br>Water Quality Certification:<br>• Continue participating in interagency meetings (Cal Dept. of Fish and Game, Army Corps of Engineers, US Fish and Wildlife Service, etc.) and holding project design feedback meetings with the public (pre-application meetings)<br>• Create a 401 database to store applicant information in a user-friendly manner | **2.5** | **$0** |
| **Long Term (FY 03-04 to 06-07)** | Wetlands Planning:<br>• Ongoing wetland monitoring and assessment<br>• Potential addition of mitigation policy to Basin Plan. Avoidance is preferred; next preference is minimization of impacts; least preferred is compensatory mitigation.<br><br>Water Quality Certification:<br>• Review 401 procedures to ensure accurate and detailed mitigation records are kept. This will help verify mitigation is completed, thereby ensuring compliance with the no net loss portion of Executive Order W-59-93<br>• Develop a GIS based system to track impacts and mitigation sites by county<br>• Enforcement | **2.5** | **$0** |

## 4.8 GROUNDWATER RESOURCE PROTECTION/CLEANUP

The significantly increasing population in the region is putting a high demand on limited groundwater supplies. Much of the groundwater in the Region is experiencing a buildup of salts, and many of the groundwater basins exceed water quality objectives or are projected to exceed water quality objectives in the future. This is primarily a result of salts added by historic irrigated agriculture, historic municipal and industrial discharges, historic and current dairy operations, and the increase in salt concentrations resulting from reuse and recycling of groundwater. The Board initiated a total watershed approach for salt control beginning with the 1975 Basin Plan. The total dissolved solids (TDS) Management Plan, developed through extensive ground and surface water modeling of the Middle, Upper Santa Ana River and Elsinore/San Jacinto River Basins, contains specific water supply, wastewater, and groundwater management plans for the Region in order to control salt loadings from residential, commercial, industrial and agricultural sources.

Many drinking water wells have been shut down due to high concentrations of salts, primarily nitrate. The groundwater management plan attempts to balance natural recharge, artificial recharge, groundwater pumping, surface water use, imported water use, and wastewater reclamation in order to optimize water quality and quantity, and integrates the water supply and wastewater management plans. The groundwater management plan includes five specific groundwater extraction and treatment projects, one of which is currently in operation and another that is under construction. These, and other similar projects, will not result in compliance with groundwater objectives for TDS, but are important to provide supplemental, reliable sources of potable supplies. The Regional Board is currently involved with other parties in a multi-million dollar, multi-year TDS/TIN project to address the issue of salt impacts in surface water and groundwater in the Lower, Middle Santa Ana River and the Elsinore/San Jacinto Watershed Management Areas.

The Santa Ana River is the primary source of recharge for the groundwater basins in Orange County. Groundwater makes up about 65% of the water supply for the two million people who reside in Orange County. Increasing concentrations of salts, especially nitrate, are occurring in the groundwater in the recharge areas, and threatening the quality of Orange County's drinking water supply. The Basin Plan specifies water quality objectives for the Santa Ana River that are intended to protect the Orange County aquifers. Salts in the River originate primarily from discharges from POTWs (the Santa Ana River is effluent dominated part of the year), surface discharges from dairy operations, and poor quality groundwater that enters the Santa Ana River from the Chino Basin. The poor quality is the result of historic irrigated agricultural and current and historical dairy operations.

The Chino Groundwater Basin, the largest basin in the region, is used extensively as a municipal water supply, and faces an increasing demand on its limited groundwater resources as the area continues to transition from agricultural land uses to urban. Much of the basin lacks assimilative capacity for and exceeds water quality objectives and drinking water standards for TDS and nitrate. Board staff is currently preparing a 'state of the watershed' report for the Chino Basin under the WMI. Upon completion of the report, Board staff will develop a water quality-based watershed management plan for the basin in conjunction with basin stakeholders. The plan will integrate with the Optimum Basin Management Plan that the court has ordered the Chino Basin Watermaster to prepare.

Groundwater in the Region has also been significantly impacted by chlorinated volatile organic compounds (VOCs), originating from historic industrial practices. Several hundred water supply wells in the region contain VOCs. Many of these wells have been shut down, and many other wells are threatened. In the Bunker Hill Basin, the City of San Bernardino had lost 25% of its drinking water supply as a result of PCE contamination, and currently has about 25 MGD of wellhead treatment capacity. Additional groundwater treatment is being pursued. A large TCE plume in the

Redlands area has closed some drinking water supply wells, and has impacted the water supply of the City of Riverside (Gage Canal Company Wells) and the City of Loma Linda. Board staff has been working with the responsible party and local water agencies, and has developed cleanup and water supply contingency plans. Several TCE and PCE plumes are present in the Chino Basin, where several water supply wells have been shut down. Investigation and cleanup of those plumes are being pursued.

Multiple historic sources of VOCs have impacted groundwater in Orange County. Many impacted water supply wells are being blended with water from other sources to dilute the concentrations of the contaminants. The Orange County Water District is pursuing a potential regional groundwater monitoring and wellhead treatment remediation project for VOCs in the Santa Ana Forebay of Orange County. The District's project will focus on groundwater in the vicinity of the cities of Anaheim, Fullerton, and Placentia. The first phase recommended for implementation includes the installation of two-pump-and treat systems in key areas where the VOC plume is relatively well characterized, and the installation of 15 monitoring wells. The District anticipates that Phase I monitoring wells will be installed by May 2001. Assuming that property acquisition is completed in a timely manner, the District estimates that Phase 1 pump-and-treat systems will begin construction in September 2001, and begin operation in May 2002. The capital cost for Phase 1 is estimated at $2,175,000. The total capital cost for the ultimate project is estimated to be $5,535,000, with annual operation and maintenance costs for the six pump-and-treat systems estimated to be $502,000. The Regional Board oversees many investigation and cleanup projects for VOCs in Orange County.

In addition to the impacts to the region's groundwater from VOCs, several groundwater basins in Riverside and San Bernardino Counties have been impacted by pesticides. DBCP, a nematicide, has been found in about 80 wells in the region. Most of those wells are public drinking water wells, and as a result of the DBCP contamination, most have been shut down.

**Short and Long Term Goals and Resource Needs**

The following table identifies the short and long term groundwater program goals and resource needs. Contract dollars would be used to investigate shallow groundwater in the Newport Bay WMA.

| Time Frame | Groundwater Program Goals | Resource Needs | |
|---|---|---|---|
| | | PYs | Contract Dollars |
| **Short Term (FY 02-03)** | • Investigation of the nutrient content of shallow groundwater in the central Newport Bay WMA (See section 2-2<br>• Participate on the Chapter 15 Roundtable<br>• Participate on the Underground Storage Tanks Roundtable<br>• Develop and maintain MTBE database<br>• Miscellaneous training | **8.3** | **$200,000** |
| **Long Term (FY 03-04 to 06-07)** | • Build program capacity in modeling and GIS capabilities to better integrate with TMDL, NPS, and Basin Planning programs | **8.3** | **$150,000** |

# 5.0 RESOURCE ALLOCATION

Watershed Management Initiative (WMI) Chapters are planning tools that identify an organization's priorities and where it would spend its baseline resources, as well as where it needs additional resources. They are not commitments to complete work or commitments to reallocate resources. Those commitments are made in fund source specific workplans. The Chapters are a key source of information that will be used in the process of negotiating and developing workplans.

The resource allocation summary table (**Table 5-1**) is designed to identify the planned distribution of FY 02-03 resources by activity type and by watershed. The reasoning behind this distribution is explained in Section 3 and Section 4.

There are about 60 types of specific activities being implemented in the Region. These activities are grouped into 16 activity categories. **Table 5-1** shows the resources allocated to each watershed management area for each activity category. The resources are described in terms of personnel years (PYs).

**Table 5-1**
**Resource Allocation Table FY 02-03**
**(numbers refer to personnel-years)**

| PROGRAM ACTIVITIES | Chino Basin | Newport Bay | Anaheim Bay | Newport Coast | Coyote/ Carbon Creeks | Lake Elsinore/ San Jacinto | Big Bear Lake | Middle Santa Ana River | Lower Santa Ana River | Upper Santa Ana River | Region Wide | PY TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monitoring/Assessment | 0.0 | 0.0 | 0.3 | 0.6 | 0.0 | 0.6 | 0.7 | 0.0 | 0.1 | 0 | 3 | **5.3** |
| Basin Planning | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 0.3 | 0.6 | 0.0 | 0.0 | 1.6 | **3.3** |
| TMDL | 1.0 | 3.0 | 0.0 | 0.0 | 0.0 | 2.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | **8.0** |
| Chapter 15 WDR | 0.7 | 0.3 | 0.3 | 0.0 | 0.0 | 0.8 | 0.0 | 1.5 | 0.4 | 0.4 | 1.3 | **5.7** |
| (Non-Chapter 15) WDR | 1.2 | 0.6 | 0.1 | 0.0 | 0.0 | 1.8 | 0.3 | 1.3 | 0.1 | 0.0 | 2.3 | **7.7** |
| NPDES | 4.1 | 1.0 | 0.2 | 0.1 | 0.1 | 2.4 | 0.3 | 2.8 | 1.4 | 0.1 | 3.1 | **15.6** |
| NPDES Storm Water | 1.7 | 1.4 | 1.2 | 0.0 | 0.0 | 1.7 | 0.3 | 1.7 | 1.2 | 1.4 | 4.4 | **15.0** |
| Nonpoint Source | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.5 | **2.5** |
| Wetlands | 0.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 0.8 | 0.8 | 0.8 | 0.1 | **3.4** |
| Watershed Management | 1.3 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.0 | 0.8 | **2.7** |
| Aboveground Tanks | 0.05 | 0.05 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | **0.2** |
| DoD | 0.0 | 0.7 | 0.8 | 0.0 | 0.0 | 0.3 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | **2.0** |
| SLIC | 0.9 | 0.4 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 1.5 | 0.0 | 0.7 | **4.4** |
| Underground Tanks | 0.8 | 1.4 | 0.8 | 0.0 | 0.0 | 1.3 | 0.6 | 1.0 | 1.5 | 0.0 | 0.9 | **8.3** |
| Program Management | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.1 | **5.1** |
| **PY TOTAL** | **12.45** | **9.05** | **4.0** | **0.7** | **0.1** | **12.4** | **4.1** | **10.7** | **7.2** | **2.7** | **25.9** | **89.2** |