Presented below are water quality standards that are in effect for Clean Water Act purposes.

EPA is posting these standards as a convenience to users and has made a reasonable effort to assure their accuracy. Additionally, EPA has made a reasonable effort to identify parts of the standards that are not approved, disapproved, or are otherwise not in effect for Clean Water Act purposes.

Chapter 1: Introduction

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The State and Regional Water Boards

Responsibility for the protection of surface water and groundwater quality in California rests with the State Water Resources Control Board (hereinafter, State Water Board) and nine Regional Water Quality Control Boards (hereinafter, Regional Water Boards) (collectively, Water Boards). The Water Boards are part of the California Environmental Protection Agency, along with the Air Resources Board, the Department of Resources Recycling and Recovery, the Department of Pesticide Regulation, the Department of Toxic Substances Control, and the Office of Environmental Health Hazard Assessment.

The State Water Board establishes statewide water quality control policy and regulation. The State Water Board also coordinates Regional Water Board efforts and reviews Regional Water Board actions for consistency with statewide policy and regulation.

The Regional Water Boards are semi-autonomous and make critical water quality decisions for their region. All duties and responsibilities of the Regional Water Board are directed at providing reasonable protection and enhancement of the quality of both surface and ground waters in the Region. The programs by which these duties and responsibilities are carried out include:

- designating beneficial uses, establishing water quality objectives to protect those uses, and identifying programs of implementation to meet objectives;
- developing new or revised policies addressing region-wide water quality concerns;
- issuing, monitoring compliance with, and enforcing waste discharge requirements and NPDES permits and other orders;
- providing recommendations to the State Water Board on financial assistance programs, budget development, and other statewide programs and policies;
- coordinating with other public agencies that are concerned with water quality control; and
- informing and involving the public on water quality issues.

Given the highly diverse environmental and land use characteristics of regions within the State, region-specific water quality regulations are contained in Water Quality Control Plans (Basin Plans) that recognize regional beneficial uses, water quality characteristics, and water quality problems.

The California Regional Water Quality Control Board, Los Angeles Region (hereinafter referred to as the Los Angeles Water Board or Regional Water Board) has jurisdiction over the coastal drainages between Rincon Point (on the coast of western Ventura County) and the eastern Los Angeles County line (Figure 1-1). The Regional Water Board consists of seven part-time members appointed by the Governor and confirmed by the State Senate, each of whom represents, and acts on behalf of, all of the people. Members serve staggered four-year terms and must reside in, or have a principal place of business within, the Region. Members of the Regional Water Board conduct their business at regular meetings and public hearings at different locations throughout the Region at which public participation is encouraged. The public may address the Regional Water Board regarding any matter within the Regional Water Board's jurisdiction during the public forum of any regular Regional Water Board meeting. The public may also address the Regional Water Board on specific items under consideration at any Regional Water Board meeting. Copies of the Regional Water Board meeting agendas are available on the Regional Water Board's website at www.waterboards.ca.gov/losangeles. The staff at the Regional Water Board, led by an Executive Officer appointed by the Board, implements the Region's water quality control programs and makes recommendations to the Regional Water Board members regarding matters under its jurisdiction.

Function of the Basin Plan

The Regional Water Board's Basin Plan contains the Region's water quality regulations and programs to implement the regulations. The Basin Plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. Specifically, the Basin Plan: (i) identifies beneficial uses for surface and ground waters, (ii) includes the narrative and numerical water quality objectives that must be attained or maintained to protect the designated beneficial uses and conform to the State's anti-degradation policy, and (iii) describes implementation programs and other actions that are necessary to achieve the water quality objectives established in the Basin Plan. In combination, beneficial uses and their corresponding water quality objectives are called Water Quality Standards.

Major State and Regional Water Board resolutions, policies, plans, and Basin Plan amendments are summarized in Chapter 5. In addition, all total maximum daily loads (TMDLs) applicable to waters within the Region are referenced in Chapter 5 and, where adopted as an amendment to this Basin Plan, are incorporated in Chapter 7. Regulations, plans, and policies of other agencies applicable to the Regional Water Board's programs are referenced in appropriate sections throughout the Basin Plan.

The Regional Water Board implements the Basin Plan by issuing and enforcing waste discharge requirements to individuals, municipalities, or businesses whose waste discharges can affect water quality. These requirements can be either State waste discharge requirements for discharges to land, or National Pollutant Discharge Elimination System (NPDES) permits issued under federal delegation for discharges to surface water. The Regional Water Board also implements the Basin Plan by issuing orders for investigation and cleanup or abatement at sites containing discharges of waste and by prohibiting certain discharges of waste in some areas. The Basin Plan is also implemented by encouraging water users to improve the quality of their water supplies, particularly where the wastewater they discharge is likely to be reused.

The Basin Plan is reviewed and updated as necessary every three years through a process known as a Triennial Review, which is discussed later in this chapter. Following adoption by the Regional Water Board, amendments to the Basin Plan are subject to approval by the State Water Board, the State Office of Administrative Law (OAL), and in some instances, the United States Environmental Protection Agency (USEPA).

The Basin Plan is a resource for the Regional Water Board and others who use water and/or discharge waste to surface or ground water in the Los Angeles Region. Other agencies and organizations involved in environmental permitting and resource management activities also use the Basin Plan. Finally, the Basin Plan provides valuable information to the public about local water quality issues.

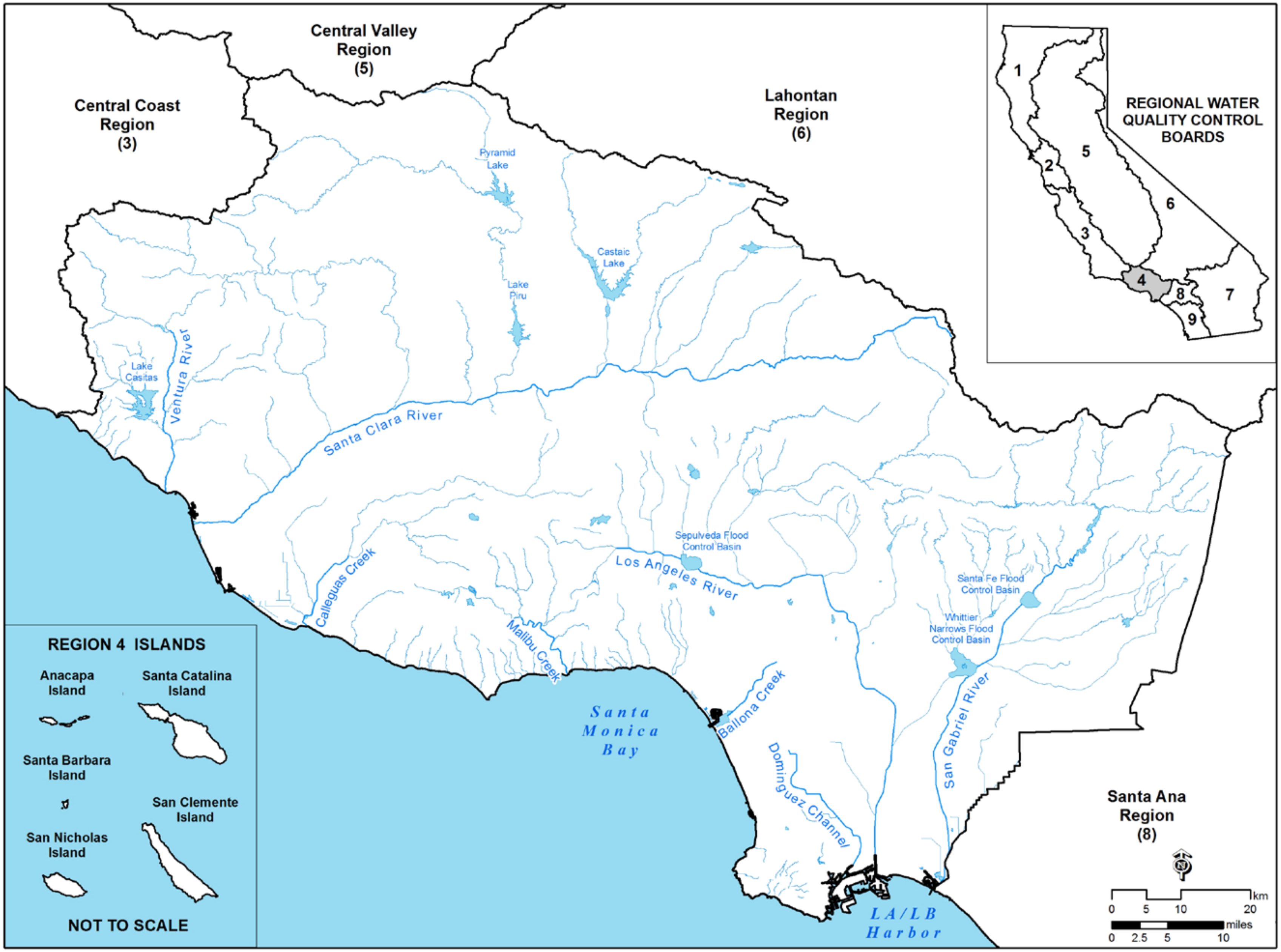


Figure 1-1. Regional Map: Regional Water Quality Control Board, Los Angeles Region.

Legal Basis and Authority

California's Porter-Cologne Water Quality Control Act (Porter-Cologne Act), enacted by the State of California in 1969 and effective January 1, 1970, is considered landmark water quality legislation and has served as a model for subsequent legislation by the federal government and other state governments. This legislation, which became Division 7 of the California Water Code (Water Code, § 13000 et seq.), establishes the responsibilities and authorities of the nine Regional Water Boards (previously called Regional Water Pollution Control Boards) and the State Water Board. The Porter-Cologne Act identifies these Boards as "... the principal State agencies with primary responsibility for the coordination and control of water quality" (§ 13001). Each Regional Water Board is directed to "...formulate and adopt water quality control plans for all areas within the region," including both surface waters and groundwater (§ 13240). A water quality control plan for the waters of an area is defined as having three components: beneficial uses to be protected, water quality objectives that protect those uses, and a program of implementation needed to achieve the water quality objectives (§ 13050). Further, "such plans shall be periodically reviewed and may be revised" (§ 13240). The State Water Board is also authorized to adopt water quality control plans on its own initiative (§ 13170).

The Clean Water Act (CWA) (33 U.S.C. § 1251 et seq.), enacted by the federal government in 1972, was designed to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. One of the national goals states that wherever attainable water quality should provide for the protection and propagation of fish, shellfish, and wildlife, and provide for recreation in and on the water. The CWA provides for the delegation of certain responsibilities in water quality control and water quality planning to the states. Section 303(c) of the CWA directs states to establish water quality standards for all "waters of the United States" and to review and update such standards on a triennial basis. Other provisions of the CWA related to basin planning include Section 208, which authorizes the preparation of waste treatment management plans, and Section 319 (added by 1987 amendments), which mandates specific actions for the control of pollution from nonpoint sources. Section 307(a) of the CWA also mandates that states adopt numerical standards for all priority pollutants.

Where USEPA and the State Water Board have agreed to such delegation, the Regional Water Boards implement portions of the Clean Water Act, such as the NPDES program. The Code of Federal Regulations (Title 40, C.F.R.) and USEPA guidance documents provide direction for implementation of the CWA.

The Porter-Cologne and Clean Water Acts also describe how enforcement of requirements pertaining to discharges of waste is to be carried out. Enforcement tools available to the Regional Water Board range from simple letters to the discharger, through formal Regional Water Board orders, and direct assessments of administrative civil liability and penalties, to judicial civil and/or criminal enforcement including civil liability, penalties, fines, and/or injunctive relief. Legally noticed public hearings are required for most actions, but some enforcement actions (e.g., Cleanup or Abatement Orders) have been delegated to the Executive Officer to allow for a quicker response than regularly scheduled Regional Water Board meetings can provide.

In addition to state and federal laws, several court decisions provide guidance for basin planning. For example, the 1983 Mono Lake Decision (*National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419) reaffirmed the public trust doctrine, holding that the public trust is "an affirmation of the duty of the state to protect the people's common heritage of streams, lakes, marshlands and tidelands, surrendering that right of protection only in rare cases when the abandonment of that right is consistent with the purposes of the trust." Public trust encompasses uses of water for commerce, navigation, fisheries, and recreation. In *California Trout, Inc. v. State Water Resources Control Board* ((1989) 207 Cal.App.3d 5856), the courts found that the public trust doctrine also applies to activities that could harm the fisheries in a non-navigable water.

History of Basin Planning and the Basin Plan in the Los Angeles Region

The Dickey Act, enacted by the State of California in 1949, established nine Regional Water Pollution Control Boards in California. Regional Water Pollution Control Boards were directed to establish water quality objectives in order to protect the quality of receiving waters from adverse impacts of wastewater discharges. During the first few years, the Los Angeles Regional Water Pollution Control Board only established narrative objectives for discharges. By 1952, the Los Angeles Regional Water Pollution Control Board began including numerical limits in requirements for discharges and adopting water quality objectives for receiving waters.

With the enactment of the Porter-Cologne Act in 1969, the names of the Regional Water Pollution Control Boards were changed to Regional Water Quality Control Boards, and their authorities were broadened. At this time, the Regional Water Quality Control Boards initiated development of comprehensive regional Basin Plans.

In 1971, the Regional Water Board adopted an *Interim Water Quality Control Plan* that compiled all of the existing objectives and policies into one document and rescinded all individually adopted objectives and policies. A more comprehensive planning effort was undertaken when the State Water Board engaged Daniel, Mann, Johnson, and Mendenhall, Inc., and Koebig and Koebig, Inc. to develop Basin Plans for the Santa Clara River Basin and the Los Angeles River Basin, respectively. This major planning effort culminated in 1975 with the *Water Quality Control Plan for the Santa Clara River Basin (4A)* and the *Water Quality Control Plan for the Los Angeles River Basin (4B)*. Those two documents, which together comprised the Basin Plans for the Los Angeles Region, were amended in 1976, 1978, 1990, and 1991. In 1994, the two 1975 Basin Plans and the aforementioned amendments to those plans were superseded by a single Basin Plan, which for planning purposes divided the Region into major surface watersheds and groundwater basins.

Since 1994, numerous Basin Plan amendments have been adopted and more current background, program, and geographical information have become available. In 2010, the Regional Water Board recognized the need for an overall update to the Basin Plan as several amendments to the Basin Plan, which had been adopted since 1994 and were in effect, had not been physically integrated into the Basin Plan. Also, the Basin Plan did not reflect current information on State and Regional Water Board programs, plans, and policies, or more recently available geographical and background information for the Los Angeles Region. As a result, an administrative update of the Basin Plan was identified as a priority project to be addressed during the 2008-2010 triennial review (Resolution No. R10-001). The administrative update was conducted in phases.

Since 1975, progress has been made toward the control of a number of water quality problems identified in the 1975 Basin Plans, including the control of point source discharges from municipal wastewater treatment plants, industrial facilities, and municipal separate storm sewer systems (MS4s) and discharges from nonpoint sources such as irrigated agriculture in the Region. At the same time, many new issues and areas of concern have arisen. Scientists continue to identify contaminants of emerging concern (CECs) that pose ecosystem and public health risks. The State and Regional Water Boards undertake a continuing planning process (described below), based on the latest scientific information, which addresses both old and new water quality issues.

Continuing Planning Process

While the Basin Plan provides sound long-term standards and program guidance for the Region, it is not a static document. The Basin Plan is a flexible tool that is reviewed and revised periodically to adapt to changing conditions. The CWA and federal regulations (CWA § 303(e); 40 C.F.R. § 130.5(b)) require that the State have a "continuing planning process" approved by the USEPA. This process has nine required elements, one of which is water quality planning consisting of adoption, review, and amendment of Basin Plans. As part of the State and Regional Water Board's continuing planning process, components of the Basin Plan are reviewed as new data and information become available or as specific needs arise. Updates of the Basin Plan occur in response to this periodic review or as a result of State or federal legislative requirements or judicial mandates such as consent decrees. State Water Board and other governmental entities' (federal, state, and local) plans that can affect water quality are considered in the planning process.

Triennial Review Process

Section 303(c)(1) of the CWA requires states to hold public hearings for the purpose of reviewing water quality standards and, as appropriate, modifying and adopting standards, at least once every three years, in a process known as a triennial review. Water quality standards consist of beneficial use designations and water quality criteria (referred to as water quality objectives in State terminology) necessary to protect those uses. This requirement is based upon recognition that the science of water quality is constantly advancing; its purpose is to ensure that standards are based on current science, methodologies, and USEPA mandates, recommendations, and guidance. The triennial review does not involve the revision of all standards every three years. Federal law only requires modifications "as appropriate." Modifications to the Basin Plan are usually made to incorporate new scientific and technical information; in response to USEPA's mandates, applicable recommendations, and guidelines, as appropriate; to address stakeholder concerns, where it is appropriate to do so; to address new legislation or case law; and to address issues identified in due course by the State or Regional Water Boards themselves or its staff during the regular course of business.

The availability of new scientific information or methodological developments may not directly translate into a change to standards during a triennial review cycle. The state of the science also has to be taken into consideration; for example, it would be premature to modify standards while scientific understanding is actively evolving and new methodologies are being developed and tested. Moreover, notwithstanding the evolution of applicable scientific knowledge or policy considerations, federal or state law or regulations may preclude changes that might otherwise be deemed desirable by stakeholders. In addition, while a major part of the review process consists of identifying potential issues, an important part of the review is the reaffirmation of those portions of the Basin Plan where no potential issues are identified. Therefore, it is common for standards to remain unchanged as a result of a triennial review process.

Even where changes are appropriate and lawful, the State's Continuing Planning Process, and other federally approved documents, recognize that the process of modifying water quality standards is resource intensive, and typically limited by staffing and budgetary constraints. As such, the triennial review process assists in identifying the most important or compelling projects and allows the State and Regional Water Boards to prioritize those as resources allow.

This federal requirement for a triennial review of the Basin Plan is complemented by the provision in Section 13240 of the California Water Code that requires a periodic review of the Basin Plan and allows for revisions.

The triennial review occurs in three phases. During the first phase, the Board reviews water quality standards and identifies potential issues for possible Basin Plan amendments that can be completed within existing resource allocations over a three-year period. In the second phase, the Board holds a hearing and prioritizes the standards-related issues on a priority list that will be further researched and potentially addressed through subsequent Basin Plan amendments. Placing a potential issue on the priority list will only require the Regional Water Board staff to investigate the need for an amendment; it does not necessarily mean a revision of the Basin Plan will be made. Finally, during the third phase, the Board, if appropriate, develops projects addressing these issues and adopts any resulting changes to the Basin Plan as individual Basin Plan amendments over the course of the three-year review period. Public input is a key component of each phase. Stakeholder input is solicited on issues of concern, on prioritization, and during the development of each individual Basin Plan amendment. The triennial review process may ultimately result in some amendments to the Basin Plan to adopt or modify water quality standards and implementation provisions.

A triennial review is not the only occasion where Basin Plan modifications are contemplated. The

Regional Water Board can amend the Basin Plan whenever needed. Such amendments need not coincide with the triennial review process.

Basin Plan Amendments

Amendments to the Basin Plan involve the preparation of an amendment, a resolution, a staff report, and substitute environmental documents required by the California Environmental Quality Act (California Public Resources Code, § 21080.5 et seq.). Public workshops are often held to inform and solicit input from the public about issues before formal action is scheduled on the amendments. Following a public review and comment period of 30 to 45 days, the Regional Water Board responds in writing to timely submitted written comments. Subsequently, the Regional Water Board takes action on the amendments at a public hearing. Basin Plan amendment hearings are advertised in the public notice section of a newspaper circulated in areas affected by the amendment, as well as on the Regional Water Board's website. Persons interested in a particular issue can also notify the Regional Water Board staff of their interest in being notified of workshops and hearings on that topic.

The California Environmental Quality Act provides that the Secretary of Resources can exempt regulatory programs of State agencies from the requirements of preparing environmental impact reports, negative declarations, and initial studies should such programs be certified as "functionally equivalent." The Water Board's Basin Planning process has been so certified. Accordingly, amendments to the Basin Plan and accompanying documentation, including the staff report, substitute environmental document, and responses to comments, are functionally equivalent to an environmental impact report or negative declaration.

Following adoption by the Regional Water Board, Basin Plan amendments and supporting documents are submitted to the State Water Board for review and approval. All Basin Plan amendments approved by the State Water Board after June 1, 1992 must also be reviewed and approved by the State Office of Administrative Law (OAL). All amendments take effect upon approval by the OAL and filing of the Department of Fish and Wildlife fee, where appropriate. In addition, the USEPA must review and approve those Basin Plan amendments that involve surface water quality standards to ensure such changes are consistent with federal regulations.

The Region

Regional Setting

The Los Angeles Region (Figure 1-1) encompasses all coastal watersheds and drainages flowing to the Pacific Ocean between Rincon Point (on the coast of western Ventura County) and the eastern Los Angeles County line, as well as the drainages of five coastal islands (Anacapa, San Nicolas, Santa Barbara, Santa Catalina, and San Clemente). In addition, the Region includes all coastal waters within three nautical miles (approximately 5½ kilometers) off the continental and island coastlines.

The Regional Water Board relies on the watershed classification system developed by the United States Geological Survey (USGS), known as the Watershed Boundary Dataset (WBD), which divides surface waters into a hierarchical system of hydrologic units, areas, and subareas (Table 1-1 and Figure 1-2). The USGS National Hydrography Dataset (NHD) is used to delineate surface waters, including rivers, streams, lakes, and ponds. Figures 1-3 and 1-4 illustrate many of the larger streams and lakes within the Region. The major watershed boundaries used for planning purposes are illustrated on Figure 1-5. The eastern regional boundary, formed by the Los Angeles County line, departs somewhat from the watershed divide; consequently, the Los Angeles and Santa Ana Regions share jurisdiction over watersheds along their common border.

In addition, the Regional Water Board uses the classification system developed by the California Department of Water Resources (as provided in the agency's Bulletin 118 "California's Groundwater"), which divides ground waters into major groundwater basins (see Ground Waters, below). This system also classifies surface waters into hydrologic units, areas, and subareas (Figure 1-2, Table 1-1). Watersheds and watershed management areas used by the Regional Water Board for planning purposes may be completely within a hydrologic unit or may cross several hydrologic units (e.g., Ventura County Coastal Watershed Management Area). In other cases, a hydrologic unit may contain more than one watershed management area. For example, the San Gabriel Hydrologic Unit contains the Los Cerritos and Dominguez Channel Watersheds in addition to the San Gabriel River Watershed. Surface waters in the region are categorized by watershed and hydrologic unit codes in the beneficial use tables contained in Chapter 2.

Geology/Topography

Most of the Los Angeles Region lies within the western portion of the Transverse Ranges Geomorphic Province. The San Andreas transform fault system, forming the boundary between the North American and Pacific tectonic plates, dissects these western Transverse Ranges. This fault system, which extends northwesterly for over 700 miles (1,127 kilometers) from the Salton Sea in southern California to Cape Mendocino in northern California, bends in an east-west direction through the Transverse Ranges. Known as the “Big Bend,” this portion of the San Andreas fault system formed from complex movements of the Pacific Plate against the North American Plate. Compression generated by such forces resulted in uplift of the Transverse Ranges, which have a conspicuous east-west trend (unlike other major ranges in the continental United States, which typically have a roughly north-south trend).

Major mountain ranges within the Los Angeles Region include the San Gabriel Mountains, Santa Monica Mountains, Santa Susana Mountains, Simi Hills, and Santa Ynez Mountains (Figure 1-6). The San Gabriel Mountains are the most prominent range in this group. The rock types exposed in the San Gabriel Mountains consist predominantly

The hydrologic unit numbers below are the last 5 digits of the HUC12 as the prefix of HUC12 for the region is the same, 1807010.

10000	**VENTURA HYDROLOGIC UNIT**
10100	Ventura River HA
101	Matilija Creek HSA
102	North Fork Matilija Creek HSA
103	San Antonio Creek HSA
104	Upper Ventura River HSA
105	Coyote Creek HSA
106	Lower Ventura River HSA
10200	Rincon Creek HA
202	Los Sauces Creek HSA
203	Arundell Barranca HSA

20000	**SANTA CLARA HYDROLOGIC UNIT**
20100	Headwaters Santa Clara River HA
101	Aliso Canyon HSA
102	Kentucky Springs Canyon HSA
103	Acton Canyon HSA
104	Agua Dulce Canyon HSA
105	Arrastre Canyon HSA
106	Mint Canyon HSA
107	Sand Canyon HSA
20200	Bouquet Canyon HA
201	Upper Bouquet Canyon HSA
202	Lower Bouquet Canyon HSA
20300	Castaic Creek HA
301	Elizabeth Lake HSA
302	Fish Canyon HSA
303	Upper Castaic Creek HSA
304	Elizabeth Lake Canyon HSA
305	Middle Castaic Creek HSA
306	Lower Castaic Creek HSA
20400	Upper Santa Clara River HA
401	South Fork Santa Clara River HSA
402	San Francisquito Canyon HSA
403	Salt Canyon HSA
20500	Upper Piru Creek HA
501	Mutau Creek HSA
502	Cedar Creek HSA
503	Seymour Creek HSA
504	Lockwood Creek HSA
505	Snowy Creek HSA
506	Hungry Valley HSA
507	Gorman Creek HSA
508	Buck Creek HSA
509	Liebre Gulch HSA
20600	Lower Piru Creek HA
601	Agua Blanca Creek HSA
602	Fish Creek HSA
603	Lake Piru HSA
604	Hosler Canyon HSA
20700	Sespe Creek HA
701	Abadi Creek HSA
702	Tule Creek HSA
703	Piedra Blanca Creek HSA
704	Tar Creek HSA
705	West Fork Sespe Creek HSA
706	Boulder Creek HSA
20800	Middle Santa Clara River HA
801	Hopper Canyon HSA
802	Pole Creek HSA
20900	Lower Santa Clara River HA
901	Santa Paula Creek HSA
902	Timber Canyon HSA
903	Adams Canyon HSA
904	Harmon Canyon HSA

30000	**CALLEGUAS HYDROLOGIC UNIT**
30100	Calleguas Creek HA
101	Upper Simi Arroyo HSA
102	Lower Simi Arroyo HSA
103	Las Posas Arroyo HSA
104	Upper Conejo Arroyo HSA
105	Lower Conejo Arroyo HSA
106	Beardsley Wash HSA
107	Revolon Slough HSA
30200	McGrath Lake HA
201	Mugu Lagoon HSA
202	McGrath Lake HSA

40000	**SANTA MONICA BAY HYDROLOGIC UNIT**
40100	Malibu Creek HA
101	Potrero Valley Creek HSA
102	Medea Creek HSA
103	Las Virgenes Arroyo HSA
40200	Big Sycamore Canyon HA
201	Big Sycamore Canyon HSA
202	Arroyo Sequit HSA
203	Zuma Canyon HSA
204	Solstice Canyon HSA
40300	Ballona Creek HA
40400	Garapito Creek HA
401	Garapito Creek HSA
402	Santa Monica Canyon HSA
403	Santa Monica Beach HSA
40500	Frontal Santa Monica Bay-San Pedro Bay HA
500	Manhattan Beach HSA

50000	**LOS ANGELES HYDROLOGIC UNIT**
50100	Big Tujunga Creek HA
101	Alder Creek HSA
102	Mill Creek HSA
103	Upper Big Tujunga Creek HSA
104	Little Tujunga Creek HSA
105	Lower Big Tujunga Creek HSA
50200	Upper Los Angeles River HA
201	Bell Creek HSA
202	Browns Canyon Wash HSA
203	Aliso Canyon Wash HSA
204	Bull Creek HSA
205	Upper Pacoima Wash HSA
206	Lower Pacoima Wash HSA
207	Verdugo Wash HSA
208	Tujunga Wash HSA
209	Arroyo Seco HSA
210	Scholl Canyon HSA
50300	Rio Hondo HA
301	Eaton Wash HSA
302	Santa Anita Wash HSA
303	Alhambra Wash HSA
50400	Lower Los Angeles River HA
401	Chavez Ravine HSA
402	Compton Creek HSA

60000	**SAN GABRIEL HYDROLOGIC UNIT**
60100	Dominguez Channel HA
101	Upper Dominguez Channel HSA
102	Lower Dominguez Channel HSA
60200	West Fork San Gabriel River HA
201	Devils Canyon HSA
202	Upper West Fork San Gabriel River HSA
203	Bear Creek HSA
204	North Fork San Gabriel River HSA
205	Lower West Fork San Gabriel River HSA
60300	Upper San Gabriel River HA
301	Fish Fork HSA
302	Cattle Canyon HSA
303	Iron Fork HSA
60400	Walnut Creek HA
401	San Dimas Wash HSA
402	Big Dalton Wash HSA
60500	San Jose Creek HA
501	Upper San Jose Creek HSA
502	Lower San Jose Creek HSA
60600	Lower San Gabriel River HA
601	Santa Fe Flood Control Basin HSA
602	La Mirada Creek HSA
603	Brea Creek-Coyote Creek HSA
605	Carbon Creek HSA
606	Coyote Creek HSA
60700	Alamitos Bay-San Pedro Bay HA
701	Long Beach Harbor HSA
702	Alamitos Bay HSA
703	San Pedro Bay HSA

70000	**SAN PEDRO CHANNEL ISLANDS HYDROLOGIC UNIT**
70000	San Nicholas Island-Santa Catalina Island HA
001	San Nicolas Island HSA
002	Santa Catalina Island HSA
003	Santa Catalina Island HSA
004	San Clemente Island HSA

The Santa Barbara Channel Islands Hydrologic Unit (see below) has a different prefix of HUC12, 1806001.

40000	**SANTA BARBARA CHANNEL ISLANDS HYDROLOGIC UNIT**
40200	Santa Cruz Island HA
202	Santa Cruz Island-Frontal Pacific Ocean HSA

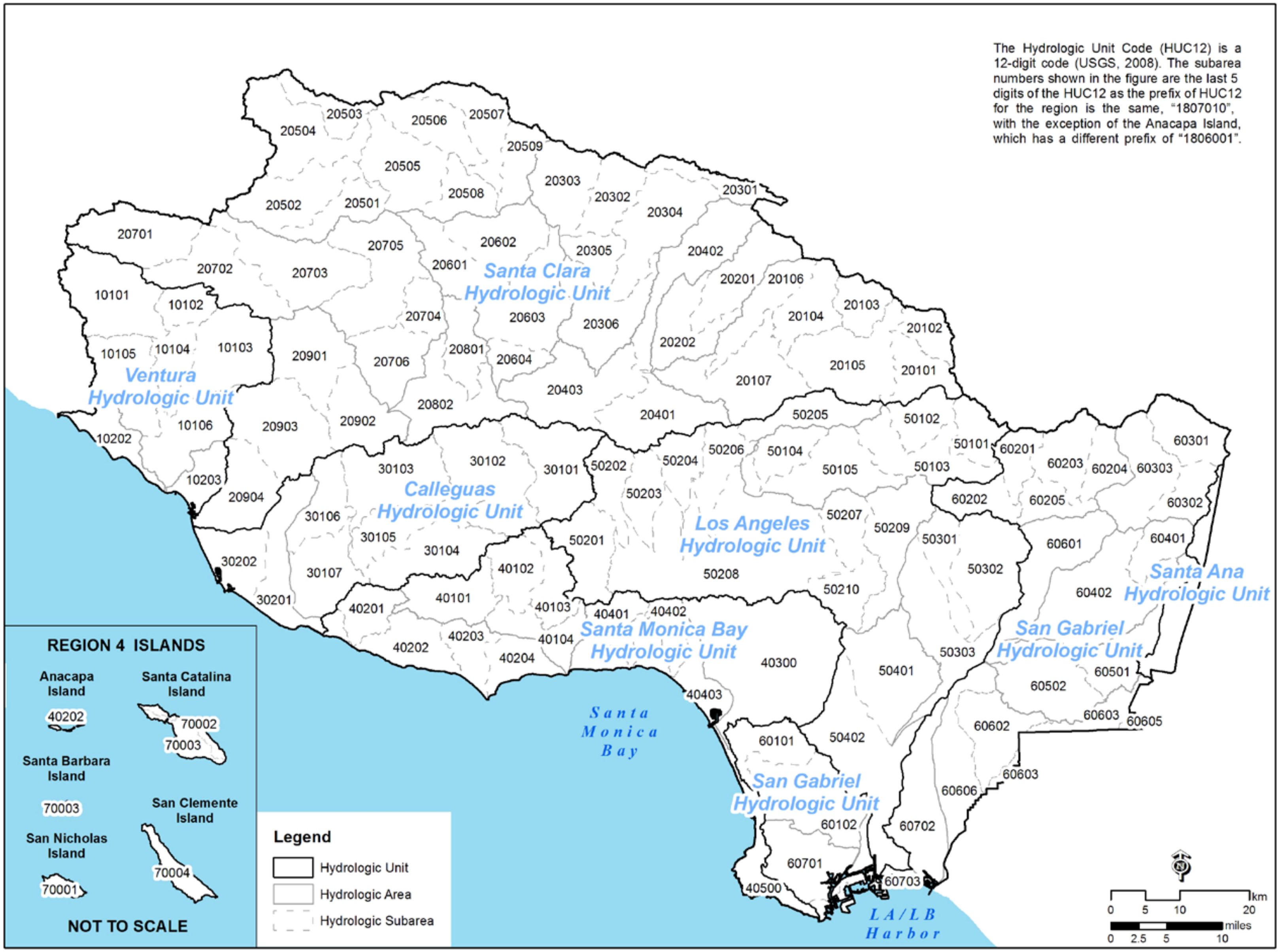


Figure 1-2. Hydrologic Units with Areas and Subareas.

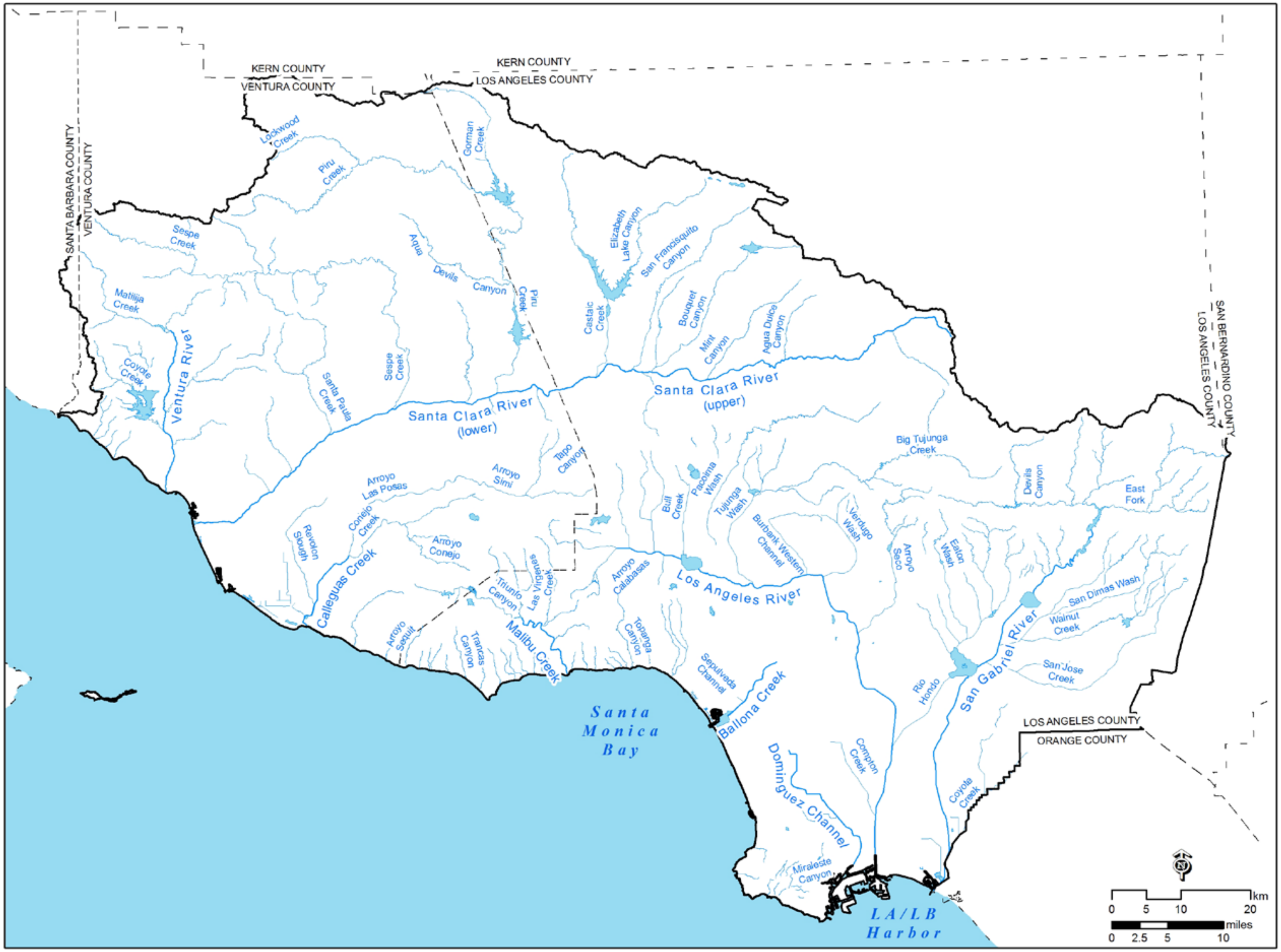


Figure 1-3. Major Rivers and Streams.

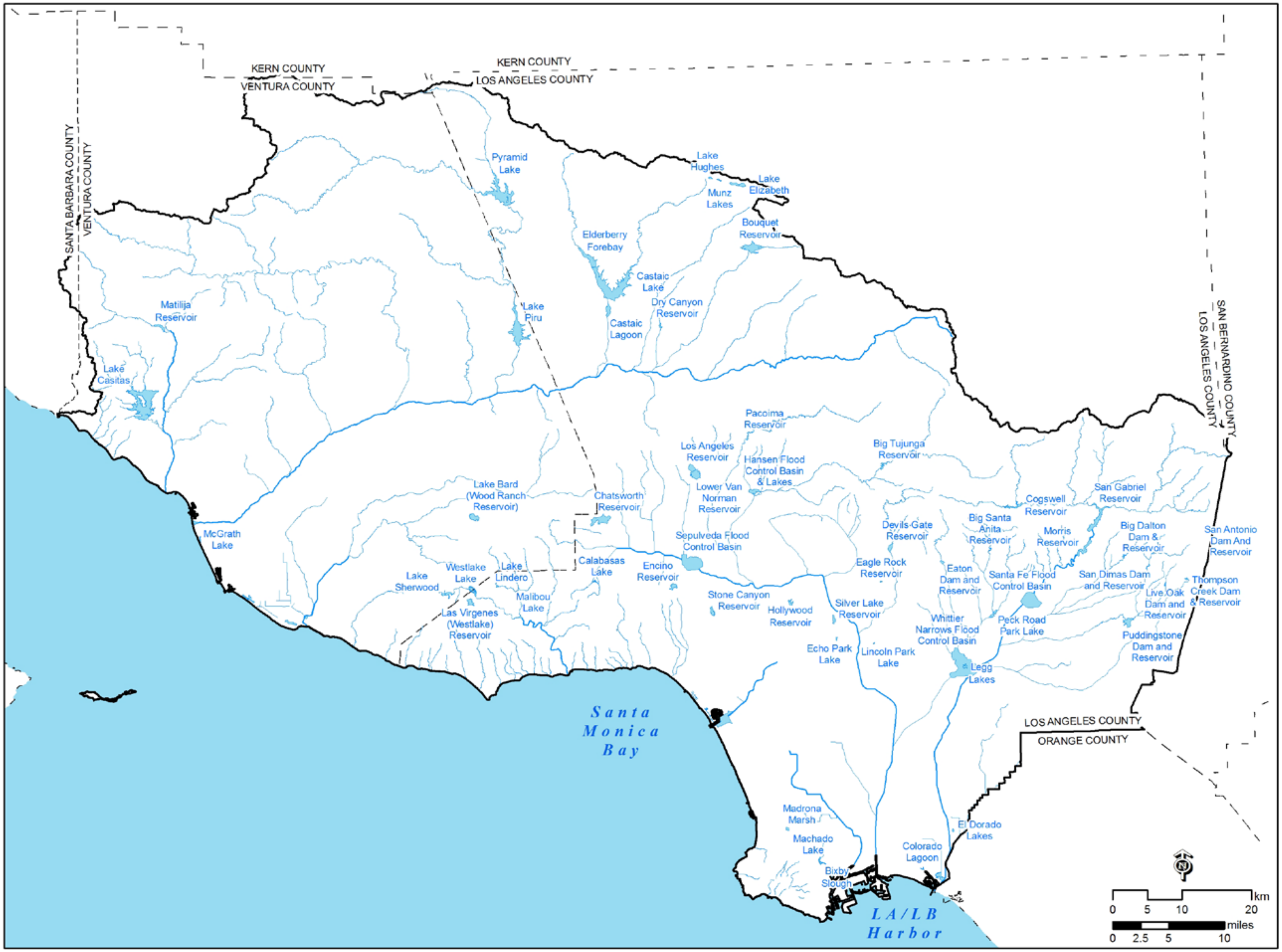


Figure 1-4. Major Lakes and Reservoirs.

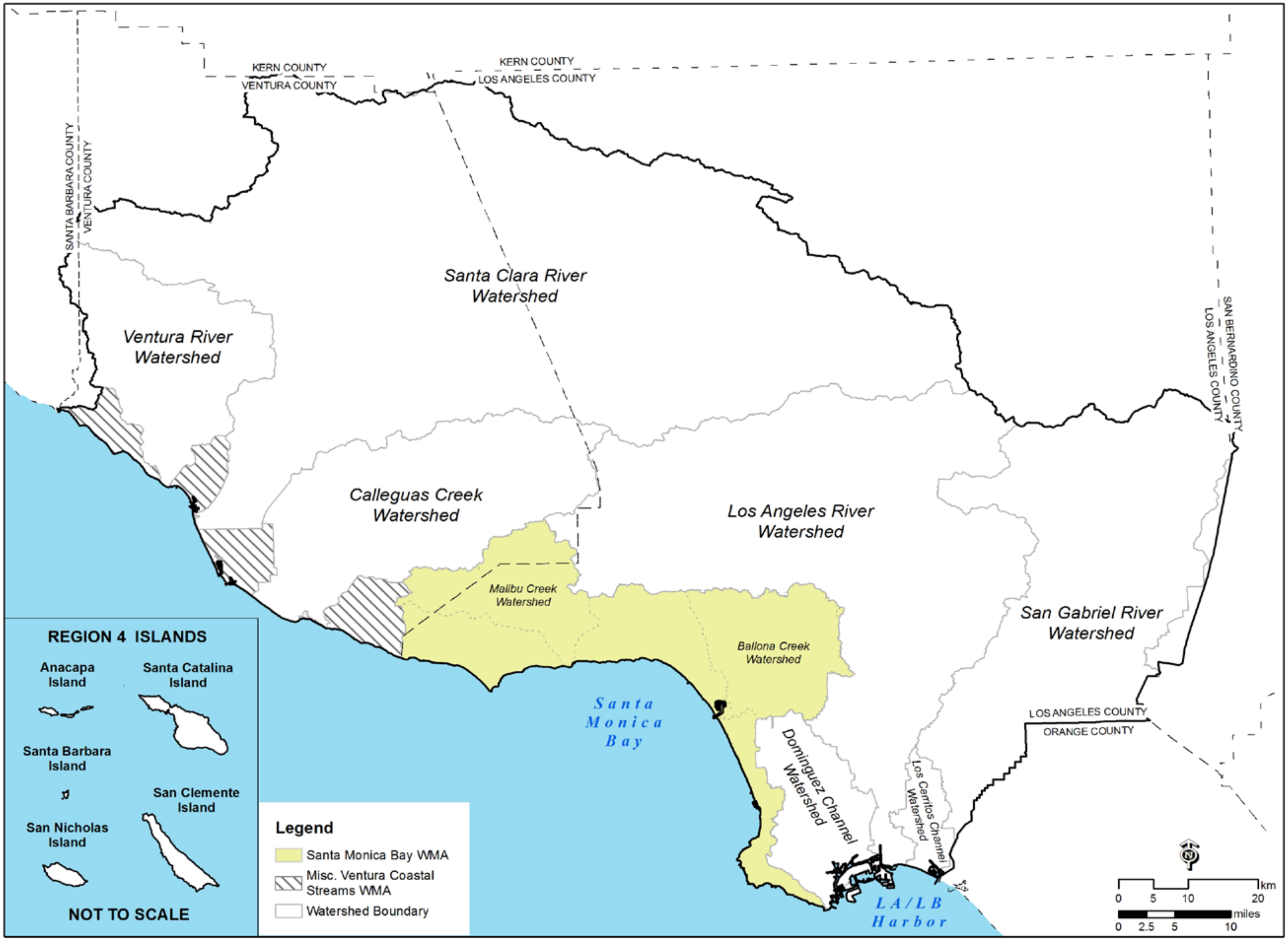


Figure 1-5. Watershed Management Areas (WMAs).

of Mesozoic granitic rocks (66 to 245 million years old), with minor exposures of Precambrian igneous and metamorphic rocks (prior to 570 million years old), and small stocks of Tertiary plutonic rocks (1.6 to 66 million years old). Cenozoic sedimentary beds (younger than 66 million years) are exposed only at the margins of the San Gabriel Mountains. Reflecting the recent and continuing uplift from plate tectonic activity, the San Gabriel Mountains are rugged mountains with deeply dissected canyons. Eroded sediments from these mountains have formed and are continuing to form prominent alluvial fans in the valleys along the flanks of the range.

During the Miocene Epoch (5 million to 23.5 million years ago), the sea advanced to the base of the San Gabriel Mountains, depositing fine-grained marine sediments. As the sea retreated, coarser grained sediments, eroded from the Transverse Ranges, were deposited as alluvial fans in low-lying areas such as the San Fernando Valley, San Gabriel Valley, Oxnard Plain, and the Los Angeles Coastal Plain (Norris and Webb, 1991). These low-lying areas or basins are filled with layers of sediment. Many of these layers of sediment form aquifers that are important sources of groundwater in the Region.

Climate

With prevailing winds from the west and northwest, moist air from the Pacific Ocean is carried inland in the Los Angeles Region until it is forced upward by the mountains. The resulting storms, common from November through March, are followed by dry periods during summer months. Differences in topography are responsible for large variations in temperature, humidity, precipitation, and cloud cover throughout the Region. The coastal plains and islands, with mild rainy winters and warm dry summers, are noted for their subtropical Mediterranean climate. The inland slopes and basins of the Transverse Ranges, on the other hand, are characterized by more extreme temperatures and little precipitation.

Precipitation in the Region generally occurs as rainfall, although snowfall can occur at high elevations. Most precipitation occurs during just a few major storms. Annual rainfall in Ventura County averages 16.1 inches (40.9 cm), although there is considerable variability in rainfall totals in dry versus wet years and at high versus low elevations. In wet years, mountain areas can exceed 40 inches (101.8 cm) of rain while in dry years, coastal lowlands can receive as little as 5 inches (12.7 cm) (VCWPD, 2007). The average annual rainfall for Los Angeles County is 15.7 inches (39.9 cm). However, large variations exist within Los Angeles County also, as indicated by average annual rainfall of 34.2 inches (86.9 cm) at Cogswell Dam in the San Gabriel Mountains and average annual rainfall of 13.71 inches (34.82 cm) for the coastal plain part of the County (LACDPW, 2011). These variations in precipitation are expected to increase as the impacts of climate change become more pronounced.

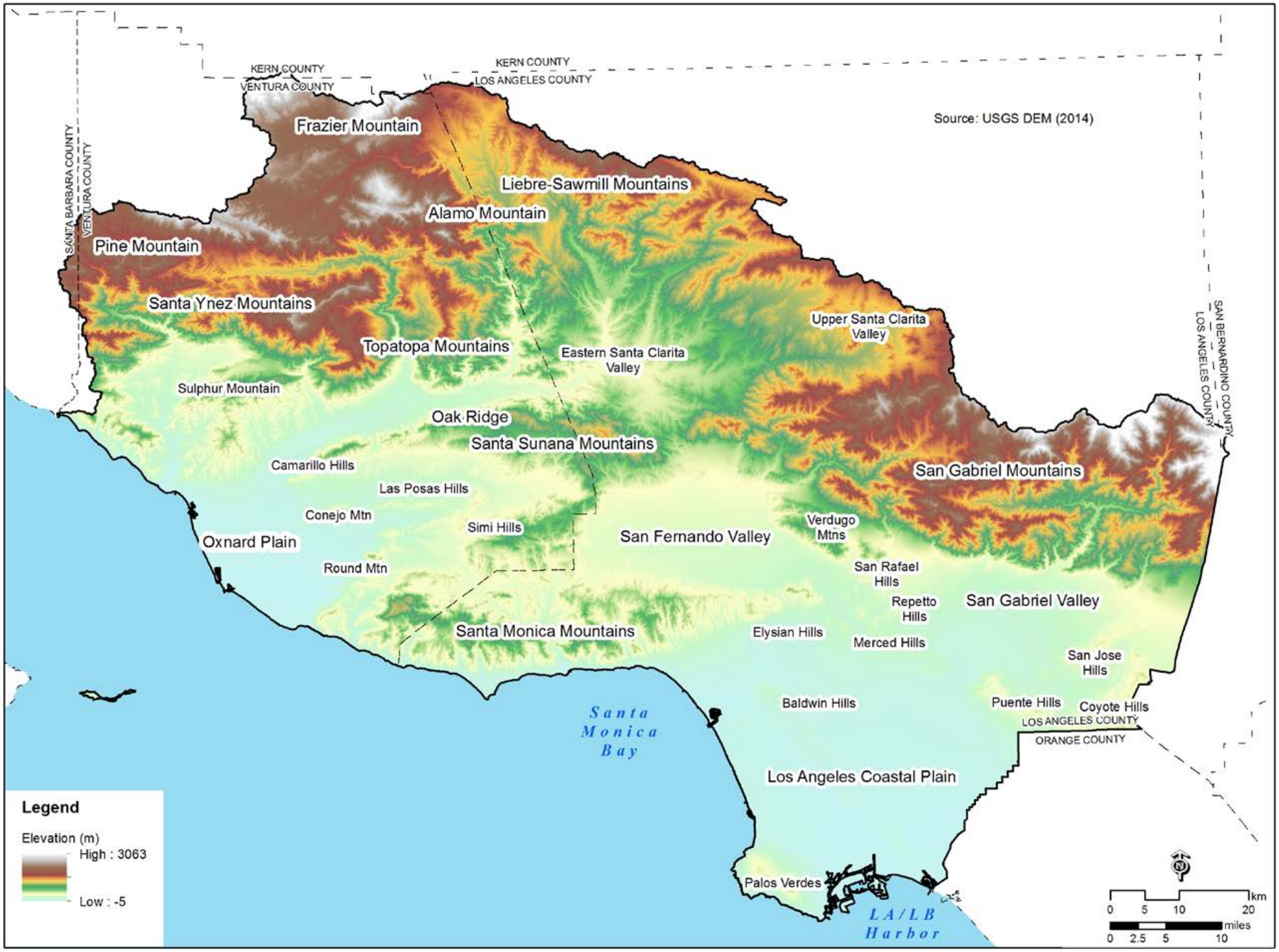


Figure 1-6. Physiographic Features of the Los Angeles Region.

Land Use/Population

Land use within the Region varies considerably (Figure 1-7). In Ventura County, land uses are changing from agriculture and open space to urban residential and commercial. In southern Los Angeles County, the predominant land uses include urban residential, commercial, and industrial. In northern Los Angeles County, open space is rapidly being transformed into residential communities.

The economy in Los Angeles County is primarily industrial, commercial, and service; while in Ventura County the economy is primarily agricultural, service, and commercial.

About 10.6 million people currently live in the Region (SCAG, 2011). From 1950 to 2000 the population in the Region more than doubled. The Region's population is projected to be 10.8 million by 2015 and 11.3 million by 2020 (State Department of Finance, 2011).

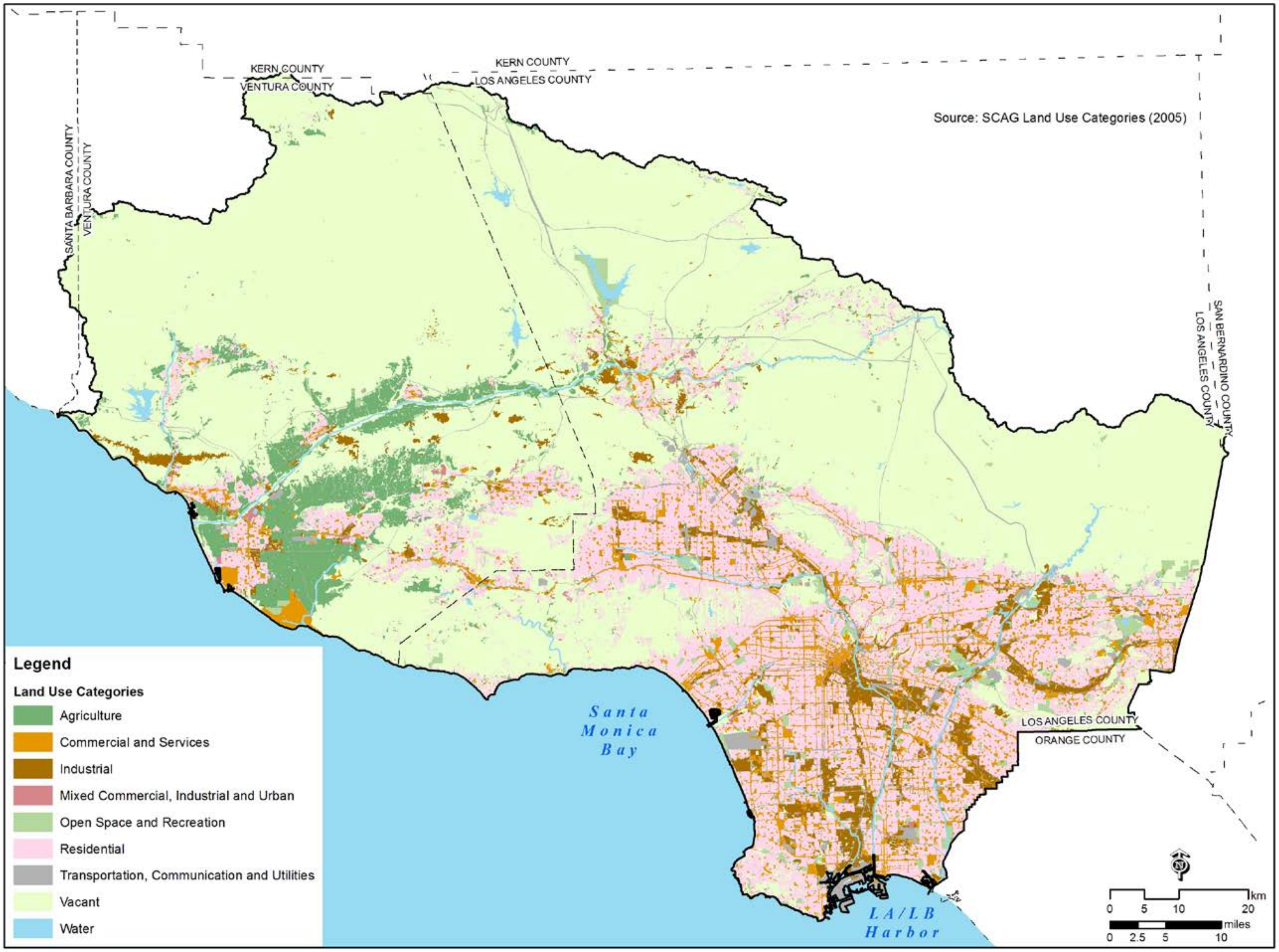
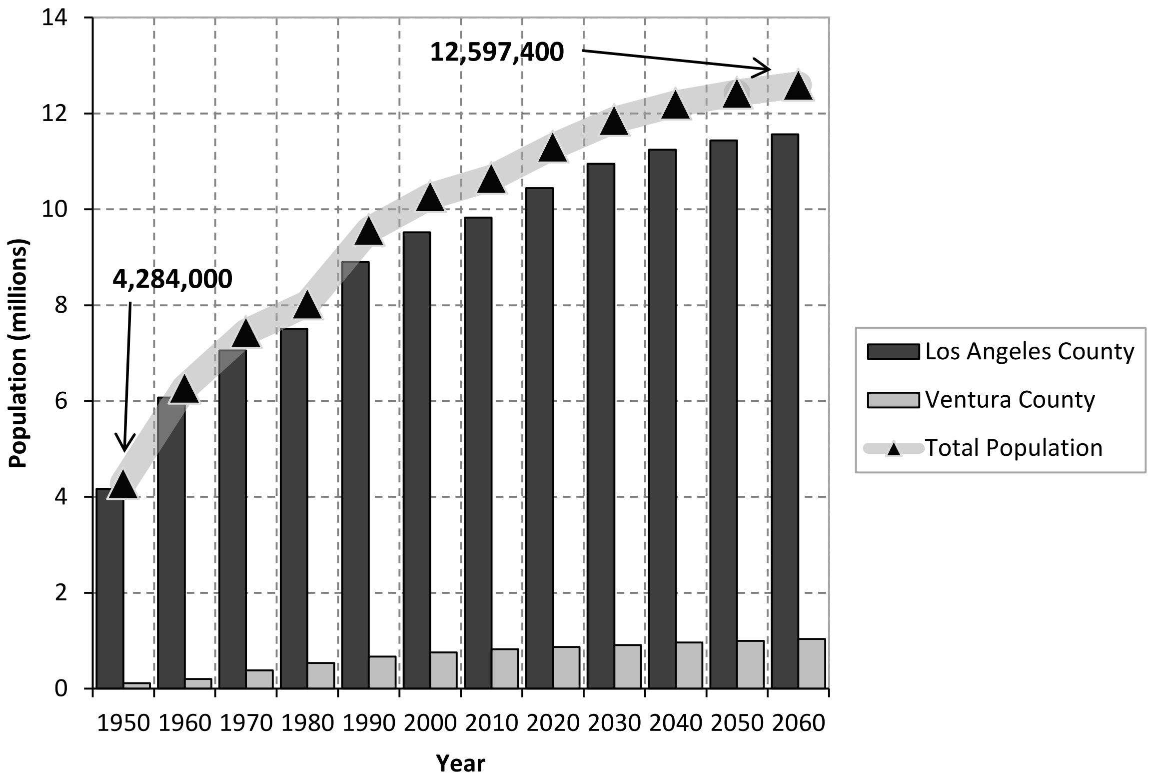


Figure 1-7. Regional Land Use.



Year	Los Angeles County	Ventura County	Total
1950	4,168,400	115,600	4,284,000
1960	6,071,900	203,100	6,275,000
1970	7,055,800	381,400	7,437,200
1980	7,500,300	532,200	8,032,500
1990	8,897,500	671,000	9,568,500
2000	9,519,300	753,200	10,272,500
2010	9,824,900	825,100	10,650,000
2020	10,441,400^{p}	867,500^{p}	11,308,900^{p}
2030	10,950,300^{p}	912,500^{p}	11,862,800^{p}
2040	11,243,000^{p}	960,500^{p}	12,203,500^{p}
2050	11,434,600^{p}	995,600^{p}	12,430,200^{p}
2060	11,562,700^{p}	1,034,700^{p}	12,597,400^{p}

p = Projected Population

Source: California Department of Finance, September 2013

Figure 1-8. Population Trend and Projection in Los Angeles and Ventura Counties.

Natural Resources

Diversity in topography, soils, and microclimates of the Region supports a corresponding variety of plant and animal communities. Native vegetation in the Region can be categorized into a number of general plant communities including grasslands, coastal sage scrub, chaparral, oak woodland, riparian, pinyon - juniper, and timber - conifer.

Chaparral is the most common type of vegetation association in the Region. It is generally located on steeper slopes and has characteristics that make it highly flammable. Large expanses of chaparral are found in the Santa Monica Mountains. Inland, coastal sage scrub occurs in the Simi Hills, Santa Susana Knolls, Verdugo Hills, and San Gabriel Mountains. Oak woodland, with the easily identifiable Valley oaks sometimes reaching heights of 20 to 60 feet (6.1 to 19.3 m), is dominant in Thousand Oaks, Lake Casitas, Hidden Valley, Santa Clarita Valley, and elsewhere in the Transverse Mountain Ranges. A large area of foothill oak woodland is found on Sulphur Mountain. Grasslands occur in Point Mugu State Park and hillsides and valleys of northern Los Angeles (Ventura County, 2010; LA County, 1980).

Riparian vegetation, found along most of the rivers and creeks, consists of sycamores, willows, cottonwoods, and alders. Extensive riparian corridors occur along Piru, Sespe, Santa Paula, Malibu, and Las Virgenes Creeks, Santa Clara, Ventura, and San Gabriel Rivers, as well as other rivers and creeks of the Los Padres and Angeles National Forests. The riparian vegetation provides essential habitat and wildlife corridors, supporting a great abundance and diversity of species (Ventura County, 2010; LA County, 1980).

The offshore environment also contains important resources. The dominant benthic habitat is soft bottom, which consists of fine to moderately coarse sediments. Few attached plants live in this habitat but invertebrates are abundant and diverse. Resident animals include crabs, shrimp, snails, worms, and echinoderms. Hard bottom areas consist of seafloor covered with bedrock, gravel, and phosphorite. Kelp beds will often be found in these hard bottom areas at depths of 20 to 70 feet (6.1 to 21.3 m). Although far less expansive in acreage than soft bottom habitat, kelp beds provide cover and protection, and thus habitat for more than 800 species of fishes and invertebrates, some of which are uniquely adapted for life in the beds. The open ocean habitat is the primary home to fish such as Pacific sardine, northern anchovy, Pacific mackerel, and Pacific bonito as well as marine mammals such as seals and sea lions. Many species of whales and dolphins are also observed offshore during the winter/spring migration. Phytoplankton are the dominant plant life in the pelagic environment.

Sandy beaches are the most prominent and dominant habitat along the shoreline. Beaches support species of macroinvertebrates such as sand crabs and Pismo clams; they also support surf fish, such as California corbina, barred surfperch, and shovelnose guitarfish. Many sandy beaches are important spawning grounds for California grunion. Intertidal zones include mud flats, tide pools, sandy beaches, and wave-swept rocks. They provide important habitat and breeding grounds for a variety of plants such as marine algae, fish such as grunion, and many invertebrates. Both beaches and other intertidal zones are important nesting and feeding grounds for migratory waterfowl and shore birds such as egrets, herons, gulls, terns, sanderlings, and plovers (CRWQCB-LA, 2010).

The existence of "ecological islands" as a result of topography and climatic changes has led to the evolution of species, subspecies, and genetic strains of plants and animals in the Region. However, increasing urbanization and development have resulted in the loss of habitat and a decline in biological diversity. As a result, several native flora and fauna species have been listed as rare, endangered, or threatened. Representative examples of endangered species include: California condor, American peregrine falcon, California least tern, tidewater goby, unarmored threespine stickleback, Mohave ground squirrel, conejo buckwheat, many-stemmed *Dudleya*, least Bell's vireo, and slender-horned spine flower (Ventura County, 2010; LA County, 1980).

Unique Habitats

Habitats that support rare, threatened, endangered, or other sensitive plant or animal species are unique, not simply because they support these species, but because they are unique habitats in terms of their physical, geographical, and biological characteristics.

Because of the existence of kelp beds, tide pools, and significant ecological diversity, the nearshore area between Laguna Point and Latigo Point is designated by the State Water Board as an Area of Special Biological Significance (ASBS). An ASBS, also known as a State Water Quality Protection Area, is a non-terrestrial marine or estuarine area designated to protect marine species or biological communities from an undesirable alteration in natural water quality. An ASBS is afforded special protection for marine life through requirements that waste discharges to the ASBS are prohibited or limited by special conditions. There are eight ASBS in the Los Angeles Region (see Chapter 5).

The California Department of Fish and Wildlife designates marine protected areas (MPAs), which are marine or estuarine waters set aside to protect or conserve marine life and its associated habitat. MPAs are classified into several types based on the level of protection afforded to the area and the types of uses that are permitted in the MPA. Marine protected areas are located in the vicinity of Point Dume, the Palos Verdes Peninsula, Anacapa Island, Santa Barbara Island, San Nicolas Island, and Santa Catalina Island.

Both Ventura and Los Angeles Counties have officially designated unique habitat areas that are described in detail in the counties' respective General Plans. The Ventura County Board of Supervisors designated Significant Biological Resources in 1988 with the adoption of the General Plan (Ventura County, 2010). The Los Angeles County Board of Supervisors designated Significant Ecological Areas (SEAs) in 1980 with the adoption of the General Plan and similar areas on Santa Catalina Island with the adoption of the Santa Catalina Island Local Coastal Plan in 1983. The collection of SEAs together was intended to designate critical components of the biodiversity of Los Angeles County as it was known and understood at that time (LA County, 1980). The section on Surface Waters/Watersheds below describes some of the more significant biological resources and ecological areas recognized by the counties in each watershed.

Water Resources/Water Quality

The Los Angeles Region is the State's most densely populated and industrialized region. Despite this, many of the watersheds in the Region encompass a great deal of diversity in level of development, land use, topography, and socioeconomic characteristics. National forest land may dominate one part of a watershed, while extensive development dominates another part. Irrigated agriculture and grazing remain significant in parts of the Region. To add to this complexity, the Regional Water Board regulates over 1,000 discharges of wastewater from a wide variety of municipal and industrial sources throughout the Region and a vast network of municipal separate storm sewer systems serving two counties and 99 cities (CRWQCB-LA, 2007). The sources of water that sustain the Region are also diverse. Because surface water and groundwater supplies within the Region are insufficient to support the population, water imported from other areas meets about 50 percent of fresh water demands in the Region (MWD, 2010). In addition, the demand for water is increasingly being fulfilled by the use of reclaimed water for indirect potable reuse (i.e. groundwater recharge) and non-potable purposes such as landscape irrigation and industrial processing and servicing. (See Other Sources of Water, below.)

Surface Waters/Watersheds

The rivers and streams of the Los Angeles Region flow from headwaters in pristine mountain areas (largely in two National Forests -- the Angeles National Forest and Los Padres National Forest, and the Santa Monica Mountains National Recreation Area), through urbanized foothill and valley areas, high density residential, industrial, or intensely farmed coastal areas, and terminate at highly utilized recreational beaches and harbors.

Coastal waters in the Region include bays, harbors, estuaries and lagoons, beaches, and the open ocean. Santa Monica Bay dominates a large portion of the Region's open coastal waters and is a nationally significant waterbody, which is part of the National Estuary Program. Deep-draft commercial harbors include the Los Angeles/Long Beach Harbor complex and Port Hueneme. Shallower, small craft harbors, such as Marina del Rey, King Harbor, and Ventura Marina, are spread along the coastline. Coastal wetlands include regionally significant resources such as Mugu Lagoon and Malibu Lagoon and numerous small coastal wetlands as well as larger ones such as the Ballona and Los Cerritos Wetlands. Recreational beaches occur nearly uninterrupted along the entire length of the Region’s coastline.

Coastal waters are impacted by a variety of activities, including:

- Municipal and industrial wastewater discharges
- Municipal separate storm sewer system discharges
- Cooling water discharges
- Failing onsite wastewater treatment systems (a.k.a. septic systems)
- Oil spills from tankers and offshore platforms
- Vessel wastes
- Dredging
- Increased development and loss of habitat
- Illegal dumping

- Natural oil seeps

Generally, largely uncontrolled discharges of pollutants from municipal separate storm sewer systems and from nonpoint sources are believed to be the greatest threats to rivers and streams within the Region. Recent advances in permitting municipal separate storm sewer system discharges, and control of certain nonpoint sources are expected to remedy many of these threats.

Major surface waters in the Region are also specifically impacted by:

- Poor mineral quality in some areas due to geology, agricultural runoff, discharge of highly mineralized groundwater, and high salinity levels in of some imported waters
- Bioaccumulation of toxic compounds in fish and other aquatic life
- Impacts from increased development and recreational uses
- In-stream toxicity from point and nonpoint sources
- Diversion of flows necessary for the propagation of fish and wildlife populations
- Channelization, dredging, and other losses of habitat
- Impacts from transient camps located along creeks and lagoons
- Illegal dumping
- Introduction of non-native plants and animals which displace native biota
- Impacts from sand and gravel mining operations
- Natural oil seeps
- Eutrophication and the accumulation of toxic pollutants in lakes

The Region encompasses ten Watershed Management Areas (WMAs), which generally consist of a single large watershed within which exist smaller subwatersheds that are tributary to the mainstem river. However, in some cases they may be a collection of drainage areas that does not meet the strict hydrologic definition of a watershed (e.g., several small Ventura coastal waterbodies in the Region are grouped together into one WMA). Watersheds in the strictest sense are geographic areas draining into a river system, ocean, or other body of water through a single outlet and include the receiving waters. They are usually bordered, and separated from, other watersheds by mountain ridges or other naturally elevated areas.

1. Ventura River Watershed: The Ventura River is the northernmost major river system in the Region; it drains an area of 235 square miles (609 square kilometers) situated within the western

Transverse Ranges. Topography in the watershed is rugged and, as a result, the surface waters that drain the watershed have very steep gradients, ranging from 40 feet per mile (7.6 m per km) at the mouth to 150 feet per mile (28.4 m per km) at the headwaters. The watershed supports a number of sensitive aquatic species, several of which are endangered or threatened. Water quality in the upper reaches is good but quality in the lower reaches is influenced by a combination of municipal wastewater discharges, agricultural activities, livestock, MS4 discharges, and oil industry discharges among other sources of pollutants. Excessive algae occurs at many locations. Wetlands are found at the Ventura River estuary, along the river itself, bordering lakes, and at isolated low-lying areas within the watershed such as Ojai Meadows (CRWQCB-LA, 2007).

Local populations of steelhead and rainbow trout have been greatly reduced in the watershed through physical barriers to migration and diverted stream flows. A limited resident population of rainbow trout occurs above Robles Diversion Dam and in San Antonio Creek and the lower Ventura River. Migratory steelhead trout ascend upstream in the Ventura River and into San Antonio Creek and may utilize areas above the Robles Diversion Dam via a fish passageway.

Multiple interested agencies, and other entities, however, have recognized the potential for the restoration and enhancement of steelhead populations in the Ventura River through the removal of Matilija Dam, which blocks access to a large area of prime spawning habitat (USACE and VCWPD, 2004). Ventura County has explored alternatives and is seeking funding to realize this removal.

The wetland at the mouth of the Ventura River is considered to be a Significant Biological Resource by Ventura County due to its ability to provide habitat for thousands of biota that include endangered, rare, or threatened species. The mainstem of the river as well as San Antonio Creek are also listed as Significant Biological Resources due to their use by steelhead trout. “Critical” condor habitat exists in three areas in Ventura County, including Matilija Creek (Ventura County, 2010).

Residents and agricultural interests in this watershed are entirely dependent on local surface water and groundwater since there is no connection to the State Water Project to deliver imported water.

2. Santa Clara River Watershed: The Santa Clara River, at approximately 100 miles (161 kilometers) in length with a 1200 square mile (3,108 square kilometer watershed), is the largest river system in southern California that remains in a relatively natural state. The river originates on the northern slope of the San Gabriel Mountains in Los Angeles County, traverses Ventura County, and flows into the Pacific Ocean halfway between the cities of San Buenaventura and Oxnard. Land use in the watershed is predominately open space; residential, agriculture, and some industrial uses occur along the mainstem (CRWQCB-LA, 2007).

Threats to water quality include increasing development in floodplain areas (particularly in the upper watershed), necessitating flood control measures such as channelization that results in increased flows, erosion, and loss of habitat. In many of these highly disturbed areas the exotic giant reed (Arundo donax) is gaining a foothold. Increasing loads of nitrogen (from irrigation and onsite wastewater treatment discharges) and salts such as chloride (from irrigation and publicly owned treatment works (POTW) discharges) in surface and groundwaters threaten beneficial uses, including irrigation and drinking water supply. Additionally, stream flows are diverted, usually during high flow, for groundwater recharge or direct delivery; wells are then pumped for municipal and agricultural uses. Thirty-six percent of the watershed is controlled by dams such as Santa Felicia and Pyramid Dams on Piru Creek and Castaic Dam on Castaic Creek. The hydrology of the river is complex; perennial flows occur in some portions of the river before disappearing into the permeable bed material and then reappearing further downstream where groundwater surfaces. Groundwater underlying the Santa Clarita Valley in the upper watershed has been impacted by perchlorate contamination. The chemical was originally detected in four Saugus wells in 1997 near the former Whittaker-Bermite industrial facility. Since then, the wells have been out of water supply service. Remediation of the perchlorate and restoration of the impacted well capacity is underway (CRWQCB-LA, 2006 and 2007).

While there are several small publicly owned treatment works (POTWs) in the Ventura County portion of the watershed and two larger POTWs in the upper watershed, many of the smaller communities in the watershed remain unsewered. In particular, in the Agua Dulce area of the upper watershed, impacts to drinking water wells from onsite wastewater treatment systems are of concern. The community has undertaken a wellhead protection effort, with oversight by Regional Water Board staff (CRWQCB-LA, 2007).

Significant Biological Resources described in Ventura County's General Plan include the extensive patches of high quality riparian habitat that are present along the length of the river and its tributaries. Also considered significant are areas such as the wetlands found at the Santa Clara River estuary, along the river itself, bordering lakes, and at isolated low-lying areas within the watershed such as the

"Pothole" in the Devil's Potrero (on Agua Blanca Creek) that supports several species of plants unique to freshwater marshes (Ventura County, 2010). In the upper part of the watershed, within Los Angeles County, SEAs have been designated including: (1) the Santa Clara River SEA, which also includes the previously designated Kentucky Springs SEA (a distinctive stand of great basin sagebrush) and the previously designated San Francisquito Canyon SEA (which provides habitat for the endangered threespine stickleback); (2) the Santa Susana and Simi Hills SEA, which includes the previously designated Lyons Canyon SEA (a chaparral and oak woodland); and (3) the Valley Oaks Savannah near Newhall (LA County, 1980 and 2011).

One of the largest of Santa Clara River's tributaries, Sespe Creek, contains most of the Santa Clara River's remnant, but restorable, run of the steelhead trout. Sespe Creek is designated as a "Wild Trout Stream" by the State of California and supports significant steelhead spawning and rearing habitat. Additionally, the federal Los Padres Wilderness Act (1992) permanently set aside portions of Sespe Creek for steelhead trout protection and designated Sespe Creek as a "Wild and Scenic River" and Ventura County considers Sespe Creek a Significant Biological Resource. The Pacific lamprey, another anadromous fish, also uses Sespe Creek and the Santa Clara River for spawning (Ventura County, 2010).

The Sespe Condor Sanctuary was dedicated in 1947 and set aside 53,000 acres (21,448 hectares) in aide of that species' recovery. The Sanctuary is surrounded on the west, north, and east by critical condor habitat and the Hopper Mountain National Wildlife Refuge is to the south of the Hopper Mountain area. "Critical" condor habitat exists for three areas in Ventura County including Mount Pinos and Sespe-Piru. All federal agencies must ensure that actions authorized, funded, or carried out by them do not result in the destruction or modification of these critical habitat areas. "Essential" habitat includes those areas intended to supplement the officially designated critical habitat. These areas have no legal status unlike "Critical Habitat" areas; however, the habitat management recommendations are intended to be applied with equal emphasis in these areas. The essential habitat in the watershed extends the Sespe-Piru critical habitat -- on the northeast to Liebre Mountain in Los Angeles County and on the west to Madulce Peak in Santa Barbara County (Ventura County, 2010).

Piru and Santa Paula Creeks, two other tributaries of the Santa Clara River, also support good habitat for steelhead, although both contain barriers to migration. Additionally, the Santa Clara River has populations of unarmored threespine stickleback, Santa Ana suckers, arroyo toads, and California least

Bell's vireo. San Francisquito Canyon, Placerita Canyon, Soledad Canyon, Castaic, and Elizabeth Canyon Creeks are smaller tributaries that all provide valuable habitat.   The Santa Clara River also serves as an important wildlife corridor (CRWQCB-LA, 2006).

Residents and agricultural interests in this watershed are dependent on a mix of local surface water and groundwater as well as imported water. Several large reservoirs are used to store imported water, which is also used to recharge groundwater basins. Use of recycled water is practiced extensively in the dryer upper watershed.

3. Calleguas Creek Watershed: Calleguas Creek and its major tributaries, Revolon Slough, Conejo Creek, Arroyo Conejo, Arroyo Santa Rosa, and Arroyo Simi drain an area of 343 square miles (888 square kilometers) in southern Ventura County and a small portion of western Los Angeles County. The Santa Susana Mountains, South Mountain, and Oak Ridge form the northern boundary of the watershed, while the Simi Hills and Santa Monica Mountains form the southern boundary (CRWQCB-LA, 2007).

Calleguas Creek drains a predominantly agricultural area on the Oxnard Plain as well as a mix of agricultural, residential, and open space areas further inland; it empties into Mugu Lagoon, one of southern California's few remaining large wetlands, which supports a rich diversity of fish and wildlife. The lagoon borders on an ASBS and supports a great diversity of wildlife including several endangered birds and one endangered plant species (CRWQCB-LA, 2007). The wetland at Mugu Lagoon is considered to be a Significant Biological Resource by Ventura County due to its ability to provide habitat for thousands of biota include endangered, rare, or threatened species (Ventura County, 2010). Additionally, a small portion of the eastern end of the watershed falls within Los Angeles County, which has designated several SEAs including the Santa Susana Mountains, Santa Susana Pass, and the Simi Hills (Los Angeles County, 1980).

While natural creek flows in the past were intermittent in this fairly low-gradient watershed, discharges of municipal, agricultural, and urban wastewaters have increased surface flow in the watershed resulting in increased sedimentation in the lagoon. The general instability of the streambanks, continual destruction of riparian vegetation, and other land use practices have accelerated erosion in the watershed. Erosion problems are intensified in areas where residential development is occurring on steeply sloping upland areas.

Aquatic life in both Mugu Lagoon and the inland streams of this watershed has been impacted by a variety of pollutants including DDT, PCBs, other pesticides, and some metals. High concentrations of minerals and nitrates are common in surface water as well as groundwater. The elevated levels of salts are as a result of applied imported water and agriculture, and are expected to be addressed through the use of groundwater desalters and the advanced treatment of wastewater effluents via reverse osmosis. The brine solution produced from these processes will be disposed of through a Salinity Management Pipeline (brine line), currently under construction, which will discharge to the Pacific Ocean.

Sediment toxicity is also elevated in some parts of the lagoon. Reproduction is impaired in the resident endangered species, such as the light-footed clapper rail, due to elevated levels of DDT and PCBs. Overall, this is a very impaired watershed (CRWQCB, 2007).

While residents and agricultural interests in this watershed utilize some local groundwater, they are highly dependent on imported water; use of reclaimed water is increasing.

4. Miscellaneous Ventura Coastal WMA: The WMA is composed of four separate coastal drainage areas located between the Regional boundary, Ventura River, Santa Clara River, and Calleguas Creek Watersheds as well as the Santa Monica Bay WMA. The drainage areas are typified by either small coastal streams, wetlands, or marinas/urban centers (CRWQCB-LA, 2007). The WMA encompasses an area that historically consisted of extensive wetlands (Grossinger, et al. 2011). Many unique habitats, including coastal wetlands and lagoons, such as McGrath Lake and Ormond Beach Wetlands, and the nearby coastal dunes remain and are found along the southern coast of Ventura County. They are considered to be Significant Biological Resources by Ventura County. These areas provide habitats for many fish, birds, invertebrates, sea lions, and other marine and estuarine species (Ventura County, 2010).

The water quality problems found at the coastal wetlands generally involve legacy and current-day pesticides since most of the wetlands are located adjacent to or downstream of agricultural areas. Some of these wetlands receive runoff from urban areas through sizable drains and pollutants associated with MS4 discharges will additionally be found. The water quality problems found at the marinas in the WMA generally involve elevated metals and, at times, legacy pesticides. While there is a POTW in the WMA, which discharges to the ocean, some of the smaller communities in the WMA remain unsewered. The Regional Water Board determined that wastewater is contaminating the underlying groundwater basin (Oxnard Forebay) in the El Rio area on the Oxnard Plain. Since groundwater from the basin is used as a drinking water supply for the area, this contamination, with pathogens and nitrogen compounds, is impairing the beneficial use of the groundwater. The Regional Water Board amended the Basin Plan in August 1999 to prohibit new onsite wastewater treatment systems in the Oxnard Forebay, including El Rio and Saticoy areas, and discharge of septic effluent for lots less than 5 acres by January 1, 2008. Implementation of the prohibition continues. (CRWQCB-LA, 2007).

While residents and commercial/agricultural interests in this WMA utilize some local groundwater, they are highly dependent on imported water.

5. Santa Monica Bay WMA: The Santa Monica Bay WMA encompasses an area of 414 square miles (1,072 square kilometers). Its borders reach from the crest of the Santa Monica Mountains on the north and from the Ventura-Los Angeles County line to downtown Los Angeles. From there it extends south and west across the Los Angeles plain to include the area east of Ballona Creek and north of the Baldwin Hills. A narrow strip of land between Playa del Rey and Palos Verdes drains to the Bay south of Ballona Creek. The WMA includes waters that flow into the Bay through 28 catchment basins that can be grouped into nine watershed areas based on their geographic characteristics. The two largest watersheds are Malibu Creek to the north (west) and Ballona Creek to the south. The smaller Topanga Creek Watershed is located partway between Malibu and Ballona. Many of the beaches lining the Bay are impaired for bacteria, while the nearshore and offshore zones are impaired due to DDT and PCBs (CRWQCB-LA, 2010).

The WMA contains a number of SEAs designated by Los Angeles County due to their unique, uncommon, or scientifically interesting features including: Point Dume, Upper La Sierra Canyon, Malibu Canyon and Lagoon, Hepatic Gulch, Cold Creek, and Las Virgenes. Other areas were selected to provide examples of the more common habitats and to ensure that the full range of the remaining biotic and geographic diversity in the region was represented. These areas include: Zuma Canyon, Tuna Canyon, Temescal-Rustic-Sullivan Canyons, and Palo Comado Canyon. Additionally, Agua Amarga Canyon on the Palos Verdes Peninsula is designated as a SEA, as well as the Palos Verdes Peninsula coastline, Portuguese Bend Landslide, Ballona Creek, the El Segundo Dunes, the Malibu coastline, and the Malibu Creek State Park Buffer Area (LA County, 1980).

Residents and commercial/industrial interests in this WMA are highly dependent on imported water; use of recycled water is increasing.

Malibu Creek Watershed: The Malibu Creek Watershed, at about 109 square miles (282 square kilometers), is one of the largest draining to Santa Monica Bay. Approximately two-thirds of this watershed lies in Los Angeles County and the remaining third is in Ventura County. Much of the land is part of the Santa Monica Mountains National Recreation Area and is under the purview of the National Park Service (CRWQCB-LA, 2007). The watershed has changed rapidly in the last 30 years from a predominantly rural area to a steadily developing area that has increased in population to nearly 90,000 residents. Increased flows and channelization of several tributaries to Malibu Creek have caused an imbalance in the natural flow regime in the watershed and have led to habitat impacts in Malibu Lagoon at the mouth of the watershed. Restoration efforts, completed by the California Department of Parks and Recreation and the California Coastal Conservancy in 2013, improved the natural structure and function of the Lagoon.

Pollutants of concern, many of which are discharged from nonpoint sources, include excess nutrients, sediment, and bacteria. In response to the ongoing bacterial and nutrient pollution in this area, the Regional Water Board adopted a prohibition of discharges from onsite wastewater treatment systems (i.e., septic systems) in the Malibu Civic Center Area in 2009 (see Chapter 4).

Malibu Lagoon supports two important plant communities, the coastal salt marsh and coastal strand, and is an important refuge for migrating birds (over 200 species of birds have been observed). As Malibu Canyon dissects the Santa Monica Mountains, species normally restricted to the drier interior valleys have extended their range down the canyon. Perennial streams in Malibu Canyon support oak and riparian woodlands. Malibu Creek is also the southernmost watercourse in California where steelhead trout continue to spawn in relatively large numbers despite a major barrier to upstream migration, Rindge Dam.

Topanga Creek Watershed: The Topanga Creek Watershed is located east of Malibu and covers an area of 18 square miles (47 square kilometers) within the Santa Monica Mountains. Topanga Creek flows through a small town center and residential areas in the upper reaches and through steep, narrow gorges in the lower reaches, ultimately emptying into the ocean just south of Pacific Coast Highway. A small lagoon exists at the mouth of the creek due to a berm created by littoral drift and wave action. Bacteria levels are of concern in the lagoon. The lower reaches of the creek flow year-round and support a small population of spawning steelhead trout aided by deep pools where temperatures remain cooler (CRWQCB-LA, 2010).

Ballona Creek Watershed: Ballona Creek, at approximately 127 square miles (329 square kilometers), is the largest drainage tributary to Santa Monica Bay and discharges to the ocean adjacent to the entrance of the Marina del Rey Harbor. The mostly channelized creek collects runoff from several partially urbanized canyons on the south slopes of the Santa Monica Mountains as well as from intensely urbanized areas of West Los Angeles, Culver City, Beverly Hills, Hollywood, Inglewood, Santa Monica, and parts of central Los Angeles (CRWQCB-LA, 2007). The watershed encompasses an area that historically consisted of extensive wetlands (Grossinger, et al. 2011). The current-day Ballona Wetlands are located near the mouth of the creek and represents one of the few remaining regionally significant coastal wetlands along Santa Monica Bay. The complex of wetlands is a mixture of habitats dominated by coastal salt marsh; a number of special status species are supported there including Belding's Savannah Sparrow (CRWQCB-LA, 2007). In 2004, the State of California acquired ownership of this remaining wetland area (600 acres (243 hectares) in total), and the California Department of Fish and Wildlife, the State Lands Commission, and the State Coastal Conservancy have been working with stakeholders, scientist, and other agencies to develop plans for its restoration (CSCC, 2008).

A large number of pollutants associated with urban development are found in the creek and, in turn, impact the nearby beaches and ocean. In addition, high concentrations of DDT in sediments at the mouth of the creek and in Marina Del Rey Harbor provide evidence of past discharges that have resulted in long-term water quality problems.

6. Dominguez Channel and Los Angeles/Long Beach Harbors WMA: The Los Angeles and Long Beach Harbors are located in the southern portion of the Los Angeles Basin and occupy an area that was once a vast wetlands complex (Grossinger, et al. 2011). Along the northern portion of San Pedro Bay is a natural embayment formed by a westerly extension of the coastline which contains both harbors, with the Palos Verdes Hills the dominant onshore feature. The channelized 15-mile (24-kilometer) long Dominguez Channel enters Los Angeles Harbor from the north. Unlike more traditional watersheds containing a river flowing toward the ocean and draining upland and mountainous areas to the ridgeline, the WMA has a generally low gradient. Its boundaries are not visually apparent in many locations and are defined by the directions that underground storm drains flow (CRWQCB-LA, 2007 and 2008).

The harbors are considered to be one oceanographic unit; together they have an open water area of approximately 8,127 acres (3,289 hectares). Despite its industrial nature, contaminant sources, disrupted wetlands habitat, and low flushing ability, the inner harbor area supports fairly diverse fish and benthic populations and provides a protected nursery area for juvenile fish. The California least tern, an endangered species, nests in one part of the harbor complex. Some wetlands persist in the Machado Lake area (CRWQCB-LA, 2007 and 2008).

The outer part of both harbors (the greater San Pedro Bay within the breakwaters) has been less disrupted and supports a great diversity of marine life and a large population of fish. It is also open to the ocean at its eastern end and receives much greater flushing than the inner harbors (CRWQCB-LA, 2007 and 2008).

Dominguez Channel drains a highly industrialized area with numerous sources of pollution resulting from polycyclic aromatic hydrocarbons (PAHs) and also contains remnants of persistent legacy pesticides as well as PCBs, all of which contribute to poor sediment quality both within the Channel and in adjacent Inner Harbor areas. Oil pumping had a large presence in the area historically with some wells still in operation. Although highest in Dominguez Channel estuary and Consolidated Slip sediments, DDT is pervasive throughout the harbors. Metals remain elevated at some locations in the sediments of the inner harbors. Consolidated Slip, the part of Inner Harbor immediately downstream of Dominguez Channel, continues to exhibit a very impacted benthic invertebrate community (CRWQCB-LA, 2007).

Valuable habitat, however, remains in the WMA. Los Angeles County designated a number of areas as SEAs in this WMA including: Harbor Lake Regional Park, Madrona Marsh, the Rolling Hills Canyons, and Terminal Island (the latter due to the presence of least tern nesting sites).

Residents and commercial/industrial interests in this WMA are highly dependent on imported water; use of recycled water is increasing.

7. Los Angeles River Watershed: The Los Angeles River Watershed is one of the largest in the Region at 824 square miles (2,134 square kilometers) and is also one of the most diverse in terms of land use patterns. Approximately 324 square miles (839 square kilometers) of the watershed are covered by forest or open space land including the area near the headwaters which originate in the Santa Monica, Santa Susana, and San Gabriel Mountains (CRWQCB-LA, 2007). The rest of the watershed is intensely urbanized and the river itself is highly modified, having been lined with concrete along most of its length by the U.S. Army Corps of Engineers from the 1930s to the 1960s. There are approximately 205 miles of engineered channels within the Los Angeles River Watershed system.

An 6.8-mile (11-kilometer) long reach in the narrows area (in the middle portion of the river system), where ground water rises into the streambed, is mostly unlined along the stream bottom and provides natural habitat for fish and other wildlife in an otherwise concrete conveyance. The upper reaches of the river convey MS4 discharges and flood flows from the San Fernando Valley. Below the Sepulveda Basin, flows are dominated by tertiary-treated effluent from three municipal wastewater treatment plants. From the Arroyo Seco, north of downtown Los Angeles, to the confluence with the Rio Hondo, the river flows through industrial and commercial areas and is bordered by rail yards, freeways, and storage facilities. From the Rio Hondo to the Pacific Ocean, the river flows through industrial, residential, and commercial areas, including major refineries and petroleum products storage facilities, major freeways, and rail yards serving the Ports of Los Angeles and Long Beach.

Efforts to revitalize areas in and along the hydromodified stream sections of the watershed began in the 1980s and steadily built momentum, finally culminating in a Los Angeles River Revitalization Master Plan (with projects geared towards the greening and restoration of several areas in and around the Los Angeles River and its main tributaries) and the accompanying feasibility report developed by the US Army Corps of Engineers identifying grouped alternative restoration projects for possible federal funding.

Also part of the watershed are a number of lakes including Peck Road Park, Belvedere Park, Hollenbeck Park, Lincoln Park, and Echo Park Lakes, Legg Lake, and Lake Calabasas, which are heavily used for recreational purposes (CRWQCB-LA, 2007). Because the watershed is highly urbanized, MS4 discharges and illegal dumping are major contributors to impaired water quality in the Los Angeles River and tributaries. There is a complex mixture of pollutant sources due to the high number of point source permits and the intensely urbanized nature of the coastal plain portion of the watershed. Excessive nutrients (and their effects) and coliform are widespread problems in the watershed as well as excessive metals (CRWQCB-LA, 2007).

The Tujunga Canyon/Hansen Dam area of the watershed is designated by Los Angeles County as a SEA and possesses several important features. The floodplain behind the dam supports some of the last examples of the open coastal sage scrub vegetation in the Los Angeles area. A spreading ground (basin used for groundwater recharge) southwest of the dam has created several freshwater marsh areas that are used by migratory waterfowl and shore birds. The area is also valuable as a wildlife corridor. Additional open space/habitat areas designated by Los Angeles County as SEAs include: Chatsworth Reservoir, Encino Reservoir, Griffith Park, the Simi Hills, the Whittier Narrows, and the Verdugo Mountains (LA County, 1980). Many streams flowing in the foothill ranges are perennial due to springs; waterfalls are evident in canyons tributary to the Tujunga Wash, Arroyo Seco, and Rio Hondo.

Residents and commercial/industrial interests in this watershed are dependent on a mix of local groundwater and imported water; use of recycled water is increasing.

8. Los Cerritos Channel/Alamitos Bay WMA: The WMA encompasses an area that historically consisted of extensive wetlands (Grossinger, et al. 2011). With urbanization came an increase in impervious surfaces, increased groundwater pumping, and less ability to recharge the groundwater. The current day Los Cerritos Channel is concrete-lined above the tidal prism and drains a relatively small, but densely urbanized area of east Long Beach. The channel's tidal prism starts at Anaheim Road and connects with Alamitos Bay through the Marine Stadium; an adjacent remnant wetland connects to the channel a short distance from the lower end of the channel. The wetland, and portion of the channel near the wetland, is an overwintering site for a great diversity of birds despite its small size. A small marina is located in the channel, which is also used by rowing teams and is a popular fishing area. Oil pumping was a large presence in the area historically with some wells still in operation (CRWQCB-LA, 2007).

Alamitos Bay is composed of the Marine Stadium, a recreation facility built in 1932 and used for boating, water skiing, and jet skiing; Long Beach Marina, which contains five smaller basins for recreational craft and a boatyard; a variety of public and private berths; and the Bay proper which includes several small canals, a bathing beach, and several popular clamming areas (CRWQCB-LA, 2007). Alamitos Bay is designated as a SEA by Los Angeles County due to the salt marsh habitat found in the area (LA County, 1980). A small bathing lagoon, Colorado Lagoon in Long Beach, has a tidal connection with the Bay and is used by overwintering migratory birds.

The water quality problems of this WMA are due to a mix of MS4 discharges from a densely populated area, legacy pollutants such as DDT and PCBs left in sediments, and both current and historic oil pumping activities (CRWQCB-LA, 2007).

Residents and commercial/industrial interests in this watershed are dependent on a mix of local groundwater and imported water; use of recycled water is increasing.

9. San Gabriel River Watershed: The 689-square mile (1,785-square kilometer) San Gabriel River Watershed receives drainage from a large area of eastern Los Angeles County; its headwaters originate in the San Gabriel Mountains. The watershed consists of extensive areas of undisturbed riparian and woodland habitats in its upper reaches. Much of the watershed of the West Fork and East Fork of the river is set aside as a wilderness area; other areas in the upper watershed are subject to heavy recreational use. The upper watershed also contains a series of flood control dams. While the upper San Gabriel River and its tributaries remain in a relatively pristine state, intensive recreational use of this area for picnicking, off road vehicle use, fishing, and hiking threaten water quality and aquatic and riparian habitats. Additional problems in the upper San Gabriel River occur as vast amounts of naturally eroding sediment from the rugged San Gabriel Mountains settle in reservoirs behind flood control dams. Improper sediment sluicing operations from these reservoirs can impact aquatic habitats and groundwater recharge areas. In the San Gabriel Valley, the middle reaches of the river have been extensively modified in order to control flood and debris flows and to recharge groundwater. Extensive sand and gravel operations are found along these stretches of the river. The watershed is hydraulically connected to the Los Angeles River through the Whittier Narrows Reservoir (normally only during high storm flows). The lower part of the river flows through a concrete-lined channel in a heavily urbanized portion of the Los Angeles Coastal Plain, before becoming a soft bottom channel once again near the ocean in the City of Long Beach (CRWQCB-LA, 2007). The lower watershed encompasses an area that historically consisted of extensive wetlands (Grossinger, et al. 2011). Large electrical power lines follow the river along the channelized portion; nurseries, small stable areas, and storage facilities are located in these areas (CRWQCB-LA, 2007). Flow in these lower reaches is dominated by effluent from several municipal wastewater treatment facilities and MS4 discharges. Impairments vary by reach; depending on the reach, they may include metals, PCBs, pesticides, bacteria, and trash.

Los Angeles County has designated a number of SEAs in this watershed. They include: Buzzard Peak/San Jose Hills, where a mix of native habitat continues to exist; the *Dudleya densiflora* Population in Glendora at the mouth of San Gabriel Canyon; the *Galium grande* Population in Monrovia at Sawpit Canyon; Powder Canyon/Puente Hills, where a mix of native habitat continues to exist; Rio Hondo College Wildlife Sanctuary; San Dimas Canyon; the Santa Fe Dam Floodplain; and Sycamore and Turnbull Canyons in the Puente Hills (LA County, 1980).

Residents and commercial/industrial interests in this watershed are dependent on a mix of local groundwater and imported water; use of recycled water is considerable and increasing, particularly in the lower watershed.

10. Channel Islands WMA: The Channel Islands within the Region's boundaries are Anacapa, San Nicolas, Santa Barbara, Santa Catalina, and San Clemente Islands. Anacapa and Santa Barbara Islands are part of the Channel Islands National Park. The waters within six nautical miles (approximately 11 kilometers) of Anacapa and Santa Barbara Islands are designated a national marine sanctuary. The ocean waters adjacent to the islands (not the entire circumference of Santa Catalina, however) are designated Areas of Special Biological Significance by the State of California (CRWQCB-LA, 2007).

A number of locations on Santa Catalina Island have been designated Areas of Botanical Significance by Los Angeles County (LA County, 1980). The west side of San Nicolas supports a large gull rookery and elephant seal breeding area. The U.S. Navy has facilities and a desalination plant on San Nicolas Island and facilities and a small package treatment plant on San Clemente Island. San Clemente Island is the primary maritime training area for the U.S. Department of the Navy Pacific Fleet, U.S. Navy SEALs, and the U.S. Marine Corps. The City of Avalon is located on Santa Catalina Island and also has a small wastewater treatment plant. Water quality in the vicinity of the islands is generally good. There are some potential water quality threats from naval facilities and small treatment plants; however, there is only one area (Avalon Beach) that is identified as impaired due to elevated bacteria (CRWQCB-LA, 2007). The impairment is being addressed by the City of Avalon through repairs and upgrades to its sewer system infrastructure and MS4, as required by a Cease and Desist Order issued by the Regional Water Board (Order No. R4-2012-0077).

Ground Waters

Ground water accounts for most of the Region's local (i.e., non-imported) supply of fresh water. Major groundwater basins in the Region are shown in Figure 1-9.

The general quality of ground water in the Region has degraded substantially from background levels. Much of the degradation reflects land uses. For example, fertilizers and pesticides, typically used on agricultural lands, can degrade ground water when irrigation return waters containing such substances seep into the subsurface. In areas that are unsewered, nitrogen and pathogenic bacteria from overloaded or improperly sited onsite wastewater treatment systems can seep into ground water and result in health risks to those who rely on ground water for domestic supply. In areas with industrial or commercial activities, aboveground and underground storage tanks contain vast quantities of hazardous substances.

Thousands of these storage tanks in the Region have leaked or are leaking, discharging petroleum fuels, solvents, and other hazardous substances into the subsurface. These leaks as well as other discharges to the subsurface that result from inadequate handling, storage, and disposal practices can seep into the subsurface and pollute ground water.

Compared to surface water pollution, investigations and remediation of polluted ground waters are often difficult (e.g. in terms of identifying viable responsible parties), costly, and extremely slow.

Examples of specific groundwater quality problems include:

- San Gabriel Valley and San Fernando Valley Groundwater Basins: Volatile organic compounds (VOCs) from industry, and nitrates from subsurface sewage disposal and past agricultural activities, are the primary pollutants in much of the ground water throughout these basins. These deep alluvial basins do not have continuous effective confining layers above ground water and as a result pollutants have seeped through the upper sediments into the ground water.

- In light of the widespread pollution in both the San Gabriel Valley and San Fernando Valley Groundwater Basins, the California Department of Toxic Substances Control designated large areas of these basins as high priority Hazardous Substances Cleanup sites. These areas were also designated as Superfund sites by the USEPA. In the San Gabriel Basin, the Regional Water Board and USEPA's management of twelve plumes of VOCs and five plumes of nitrates, where ground water exceeds the Maximum Contaminant Level (MCL), has limited the impact to adjudicated drinking water resources. Basin water quality has also benefited from management practices and implementation of groundwater remediation conducted by the Watermaster in conjunction with local water purveyors. In the San Fernando Basin, impacts from a VOC plume and four nitrate plumes along with the irregular presence of confining layers have impacted the use of the basin for drinking water uses.

- Central and West Coast Groundwater Basins (Los Angeles Coastal Plain): Seawater intrusion that has occurred in these basins is now under control in most areas through an artificial recharge system consisting of spreading basins and injection wells that form fresh water barriers along the coast. Ground water in the lower aquifers of these basins is generally of good quality, but large plumes of saline water have been trapped behind the barrier of injection wells in the West Coast Basin, degrading significant volumes of ground water with high concentrations of chloride. Desalters are used in these areas to manage the spread of the saline plumes.

- The quality of ground water in parts of the upper aquifers of both basins is also impacted by both organic and inorganic pollutants from a variety of sources, such as leaking tanks, leaking sewer lines, and illegal discharges. As the aquifers and confining layers in these alluvial basins are typically inter-fingered, the quality of ground water in the deeper production aquifers is threatened by migration of pollutants from the upper aquifers.

- Ventura Central Groundwater Basins: Despite efforts to artificially recharge ground water and to control levels of pumping, ground water in several of the Ventura Central basins has been, and continues to be, overdrafted (particularly in the Oxnard Plain and Pleasant Valley areas). Some of the aquifers in these basins are in hydraulic continuity with seawater; thus seawater is intruding further inland, degrading large volumes of ground water with high concentrations of chloride. In addition, nutrients and other dissolved constituents in irrigation return flows are seeping into shallow aquifers and degrading ground water in these basins. Furthermore, degradation and cross-contamination are occurring as degraded or contaminated ground water travels between aquifers through abandoned and improperly sealed wells and corroded active wells.

Once unsewered areas of Ventura County, such as the El Rio area (to the northwest of Oxnard), that represented a source of nutrient and bacterial pollution to ground water in the Ventura Central Basins are subject to a prohibition on discharges from onsite wastewater treatment systems adopted by the Regional Water Board in 1999, and these areas are being sewered.

- Santa Clara River Valley Basins: In the upgradient portion of Santa Clara River Valley, contamination of the groundwater and its exfiltrates by salts, nutrients, and bacteria as a result of increasing urbanization has impacted water quality. In addition, perchlorate contamination, as a result of industrial practices, has impacted the use of groundwater as a source of domestic supply.

- Malibu Valley Basin: Seawater Intrusion: Seawater intrusion occurred in 1950, and again in 1960, when seawater advanced 0.5 miles inland (DWR 1975). In December 1954 and April 1969, chloride concentrations exceeding 100 mg/L were found in groundwater in the coastal part of the basin (DWR 1975). In the future seawater intrusion is expected to be managed via injection of recycled water from the City of Malibu's proposed wastewater treatment plant in the lower Civic Center Gravels of the Malibu Valley Groundwater Basin to protect against further intrusion.

- Acton Valley Groundwater Basin: Ground water is the source of most potable water in this unsewered area. However, increasing concentrations of nitrate as a result of improperly sited or maintained onsite wastewater treatments systems have been found to be degrading the quality of this water.

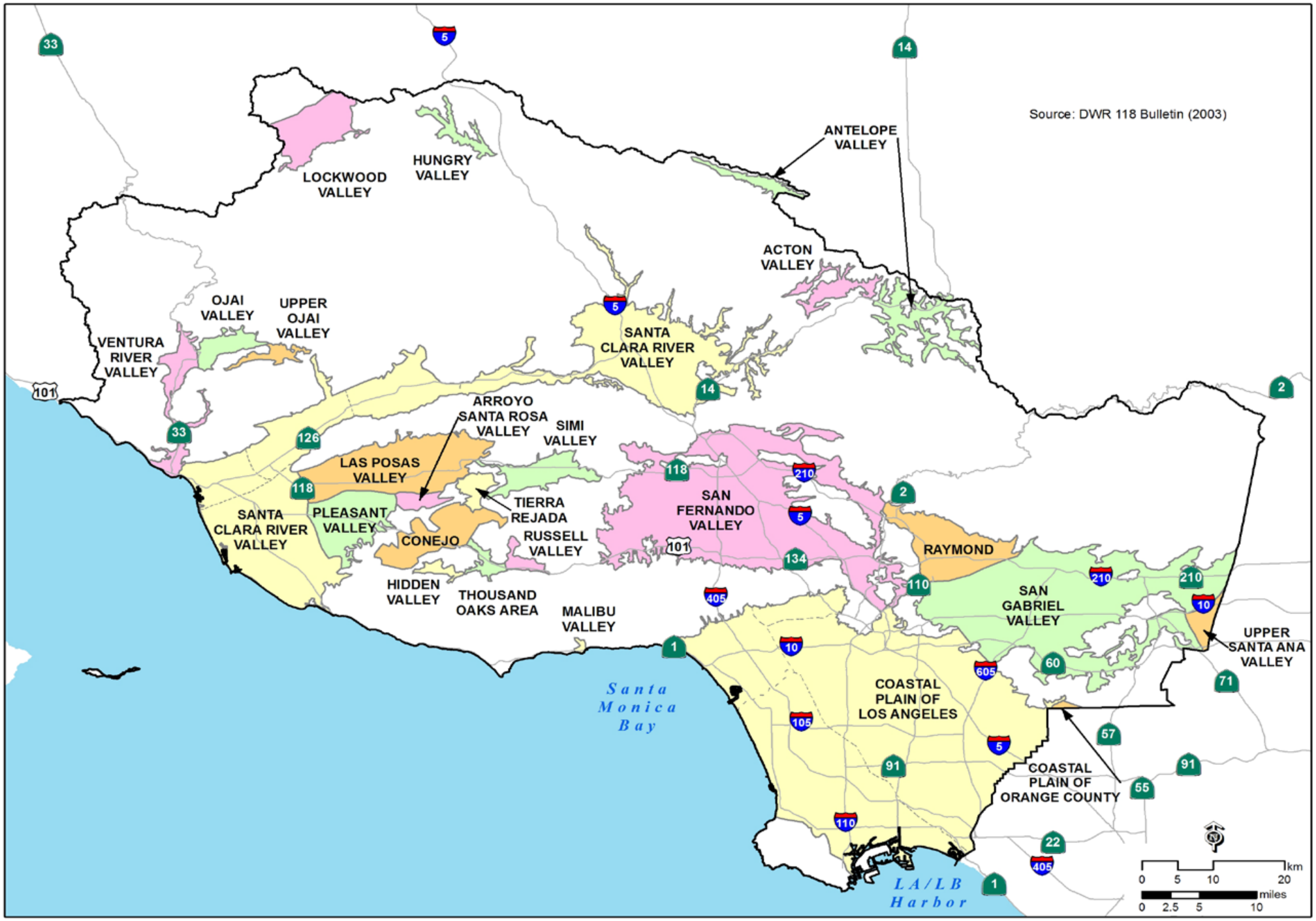


Figure 1-9. Regional Groundwater Basins.

Other Sources of Water

Imported Waters: Water from other areas has been imported into the Los Angeles Region since 1913, when the Los Angeles Aqueduct started delivering water from the Owens Valley. Since that time, southern California has developed complex systems of aqueducts to import water to support a rapidly growing population and economy. Water imported to the Region presently meets roughly half of the demand for potable water.

The principal systems (Figure 1-10) for importing water are summarized below:

The Los Angeles Aqueducts: The City of Los Angeles, Department of Water and Power, diverts water from the Mono and Owens River Basins and transports this water via the 338-mile long (544-kilometer long) Los Angeles Aqueducts to the City of Los Angeles. The original aqueduct was completed in 1913. A second aqueduct, which parallels the first, was completed in 1970.

Releases from the Haiwee Reservoir Complex, at the end of the Owens Valley Basin, supplied over 500,000 acre-feet per year to the City of Los Angeles during the first half of the 1980s. However, releases dropped to 127,012 acre-feet (15,667 hectare-meters) in 1990 as a result of a statewide drought, as well as legal restrictions on Mono Basin and Owens Valley water resources. Releases in 1992 totaled 173,945 acre-feet (21,456 hectare-meters).

The California Aqueduct (The State Water Project): The State of California, Department of Water Resources, transports about 2.4 million acre-feet (296,036 hectare-meters) per year of water, largely from the Feather and the Sacramento Rivers in northern California, to other parts of California via the California Aqueduct. In southern California, the aqueduct splits into east and west branches, terminating at Perris and Castaic Reservoirs, respectively. Approximately 1.4 million acre-feet (172,687 hectare-meters) per year of this water is delivered to four contractors for use within the Los Angeles Region: The Metropolitan Water District of Southern California (MWD), County of Ventura, Castaic Lake Water Agency, and San Gabriel Valley Municipal Water District.

The Colorado River Aqueduct: The MWD imports water from Lake Havasu on the Colorado River through the 242-mile long (389-kilometer long) Colorado River Aqueduct. This water is transported to Lake Mathews, MWD's terminal reservoir, in Riverside County. While MWD held water rights for over

1.2 million acre-feet (148,018 hectare-meters) per year in the 1930s, MWD's dependable supply of Colorado River water has now been reduced to 450,000 acre-feet (55,507 hectare-meters) per year due to the exercise of water rights by other Colorado River water users. After blending with water delivered through the State Water Project, MWD delivers a portion of this water to its member agencies in the Los Angeles Region; the remaining water is delivered to other areas in southern California.

Water imported from the Owens Valley through the Los Angeles Aqueduct is usually treated for turbidity. Water from the Colorado River typically is harder than local supplies and other imported waters. This hardness is the result of dissolved constituents from soils and rocks in the Colorado River watershed. Water from northern California, while not as hard as Colorado River water, accumulates organic materials as it flows through the fertile Sacramento-San Joaquin Delta. These organic materials when combined with chlorine during typical disinfection treatment processes can result in by-products such as trihalomethanes (THMs). As THMs are linked to cancer, a 100-parts per billion standard has been established that mitigates the occurrence of THMs in drinking water while still allowing for adequate chlorine disinfection.

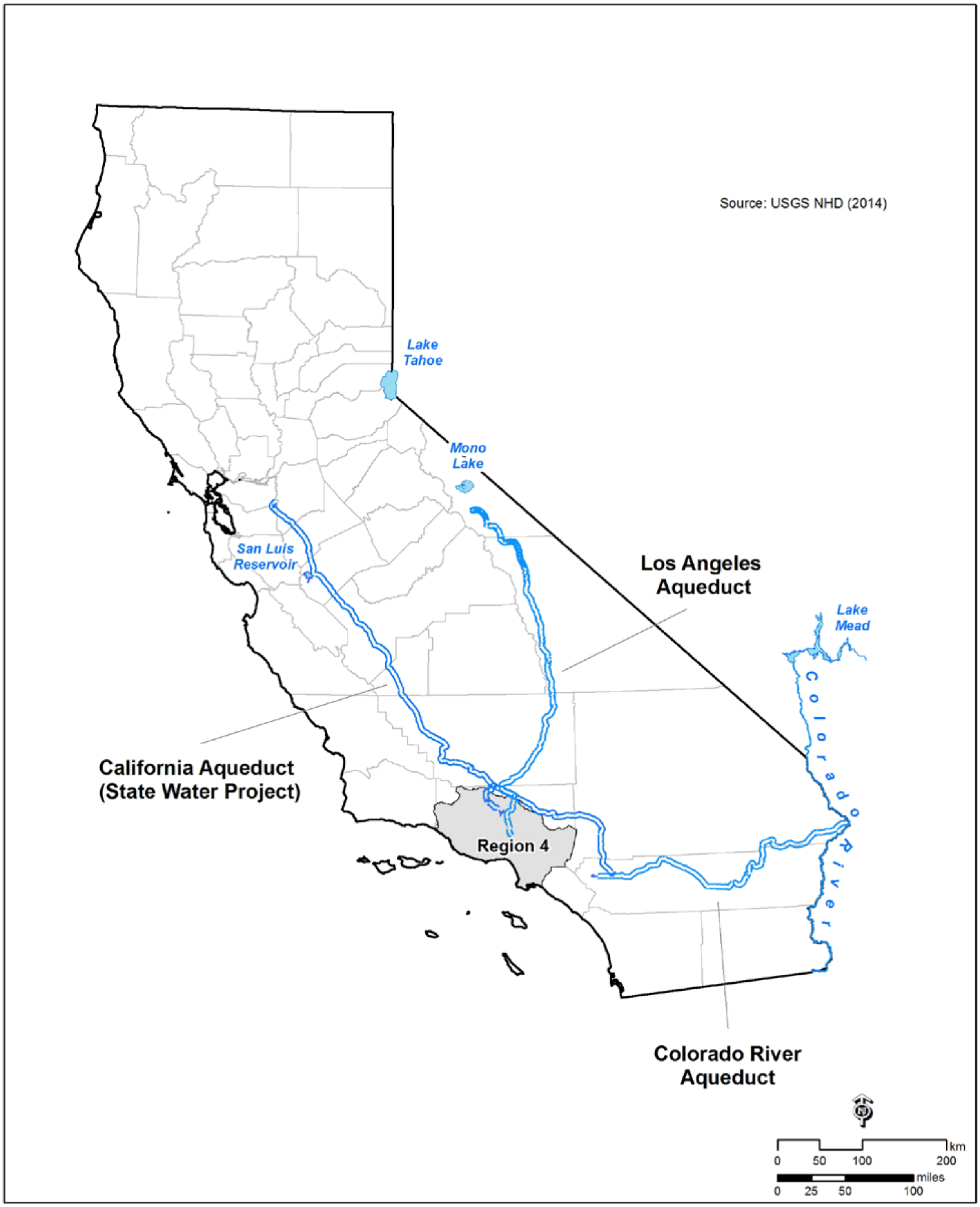


Figure 1-10. Sources of Imported Water in the Los Angeles Region.

Recycled Water: The State and Regional Water Boards recognize the shortage of fresh potable water in the Region and the need to conserve water for beneficial uses. Accordingly, reclaimed waters are an increasingly important local resource. The State Water Board's *Policy with Respect to Water Reclamation in California* (Resolution No. 77-1) and the more recently adopted *Recycled Water Policy* (Resolution No. 2009-0011, as amended by 2013-0003) are summarized in Chapter 5. The importance of water reclamation is also recognized in the California Water Code. Sections 13575 to 13577, which were added in 1991 (during the 1986-1991 drought), set reclamation goals of 700,000 acre-feet (86,344 hectare-meters) per year and 1,000,000 acre-feet (123,348 hectare-meters) per year in the years 2000 and 2010, respectively.

The Regional Water Board supports reclamation projects (i.e., those projects that reuse treated wastewaters, thereby offsetting the use of fresh waters) through the Water Reclamation Requirements program. Under this program, discussed in detail in Chapter 4, treated wastewaters are reused for groundwater recharge, recreational impoundments, industrial processing and supply, and landscape irrigation. The State and Regional Water Boards also support increased capture and infiltration of local storm water as an additional source of local water supply. The Regional Water Board provides incentives through its permits for discharges from municipal separate storm sewer systems to support increased infiltration of storm water as a means of achieving water quality standards and increasing local water supply.

In addition, the State and Regional Water Boards provide financial assistance to projects that are developing reclamation capabilities.

Drought Considerations

California experiences frequent drought conditions including the most recent instances from 1987 to 1992, 2008 to 2011, and a drought period that was declared in 2014. The Los Angeles region's dependence on imported waters leaves it vulnerable during such periods, and as such, state and local water agencies in the region have focused efforts on finding ways to integrate water quality protection programs with provisions that also have the benefit of increasing local water supplies and off-setting use of imported water, while reducing run-off from irrigation and other urban and agricultural activities. These efforts have included promoting water recycling as opposed to discharges, promoting reuse of water under de-watering permits; water conservation programs; public education; and the promotion of stormwater capture for recharge of groundwater basins. In response to 2014 drought conditions, on July 29, 2014, the State Water Board adopted emergency regulations to increase conservation practices by all Californians (State Water Board Resolution No. 2014-0038). This regulation establishes the minimum level of conservation practices that residents, businesses and water suppliers must implement as the drought deepens and will be in effect for 270 days unless extended or repealed. The State and Regional Water Boards are also expediting permitting to safely use recycled water in order to reduce demand on potable water supplies.

In addition to the water supply concerns during drought periods, impacts to water quality such as increasing salinity need to be considered and managed. In the past, as in the drought period from 1987 through 1992, the Regional Water Board addressed these concerns though the adoption of interim permit limits for wastewater treatment plant discharges in certain watersheds - temporarily allowing for higher effluent limits for salts to accommodate drought-related increases in salt loading from imported potable water. In a similar vein, during the current drought period the State Water Board has acted on requests to provide flexibility with respect to recycled water permit requirements (State Water Board Order No. WQ 2014-0090). Such measures are taken in consideration of the need to protect existing and potential beneficial uses of receiving waters.

The Basin Plan

The following chapters identify the designated beneficial uses of the Region's waters (Chapter 2), include the narrative and numeric water quality objectives that must be attained or maintained to protect these beneficial uses and conform to the State's anti-degradation policy (Chapter 3), describes programs of implementation and other plans, policies, and actions that are necessary to achieve the water quality objectives (Chapters 4, 5 and 7); and describe monitoring and assessment programs that are used to determine attainment of water quality objectives (Chapter 6).

2. BENEFICIAL USES

Table of Contents

Introduction

Beneficial uses form the cornerstone of water quality protection under the Basin Plan. Once beneficial uses are designated, appropriate water quality objectives can be established and programs that maintain or enhance water quality can be implemented to ensure the protection of beneficial uses. The designated beneficial uses, together with water quality objectives (referred to as criteria in federal regulations), form water quality standards. Such standards are mandated for all waterbodies within the state under the California Water Code. In addition, the federal Clean Water Act mandates standards for all surface waters, including wetlands.

Twenty-four beneficial uses in the Region are identified in this Chapter. These beneficial uses and their definitions were developed by the State and Regional Boards for use in the Regional Board Basin Plans. Three beneficial uses were added since the original 1975 Basin Plans. These new beneficial uses are Aquaculture, Estuarine Habitat, and Wetlands Habitat.

Beneficial uses can be designated for a waterbody in a number of ways. Those beneficial uses that have been attained for a waterbody on, or after, November 28, 1975, must be designated as "existing" in the Basin Plans. Other uses can be designated, whether or not they have been attained on a waterbody, in order to implement either federal or state mandates and goals (such as fishable and swimmable) for regional waters. Beneficial uses of streams that have intermittent flows, as is typical of many streams in southern California, are designated as intermittent. During dry periods, however, shallow ground water or small pools of water can support some beneficial uses associated with intermittent streams; accordingly, such beneficial uses (e.g., wildlife habitat) must be protected throughout the year and are designated "existing." In addition, beneficial uses can be designated as "potential" for several reasons, including:

- implementation of the State Board's policy entitled "Sources of Drinking Water Policy" (State Board Resolution No. 88-63, described in Chapter 5),
- plans to put the water to such future use,
- potential to put the water to such future use,
- designation of a use by the Regional Board as a regional water quality goal, or
- public desire to put the water to such future use.

Beneficial Use Definitions

Beneficial uses for waterbodies in the Los Angeles Region are listed and defined below. The uses are listed in no preferential order.

Municipal and Domestic Supply (MUN)
Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

Agricultural Supply (AGR)
Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

Industrial Process Supply (PROC)
Uses of water for industrial activities that depend primarily on water quality.

Industrial Service Supply (IND)
Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.

Ground Water Recharge (GWR)
Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.

Freshwater Replenishment (FRSH)
Uses of water for natural or artificial maintenance of

surface water quantity or quality (e.g., salinity).

Navigation (NAV)
Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.

Hydropower Generation (POW)
Uses of water for hydropower generation.

Water Contact Recreation (REC-1)
Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.

Limited Water Contact Recreation (LREC-1)
Uses of water for recreational activities involving body contact with water, where full REC-1 use is limited by physical conditions such as very shallow water depth and restricted access and, as a result, ingestion of water is incidental and infrequent.

Non-contact Water Recreation (REC-2)
Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

High Flow Suspension: The High Flow Suspension shall apply to water contact recreational activities associated with the swimmable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use, non-contact water recreation involving incidental water contact regulated under the REC-2 use, and the associated bacteriological objectives set to protect those activities. Water quality objectives set to protect (1) other recreational uses associated with the fishable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use and (2) other REC-2 uses (e.g., uses involving the aesthetic aspects of water) shall remain in effect at all times for waters where the (av) footnote appears in Table 2-1a. The High Flow Suspension shall apply on days with rainfall greater than or equal to ½ inch and the 24 hours following the end of the ½-inch or greater rain event, as measured at the nearest local rain gauge, using local Doppler radar, or using widely accepted rainfall estimation methods. The High Flow Suspension only applies to engineered channels, defined as inland, flowing surface water bodies with a box, V-shaped or trapezoidal configuration that have been lined on the sides and/or bottom with concrete. The water bodies to which the High Flow Suspension applies are identified in Table 2-1a in the column labeled “High Flow Suspension”.

Commercial and Sport Fishing (COMM)
Uses of water for commercial or recreational collection of fish, shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.

Aquaculture (AQUA)
Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.

Warm Freshwater Habitat (WARM)
Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Cold Freshwater Habitat (COLD)
Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Inland Saline Water Habitat (SAL)
Uses of water that support inland saline water ecosystems including, but not limited to, preservation or enhancement of aquatic saline habitats, vegetation, fish, or wildlife, including invertebrates.

Estuarine Habitat (EST)
Uses of water that support estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds).

Wetland Habitat (WET)
Uses of water that support wetland ecosystems, including, but not limited to, preservation or enhancement of wetland habitats, vegetation, fish, shellfish, or wildlife, and other unique wetland functions which enhance water quality, such as providing flood and erosion control, stream bank stabilization, and filtration and purification of naturally

occurring contaminants.

Marine Habitat (MAR)
Uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).

Wildlife Habitat (WILD)
Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Preservation of Biological Habitats (BIOL)
Uses of water that support designated areas or habitats, such as **Areas of Special Biological Significance (ASBS),** established refuges, parks, sanctuaries, ecological reserves, or other areas where the preservation or enhancement of natural resources requires special protection.

The following coastal waters have been designated as ASBS in the Los Angeles Region. For detailed descriptions of their boundaries see the Ocean Plan discussion in Chapter 5, Plans and Policies:

- San Nicolas Island and Begg Rock
- Santa Barbara Island and Anacapa Island
- San Clemente Island
- Mugu Lagoon to Latigo Point

- Santa Catalina Island, Subarea One, Isthmus Cove to Catalina Head
- Santa Catalina Island, Subarea Two, North End of Little Harbor to Ben Weston Point
- Santa Catalina Island, Subarea Three, Farnsworth Bank Ecological Reserve
- Santa Catalina Island, Subarea Four, Binnacle Rock to Jewfish Point

The following areas are designated Ecological Reserves or Refuges:

- Channel Islands National Marine Sanctuary
- Santa Barbara Island Ecological Reserve
- Anacapa Island Ecological Reserve
- Catalina Marine Science Center Marine Life
- Point Fermin Marine Life Refuge
- Farnsworth Bank Ecological Reserve
- Lowers Cove Reserve
- Abalone Cove Ecological Reserve
- Big Sycamore Canyon Ecological Reserve

Rare, Threatened, or Endangered Species (RARE)
Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.

Migration of Aquatic Organisms (MIGR)
Uses of water that support habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms, such as anadromous fish.

Spawning, Reproduction, and/or Early Development (SPWN)
Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

Shellfish Harvesting (SHELL)
Uses of water that support habitats suitable for the collection of filter-feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial, or sports purposes.

Beneficial Uses for Specific Waterbodies

Tables 2-1 through 2-4 list the major regional waterbodies and their designated beneficial uses. These tables are organized by waterbody type: (i) inland surface waters (rivers, streams, lakes, and inland wetlands), (ii) ground water, (iii) coastal waters (bays, estuaries, lagoons, harbors, beaches, and ocean waters), and (iv) coastal wetlands. Within Tables 2-1 and 2-1a waterbodies are organized by major watersheds. Twelve digit Hydrologic unit codes are noted in the surface water tables (2-1, 2-1a, 2-3, and 2-4) as a cross reference to the Watershed Boundary Dataset developed by the United States Geological Survey (2007). For those surface waterbodies that cross into other hydrologic units, such waterbodies appear more than once in a table. Furthermore, certain coastal waterbodies are duplicated in more than one table for completeness (e.g., many lagoons are listed both in inland surface waters and in coastal features tables). Major groundwater basins are classified in Table 2-2 according to the Department of Water Resources Bulletin No.119 – Update 2003. A series of maps (Figures 2-1 to 2-22) illustrates regional surface waters, ground waters, and major harbors.

The Regional Board contracted with the California Department of Water Resources for a study of beneficial uses and objectives for the upper Santa Clara River (DWR, 1989) and for another study of the beneficial uses and objectives the Piru, Sespe, and Santa Paula Hydrologic areas of the Santa Clara River (DWR, 1993). In addition, the Regional Board contracted with Dr. Prem Saint of California State University at Fullerton to survey and research beneficial uses of all waterbodies throughout the Region (Saint, et al., 1993a and 1993b). Information from these studies was used to update this Basin Plan.

State Board Resolution No. 88-63 (Sources of Drinking Water) followed by Regional Board Resolution No. 89-03 (Incorporation of Sources of Drinking Water Policy into the Water Quality Control Plans (Basin Plans)) states that " All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic waters supply and should be so designated by the Regional Boards ... [with certain exceptions which must be adopted by the Regional Board]." In adherence with these policies, all inland surface and ground waters have been designated as MUN - presuming at least a potential suitability for such a designation.

These policies allow for Regional Boards to consider the allowance of certain exceptions according to criteria set forth in SB Resolution No. 88-63. While supporting the protection of all waters that may be used as a municipal water supply in the future, the Regional Board realizes that there may be exceptions to this policy.

In recognition of this fact, the Regional Board will soon implement a detailed review of criteria in the State Sources of Drinking Water policy and identify those waters in the Region that should be excepted from the MUN designation. Such exceptions will be proposed under a special Basin Plan Amendment and will apply exclusively to those waters designated as MUN under SB Res. No. 88-63 and RB Res. No. 89-03.

In the interim, no new effluent limitations will be placed in Waste Discharge Requirements as a result of these designations until the Regional Board adopts this amendment.

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The following sections summarize general information regarding beneficial uses designated for the various waterbody types.

Inland Surface Waters

Inland surface waters consist of rivers, streams, lakes, reservoirs, and inland wetlands. Beneficial uses of these inland surface waters and their tributaries (which are graphically represented on Figures 2-1 to 2-10) are designated on Tables 2-1 and 2-1a.

Beneficial uses of inland surface waters generally include REC-1 (swimmable) and WARM, COLD, SAL, or COMM (fishable), reflecting the goals of the federal Clean Water Act. In addition, inland waters are usually designated as IND, PRO, REC-2, WILD, and are sometimes designated as BIOL and RARE. In a few cases, such as reservoirs used primarily for drinking water, REC-1 uses can be restricted or prohibited by the entities that manage these waters. Many of these reservoirs, however, are designated as potential for REC-1, again reflecting federal goals. Furthermore, many regional streams are primary sources of replenishment for major groundwater basins that supply water for drinking and other uses, and as such must be protected as GWR. Inland surface waters that meet the criteria mandated by the *Sources of Drinking Water Policy* (which became effective when the State Board adopted Resolution No. 88-63 in 1988) are designated MUN. (This policy is reprinted in Chapter 5, Plans and Policies).

Under federal law, all surface waters must have water quality standards designated in the Basin Plans. Most of the inland surface waters in the Region have beneficial uses specifically designated for them. Those waters not specifically listed (generally smaller tributaries) are designated with the same beneficial uses as the streams, lakes, or reservoirs to which they are tributary. This is commonly referred to as the "tributary rule."

Ground Waters

Beneficial uses for regional groundwater basins (Figure 1-9) are designated on Table 2-2. For reference, Figures 2-11 to 2-18 show enlargements of all of the major basins and sub-basins referred to in the ground water beneficial use table (Table 2-2) and the water quality objective table (Table 3-8) in Chapter 3.

Many groundwater basins are designated MUN, reflecting the importance of ground water as a source of drinking water in the Region and as required by the State Board's *Sources of Drinking Water Policy.* Other beneficial uses for ground water are generally IND, PROC, and AGR. Occasionally, ground water is used for other purposes (e.g., ground water pumped for use in aquaculture operations at the Fillmore Fish Hatchery).

Coastal Waters

Coastal waters in the Region include bays, estuaries, lagoons, harbors, beaches, and ocean waters. Beneficial uses for these coastal waters provide habitat for marine life and are used extensively for recreation, boating, shipping, and commercial and sport fishing, and are accordingly designated in Table 2-3. Figures 2-19 to 2-22 show specific sub-areas of some of these coastal waters.

Wetlands

Wetlands include freshwater, estuarine, and saltwater marshes, swamps, mudflats, and riparian areas. As the California Water Code (§13050[e]) defines "waters of the state" to be "any water, surface or underground, including saline waters, within the boundaries of the state," natural wetlands are therefore entitled to the same level of protection as other waters of the state.

Wetlands also are protected under the Clean Water Act, which was enacted to restore and maintain the physical, chemical, and biological integrity of the nation's waters, including wetlands. Regulations developed under the CWA specifically include wetlands "as waters of the United States" (40 CFR 116.3) and defines them as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Although the definition of wetlands differs widely among federal agencies, both the USEPA and the U.S. Army Corps of Engineers use this definition in administrating the 404 permit program.

Recently, both state and federal wetlands policies have been developed to protect these valuable waters. Executive Order W-59-93 (signed by Governor Pete Wilson on August 23, 1993) established state policy guidelines for wetlands conservation. The primary goal of this policy is to ensure no overall net loss and to achieve a long-term net gain in the quantity, quality, and permanence of wetland acreage in California. The federal wetlands policy, representing a significant advance in wetlands protection, was unveiled by nine federal agencies on August 24, 1993. This policy represents an agreement that is sensitive to the needs of landowners, more efficient, and provides flexibility in the permit process.

The USEPA has requested that states adopt water quality standards (beneficial uses and objectives) for wetlands as part of their overall effort to protect the nation's water resources. The 1975 Basin Plans identified a number of waters which are known to include wetlands; these wetlands, however, were not specifically identified as such. In this Basin Plan, a wetlands beneficial use category has been added to identify inland waters that support wetland habitat as well as a variety of other beneficial uses. The wetlands habitat definition recognizes the uniqueness of these areas and functions they serve in protecting water quality. Tables 2-1a and 2-4 identifies and designates beneficial uses for significant coastal wetlands in the Region. These waterbodies are also included on Tables 2-1 and 2-3. Beneficial uses of wetlands include many of the same uses designated for the rivers, lakes, and coastal waters to which they are adjacent, and include REC-1, REC-2, WARM, COLD, EST, MAR, WET, GWR, COMM, SHELL, MIGR, SPWN, WILD and often RARE or BIOL.

As some wetlands can not be easily identified in southern California because of the hydrologic regime, the Regional Board identifies wetlands using indicators such as hydrology, presence of hydrophytic plants (plants adapted for growth in water), and/or hydric soils (soils saturated for a period of time during the growing season). The Regional Board contracted with Dr. Prem Saint, et al. (1993a and 1993b), to inventory and describe major regional wetlands. Information from this study was used to update this Basin Plan.

Table 2-1. Beneficial Uses of Inland Surface Waters.

WATERSHED[a]	WBD No.	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
VENTURA COUNTY COASTAL STREAMS																							
Los Sauces Creek	180701010202	P*	I	I	I	I						I	I				E			I	I		
Poverty Canyon	180701010202	P*	I	I	I	I						I	I				E			I	I		
Madranio Canyon	180701010202	P*	I	I	I	I						I	I				E			I	I		
Javon Canyon	180701010202	P*	I	I	I	I						I	I				E			I	I		E
Padre Juan Canyon	180701010202	P*	I	I	I	I						I	I				E			I	I		
McGrath Lake	180701010202									P					E		E		Ee				E
Big Sycamore Canyon Creek	180701040201	P*				I						I	E				E			P	P		E
Little Sycamore Canyon Creek	180701040202	P*										I					E		E		P		
VENTURA RIVER WATERSHED																							
Ventura River Estuary[c]	180701010106							E		E		E			E	E	E		Ee	Ef	Ef	E	E
Ventura River Reach 1 (Ventura River Estuary to Main St.)	180701010106	P*	E		E	E	E					E	E				E		E	E	E		E
Ventura River Reach 2 (Main St. to Weldon Canyon)	180701010106	P*	E		E	E	E					E	E				E		E	E	E		E
Cañada Larga	180701010106	P*		I	I	I	I					I	I				E			I	I		
Lake Casitas	180701010105	E	E	E	E	P	P		P			E	E				E		E				
Lake Casitas tributaries	180701010105	E*			P	E						E	E				E		P	E	E		E
Ventura River Reach 3 (Weldon Canyon to Casitas Vista Rd.)	180701010106	P*	E		E	E	E					E	E				E		E	E	E		E
Ventura River Reach 4 (Casitas Vista Rd. to San Antonio Creek)	180701010106	P*	E		E	E	E					E	E				E		E	E	E		E
Ventura River Reach 4 (San Antonio Creek to Camino Cielo Rd.)	180701010104	E	E	E	E	E	E					E	E				E		Eg	E	E		E
Coyote Creek	180701010105	P*				E						E	E				E			E	E		E
San Antonio Creek (Ventura River Reach 4 to Lion Creek)	180701010103	E	E	E	E	E						E	E				E			E	E		E
San Antonio Creek (above Lion Creek)	180701010103	E	E	E	E	E	E					E	E				E			E	E		E
Lion Creek	180701010103	I*	I	I	I							I	I				E						
Reeves Creek	180701010103	I*	I	I	I	I						I	I				E			I	I		
Mirror Lake	180701010104	P*				E						E					E						E
Ojai Wetland	180701010104	P*										E					E						E
Ventura River Reach 5 (above Camino Cielo Rd.)	180701010104	E	E	E	E	E	E					E	E				E		Eg	E	E		E
Matilija Creek Reach 1 (Ventura River Reach 5 to Matilija Reservoir)	180701010101	P*				E							E				E			E	E		E
Matilija Creek Reach 2 (above Matilija Reservoir)	180701010101	P*				E							E				E			E	E		E
Murietta Canyon Creek	180701010101	P*				E							E				E			E	E		E
North Fork Matilija Creek	180701010102	E*	E	E	E	E						E	E				E		E	E	E		E
Matilija Reservoir	180701010101	E			E	E	E					E	E				E			E	E		E

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.
c: Coastal waterbodies which are also listed in inland Surface Waters Tables (2-1) or in Wetlands Table (2-4).
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f: Aquatic organisms utilize all bays, estuaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
g: Condor refuge.

Table 2-1. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
SANTA CLARA RIVER WATERSHED																							
Santa Clara River Estuary (Ends at Harbor Blvd.) [c]	180701020904							E		E					E	E	E		Ee	Ef	Ef		E
Santa Clara River Reach 1																							
Santa Clara River (Estuary to Highway 101 bridge)	180701020904	P*	E	E	E	E	E					E	E				E		E	E			E
Santa Clara River Reach 2																							
Santa Clara River (Highway 101 bridge to Ellsworth Barranca)	180701020904	P*	E	E	E	E	E					E	E				E		E	E			E
Santa Clara River (Ellsworth Barranca to Freeman Diversion)	180701020903	P*	E	E	E	E	E					E	E				E		E	E			E
Santa Clara River Reach 3																							
Santa Clara River (Freeman Diversion Dam to Santa Paula Creek)	180701020903	P*	E	E	E	E	E					E					E		E	E			E
Santa Clara River (Santa Paula Creek to Sespe Creek)	180701020902	P*	E	E	E	E	E					E					E		E	E			E
Santa Clara River (Sespe Creek to A Street, Fillmore)	180701020802	P*	E	E	E	E	E					E					E		E	E			E
Santa Clara River Reach 4A																							
Santa Clara River (A Street, Fillmore to Piru Creek)	180701020802	P*	E	E	E	E	E					E					E		E	E			E
Santa Clara River Reach 4B																							
Santa Clara River (Piru Creek to Blue Cut gaging station)	180701020403	P*	E	E	E	E	E					E					E		E	E			E
Santa Clara River Reach 5																							
Santa Clara River (Blue Cut gaging station to West Pier Highway 99)	180701020403	P*	E	E	E	E	E					E					E		E				E
Santa Clara River Reach 6																							
Santa Clara River (West Pier Highway 99 to Bouquet Canyon Rd.)	180701020403	P*	E	E	E	E	E					E					E		E				E
Santa Clara River Reach 7																							
Santa Clara River (Bouquet Canyon Rd. to Lang gaging station)	180701020107	P*	E	E	E	E	E					E					E		E				E
Santa Clara River Reach 8																							
Soledad Canyon (Lang gaging station to Agua Dulce Canyon Creek)	180701020107	E*	E	E	E	E	E					E					E		Ei				E
Soledad Canyon (Agua Dulce Canyon Creek to Aliso Canyon Creek)	180701020105	E*	E	E	E	E	E					E					E		Ei				E
Soledad Canyon (above Aliso Canyon Creek)	180701020102	E*	E	E	E	E	E					E					E		Ei				E
Santa Clara River Reach 9																							
Santa Paula Creek (above Santa Paula Water Works Diversion Dam)	180701020901	P	E	E	E	E	E					E	E				E		E	E	E		
Santa Clara River Reach 10																							
Sespe Creek (gaging station below Little Sespe Creek to Hot Springs Canyon)	180701020705	P	E	P	E	E						E	E				E	E	Eg	E	E		E
Sespe Creek (Hot Springs Canyon to Piedra Blanca Creek)	180701020703	P	E	P	E	E						E	E				E	E	Eg	E	E		E
Sespe Creek (Piedra Blanca Creek to Potrero John Creek)	180701020702	P	E	P	E	E						E	E				E	E	Eg	E	E		E
Sespe Creek (above Potrero John Creek)	180701020701	P	E	P	E	E						E	E				E	E	Eg	E	E		E
Santa Clara River Reach 11																							
Piru Creek (gaging station below Santa Felicia Dam to Agua Blanca Creek)	180701020603	P	E	E	E	E	E					E	E				E		Eg	E	E		E
Piru Creek (Agua Blanca Creek to Pyramid Lake)	180701020602	P	E	E	E	E	E					E	E				E		Eg		E		E
Piru Creek (Pyramid Lake to Snowy Creek)	180701020508	P	E	E	E	E	E					E	E				E		Eg		E		E
Piru Creek (Snowy Creek to Lockwood Creek)	180701020505	P	E	E	E	E	E					E	E				E		Eg		E		E
Piru Creek (above Lockwood Creek)	180701020502	P	E	E	E	E	E					E	E				E		Eg		E		E
Santa Paula Creek (Santa Clara River R4A to Santa Paula Water Works Diversion Dai	180701020901	P	E	E	E	E	E					E	E				E		E	E	E		
Sisar Creek	180701020901	P	E	P	E	E						E	E				E		Eg		E		E

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.
c: Coastal waterbodies which are also listed in Coastal Features Table (2-3) or in Wetlands Table (2-4).
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f:Aquatic organisms utilize all bays, estuaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
g: Condor refuge.
i: Soledad Canyon is the habitat of the Unarmored Three-Spine Stickleback.

Table 2-1. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
SANTA CLARA RIVER WATERSHED (Cont.)																							
Sespe Creek (Santa Clara River R3 to gaging station below Little Sespe Creek)	180701020706	P	E	E	E	E						E	E				E	E	E	E	E		E
Timber Creek	180701020703	P*				E							E				E	E	E	E	E		E
Bear Canyon	180701020703	P*				E						E	P				E	E	E	E	E		E
Trout Creek	180701020703	P*				E						E	E				E		E	E	E		E
Piedra Blanca Creek	180701020703	P*				E							E				E		E	E	E		E
Lion Canyon	180701020702	P*				E						E	E				E			E	E		E
Rose Valley Creek	180701020702	P*				E						E	E				E				E		E
Howard Creek	180701020702	P*				E							E				E	E	E	E	E		E
Tule Creek	180701020702	P*				E							P				E	E	E	E	E		E
Potrero John Creek	180701020701	P*				E							P				E		E	E	E		E
Hopper Creek	180701020801	P*	E		E	E	E					E	E				E		Eg				E
Piru Creek (Santa Clara River R4A to Santa Paula Water Works Diversion Dam)	180701020604	P	E	E	E	E	E					E	E				E		Eg	E	E		E
Lake Piru	180701020603	P	E	E	E	E	P					E	E				E		E		E		
Lake Piru	180701020603	P	E	E	E	E	P		P			E	E				E		E		E		
Pyramid Lake	180701020509	E	E	E	E	E	P		E			E	E				E		E				
Gorman Creek	180701020507	I*			I	I						I	I				E		P				
Canada de los Alamos	180701020506	I*			I	I	I					I	I				E		E				
Lockwood Creek	180701020504	I*			I	I						I	I				E						
Lockwood Creek	180701020504	I*			I	I	I					I	I				E						
Tapo Canyon	180701020403	P*			P							E					E						
Castaic Creek (Santa Clara River R5 to Castaic Lake)	180701020306	I	I	I	I	I	I					I					E		E				
Castaic Creek (Castaic Lake to Fish Canyon)	180701020305	I	I	I	I	I	I					I					E		E				
Castaic Creek (above Fish Canyon)	180701020304	I	I	I	I	I	I					I					E		E				
Castaic Lagoon	180701020306	E*	E	E	E	E	E					E					E						
Castaic Lake	180701020305	E	E	E	E	E	E		E			E	I				E		E		E		
Castaic Lake	180701020304	E	E	E	E	E	E		E			E	I				E		E		E		
Elderberry Forebay	180701020305	E	E	E	E	E	E		E			E					E		E		E		
Elizabeth Lake Canyon	180701020304	I	I	I	I	I	I					I					E						
San Francisquito Canyon I	180701020402	I	I	I	I	I	I					I					E		E		I		E
Drinkwater Reservoir	180701020402	P*				E						P					E		E				E
South Fork Santa Clara River	180701020401	I*	I	I	I	I	I					I					E						
Bouquet Canyon (Santa Clara River R6 to Vasquez Canyon)	180701020401	E I	E I	P I	P I	E	P					E	E				E				P		E
Bouquet Canyon (above Vasquez Canyon)	180701020401	P	P	P	E	E	P					E	E				E		E				E
Dry Canyon Creek	180701020202	I	I	I	I	I	I					I					E						
Dry Canyon Reservoir[j]	180701020201	E	E	E	E	P	P		P			E					E						
Bouquet Reservoir	180701020201	E	E	E	E	E	E		P			E					E						
Mint Canyon Creek Reach 1 (Santa Clara River R7 to Rowher Canyon)	180701020106	I	I	I	I	I	I					I					E						
Mint Canyon Creek Reach 2 (above Rowher Canyon)	180701020106	I*	I	I	I	I	I					I					E						
Agua Dulce Canyon Creek (Santa Clara River R8 to Escondido Canyon Rd.)	180701020104	I*	I	I	I	I	I					I					E		E				
Agua Dulce Canyon Creek (above Escondido Canyon Rd.)	180701020104	I*			I	I	I					I					E						
Aliso Canyon Creek	180701020101	P*			P	E						E					E						E
Lake Hughes	180701020301	P	P	P	P	P	P					E					E						
Munz Lake	180701020301	P*	P	P	P	E	P					E					E						
Lake Elizabeth	180701020301	P	P	P	P	P	P					E					E		E				

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.
g: Condor refuge.
j: Out of service.

Table 2-1. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
CALLEGUAS-CONEJO CREEK WATERSHED																							
Calleguas Creek Estuary [c]	180701030107							P		E					E		E		Ee,p	Ef	Ef		E
Calleguas Creek Reach 1																							
Mugu Lagoon [c]	180701030102							E		Ed					E	E	Eo	E	Ee,p	Ef	Ef	Ed	E
Calleguas Creek Reach 2																							
Calleguas Creek (Estuary to Potrero Rd.)	180701030107	P*			E	E	E					E	E				E		Ep				E
Calleguas Creek Reach 3																							
Calleguas Creek (Potrero Rd. to Conejo Creek)	180701030107	P*	E	E	E	E						E					E						
Calleguas Creek Reach 4																							
Revolon Slough (Calleguas Creek Rch 2 to Pleasant Valley Rd.)	180701030107	P*	P		E	E						E					E						E
Revolon Slough (Pleasant Valley Rd. to Central Ave.)	180701030106	P*	P		E	E						E					E						E
Calleguas Creek Reach 5																							
Beardsley Channel (above Central Ave.)	180701030106	P*					E					E					E						
Calleguas Creek Reach 6																							
Arroyo Las Posas (Calleguas Creek Rch 3 to Long Canyon)	180701030103	P*	P	P	P	E						E	P				E						
Arroyo Las Posas (Long Canyon to Hitch Rd.)	180701030103	P*	P	P	P	E	E					E	P				E						
Calleguas Creek Reach 7																							
Arroyo Simi (Hitch Rd. to Happy Camp Canyon)	180701030103	P*	I			I	I					I					E		E				
Arroyo Simi (Happy Camp Canyon to Alamos Canyon)	180701030102	P*	I			I	I					I					E		E				
Arroyo Simi (Alamos Canyon to Tapo Canyon Creek)	180701030102	I*	I			I	I					I					E						
Arroyo Simi (above Tapo Canyon Creek)	180701030101	I*	I			I	I					I					E						
Calleguas Creek Reach 8																							
Tapo Canyon Creek (above Arroyo Simi)	180701030101	I*		P	P	I						I					E						
Calleguas Creek Reach 9A																							
Conejo Creek (Camrosa Diversion to Camarillo Rd.)	180701030105	P*	E	E	E	E						E					E						
Conejo Creek (Camarillo Rd. to Arroyo Santa Rosa)	180701030105	P*				I	I					I					E				E		
Calleguas Creek Reach 9B																							
Conejo Creek (Calleguas Creek Rch 3 to Camrosa Diversion)	180701030105	P*	E	E	E	E						E					E						
Calleguas Creek Reach 10																							
Arroyo Conejo (Conejo Creek to North Fork Arroyo Conejo)	180701030105	P*				I	I					I					E		E				
Calleguas Creek Reach 11 (Arroyo Santa Rosa)																							
Arroyo Santa Rosa (above confl. with Conejo Creek)	180701030105	P*				I	I					I					E						
Calleguas Creek Reach 12																							
North Fork Arroyo Conejo (above confl. with Arroyo Conejo)	180701030104	P*		<del>	E	E						E					E				E		
Calleguas Creek Reach 13																							
Arroyo Conejo (above confl. with North Fork Arroyo Conejo)	180701030104	P*				I	I					I					E						
Gillibrand Canyon Creek (Tapo Canyon Creek to Windmill Canyon)	180701030101	P*				I	I					I					E						
Gillibrand Canyon Creek (above Windmill Canyon)	180701030101	P*				I						I					E						
Lake Bard (Wood Ranch Reservoir)	180701030102	E	E	E	E	P						E					E						

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.
c: Coastal waterbodies which are also listed in Coastal Features Table (2-3) or in Wetlands Table (2-4).
d: Limited public access precludes full utilization.
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f: Aquatic organisms utilize all bays, estuaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
o: Marine habitats of the Channel Islands and Mugu Lagoon serve as pinniped haul-out areas for one or more species (i.e. sea lions).
p: Habitat of the Clapper Rail.

Table 2-1. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
LOS ANGELES COUNTY COASTAL STREAMS																							
Arroyo Sequit	180701040202	P*				I						E	E				E		E	E	E		E
San Nicholas Canyon Creek	180701040202	P*										I					E						
Los Alisos Canyon Creek	180701040202	P*										I					E		E				
Lachusa Canyon Creek	180701040202	P*										I					E						
Encinal Canyon Creek	180701040202	P*										I					E		E				
Trancas Canyon Creek	180701040203	E*										E					E		E				
Dume Lagoon [c]	180701040203							E		E					E		E		Ee	Pf	Pf		E
Dume Creek (Zuma Canyon)	180701040203	E*										E	E				E		E	P	P		
Ramirez Canyon Creek	180701040204	I*										I					E				P		
Escondido Canyon Creek	180701040204	I*										I					E		E				
Latigo Canyon Creek	180701040204	I*										I					E		E				
Solstice Canyon Creek	180701040204	E*										E					E			P	P		
Puerco Canyon Creek	180701040204	I*										I					E						
Corral Canyon Creek	180701040204	I*										I					E						
Carbon Canyon Creek	180701040403	P*										I					E						
Las Flores Canyon Creek	180701040403	P*										I					E						
Piedra Gorda Canyon Creek	180701040403	P*										I					E						
Pena Canyon Creek	180701040403	P*										I	E				E						
Tuna Canyon Creek	180701040403	P*										I					E						
Topanga Lagoon [c]	180701040401							E		E					E		E		Ee	Ef	Ef		E
Topanga Canyon Creek	180701040401	P*										E	E				E			P	I		
Santa Ynez Canyon	180701040403	P*										I					E		E				
Santa Ynez Lake (Lake Shrine)	180701040403	P*										E					E						
Santa Monica Canyon Channel	180701040402	P*										P					P						
Rustic Canyon Creek	180701040402	P*										I					E						
Sullivan Canyon Creek	180701040402	P*										I					E						
Mandeville Canyon Creek	180701040402	P*										I					E						
Coastal Streams of Palos Verdes	180701040500	P*				I						I					E		E				
Canyon Streams of Palos Verdes	180701040701	P*				I						I					E		Et				
Bixby Slough	180701040701	P*										E					E		E				E
Machado Lake	180701040701	P*										E					E		E				E
Madrona Marsh	180701040701											P					E						E
Stone Canyon Reservoir	180701040300	E*	E	E		P						E					E						
Hollywood Reservoir	180701040300	E*	E	E		P						E					E						
Franklin Canyon Reservoir	180701040300	E*										Pu											
Upper Franklin Canyon Reservoir	180701040300	E*	E	E		P						E					E						E

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.
c: Coastal waterbodies which are also listed in Coastal Features Table (2-3) or in Wetlands Table (2-4).
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f: Aquatic organisms utilize all bays, estuaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
t: Rare applies only to Agua Magna canyon and Sepluveda Canyon areas.
u: This reservoir is covered and thus inaccessible.

Table 2-1. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
MALIBU CREEK WATERSHED																							
Malibu Lagoon [c]	180701040104							E							E	E	E		Ee	Ef	Ef		E
Malibu Creek	180701040104	P*										E	E				E		E	E	E		E
Cold Creek	180701040104	P*											P				E		E		P		E
Las Virgenes Creek	180701040103	P*										E	P				E		E	P	P		E
Century Reservoir	180701040104	P*										E					E						E
Malibou Lake	180701040104	P*						E				E					E		E				E
Medea Creek Reach 1 (Malibou Lake to Lindero Creek Reach 1)	180701040102	P*				I						I	P				E		E				E
Medea Creek Reach 2 (above Lindero Creek Reach 1)	180701040102	I*				I						E					E						E
Lindero Creek Reach 1 (Medea Creek Reach 1 to Lake Lindero)	180701040102	P*										I					E						
Lindero Creek Reach 2 (above Lake Lindero)	180701040102	P*										I					E						
Triunfo Creek Reach 1 (Malibou Lake to Lobo Canyon)	180701040104	P*										I					E						
Triunfo Creek Reach 2 (Lobo Canyon to Westlake Lake)	180701040101	P*				I						I					E		E				
Westlake Lake	180701040101	P*						E				E					E						
Potrero Valley Creek	180701040101	P*				I						P					E						
Lake Eleanor Creek	180701040101	P*				I						I					E						
Lake Eleanor	180701040101	P*				E						E					E		E				E
Las Virgenes (Westlake) Reservoir	180701040101	E	E	E	E							P					E						
Hidden Valley Creek	180701040101	I*				I						I					E						
Lake Sherwood	180701040101	P*				E		E				E					E						E
BALLONA CREEK WATERSHED																							
Ballona Creek Estuary (ends at Centinela Creek) [c,w]	180701040300							E		E					E	E	E		Ee	Ef	Ef	E	
Ballona Lagoon/ Venice Canals [c]	180701040403							E		E					E	E	E		Ee	Ef	Ef	E	E
Ballona Wetlands [c]	180701040300														E		E		Ee	Ef	Ef		E
Del Rey Lagoon [c]	180701040500							E		E					E		E		Ee	Ef	Ef		E
Ballona Creek Reach 2 (Estuary to National Blvd.)	180701040300	P*										P					P						
Ballona Creek Reach 1 (above National Blvd.)	180701040300	P*										P					E						
LOS CERRITOS CHANNEL WATERSHED																							
Los Cerritos Wetlands [c]	180701040702							E		E					E		E		Ee	Pf	Pf	E	E
Los Cerritos Channel Estuary (Ends at Anaheim Rd.) [c]	180701040702		E					E		E					E	E	E		Ee	Ef	Ef	E	
Sims Pond	180701040702	P*										P					E						E
Los Cerritos Channel	180701040702	P*										I					E						
Colorado Lagoon	180701040702									E		P					E					E	

E: Existing beneficial use

P: Potential beneficial use

I: Intermittent beneficial use

E,P, and I: shall be protected as required.

* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).

au: The REC-1 use designation does not apply to recreational activities associated with the swimmable goal as expressed in the Federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use in the Basin Plan, or the associated bacteriological objectives set to protect those activities. However, water quality objectives set to protect other REC-1uses associated with the fishable goal as expressed in the Federal Clean Water Act section 1010(a)(2) shall remain in effect for waters where the (au) footnote appears.

Footnotes are consistent for all beneficial use tables.

a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.

c: Coastal waterbodies which are also listed in Coastal Features Table (2-3) or in Wetlands Table (2-4).

e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.

f: Aquatic organisms utilize all bays, estuaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.

w: These areas are engineered channels. All references to Tidal Prisms in Regional Board documents are functionally equivalent to estuaries.

av: The High Flow Suspension only applies to water contact recreational activities associated with the swimmable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use, non-contact water recreation involving incidental water contact regulated under the REC-2 use, and the associated bacteriological objectives set to protect those activities. Water quality objectives set to protect (1) other recreational uses associated with the fishable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use and (2) other REC-2 uses (e.g., uses involving the aesthetic aspects of water) shall remain in effect at all times for waters where the (av) footnote appears.

** The dividing line between "Ballona Creek" and "Ballona Creek to Estuary" is the point at which the vertical channel walls transition to sloping walls.

Table 2-1. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
DOMINGUEZ CHANNEL WATERSHED																							
Dominguez Channel Estuary (Ends at Vermont Ave.) [c,w]	180701060102							P		E					E	E	E		Ee	Ef	Ef		
Dominguez Channel (Estuary to 135th St.)	180701060102	P*										P					P		E				
Dominguez Channel (above 135th St)	180701060101	P*										P					P		E				
LOS ANGELES RIVER WATERSHED																							
Los Angeles River Estuary (Ends at Willow St.) [c,w]	180701050402		E					E		E					E	E	E		Ee	Ef	Ef	P	E
Los Angeles River Reach 1 (Estuary to Carson St.)	180701050402	P*	P	P		E						E				E	E		E	P	P	Ps	
Compton Creek	180701050402	P*				E						E					E						E
Los Angeles River Reach 2 (Carson St. to Rio Hondo Reach 1)	180701050402	P*	P			E						E					P						
Los Angeles River Reach 2 (Rio Hondo Reach 1 to Figueroa St.)	180701050401	P*	P			E						E					P						
Rio Hondo Reach 1 (Los Angeles River Reach 2 to Santa Ana Freeway)	180701050303	P*				I						P					I						
Rio Hondo Reach 2 (Santa Ana Freeway to Whittier Narrows Dam)	180701050303	P*				I						P					I						
Rio Hondo Reach 3 (above Whittier Narrows Dam)	180701050302	P*				I						P					I		E				E
Alhambra Wash	180701050303	P*				I						P					P		E				
Rubio Wash	180701050303	P*				I						I					E		P				
Rubio Canyon	180701050301	P*				E						I					E		E				E
Eaton Wash	180701050301	P*				I						I					E						
Eaton Wash (below dam) (Rio Hondo Reach 3 to Eaton Dam)	180701050301	P*				I						I					E						
Eaton Wash (above dam) (Eaton Dam to Mount Wilson Toll Rd.)	180701050301	P*				I						I					E						
Eaton Reservoir	180701050301	P*				I						I					E						
Eaton Canyon Creek (above Mount Wilson Toll Rd.)	180701050301	P*				E						E					E		E		E		E
Arcadia Wash	180701050302	P*				I						P					P						
Arcadia Wash	180701050302	P*				I						P					P						
Santa Anita Wash (lower) (Rio Hondo Reach 3 to Elkins Ave.)	180701050302	P*				I						P					P		E				
Santa Anita Wash (upper) (Elkins Ave. to Big Santa Anita Reservoir)	180701050302	P*				E						E					E		E				
Little Santa Anita Canyon Creek	180701050302	P*				I						I					E						
Big Santa Anita Reservoir	180701050302	P*				E						E	E				E						
Santa Anita Canyon Creek	180701050302	E*				E						E	E				E		E		E		E
Winter Creek	180701050302	P*				I						I					E						E
East Fork Santa Anita Canyon	180701050302	P*				E						E	E				E				E		E
Sawpit Wash	180701050302	I				I						I					E						
Sawpit Canyon Creek	180701050302	P*				I						I					E		E				
Sawpit Reservoir	180701050302	P*				I						I					E						
Monrovia Canyon Creek	180701050302	I				I						I					E						E
Arroyo Seco Reach 1 (Los Angeles River Reach 2 to Holly St.)	180701050209	P*										P					P						
Arroyo Seco Reach 2 (Holly St. to Devils Gate Dam)	180701050209	P*										P					P		E				
Devils Gate Reservoir (lower)	180701050209	P*				I						I					E						
Devils Gate Reservoir (upper)	180701050209	I*				I						I					E						
Arroyo Seco Reach 3 (above Devils Gate Dam)	180701050209	E	E	E		E						E	E				E						E
Millard Canyon Creek	180701050209	E*	E	E		E						E					E		E				E
El Prieto Canyon Creek	180701050209	I	I	I		I						I					E						
Little Bear Canyon Creek	180701050209	P*				I						I	I				E						E
Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)	180701050402	P*	P			E						E					E						E
Verdugo Wash Reach 1 (Los Angeles River Rch 3 to Verdugo Rd./Towne St.)	180701050207	P*				I						P					P						
Verdugo Wash Reach 2 (above Verdugo Rd. @ Towne St.)	180701050207	P*				I						P					P						
Halls Canyon Channel	180701050207	P*	I	I		I						I					E						
Snover Canyon	180701050207	I	I	I		I						I					E						
Pickens Canyon	180701050207	I*				I						I					E						
Shields Canyon	180701050207	I	I	I		I						I					E						

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Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.
c: Coastal waterbodies which are also listed in Coastal Features Table (2-3) or in Wetlands Table (2-4).
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f:Aquatic organisms utilize all bays, estuaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
s: Access prohibited by Los Angeles County Department of Public Works.
w: These areas are engineered channels. All references to Tidal Prisms in Regional Board documents are functionally equivalent to estuaries.

Table 2-1. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
LOS ANGELES RIVER WATERSHED (cont.)																							
Dunsmore Canyon Creek	180701050207	I	I	I		I						I					E						
Burbank Western Channel	180701050208	P*										P					P						
La Tuna Canyon Lateral and Creek	180701050208	P*				I						I					E						
Tujunga Wash	180701050208	P*				I						P	P				P						
Hansen Flood Control Basin & Lakes	180701050105	P*				E						E	E				E		E				
Lopez Canyon Creek	180701050105	P*				I						I					E						
Little Tujunga Canyon Creek	180701050104	P*				I						I	I				E		E				
Kagel Canyon Creek	180701050104	P*				I						I					E						
Big Tujunga Canyon Creek (Hansen Flood Control Basin to Big Tujunga Reservoir)	180701050105	P*				E						E	E				E		E		E		E
Big Tujunga Canyon Creek (above Big Tujunga Reservoir)	180701050103	P*				E						E	E				E		E		E		E
Upper Big Tujunga Canyon Creek	180701050103	P*				E						I	P				E						E
Haines Canyon Creek	180701050105	P*				I						I					E		E				
Vasquez Creek	180701050105	P*				E						P	P				E						E
Clear Creek	180701050105	P*				E						E	E				E						E
Big Tujunga Reservoir	180701050105	P*				E						E	P				E				E		
Mill Creek	180701050102	P*				E						E	E				E						E
Los Angeles River Reach 4 (Riverside Dr. to Sepulveda Dam)	180701050208	P*	P			E						E					E						E
Pacoima Wash	180701050206	P*				E						E					E		E				
Pacoima Reservoir	180701050205	P*				E						E					E						
Pacoima Canyon Creek	180701050205	P*				E						E	E				E		E		E		E
May Canyon Creek	180701050206	P*				I						I					E						
Wilson Canyon Creek	180701050206	P*				I						I					E						
Stetson Canyon Creek	180701050204	P*				I						P					P						
Los Angeles River Reach 5 (Sepulveda Dam to Balboa Blvd.)	180701050208	P*	P			E						E					E						E
Sepulveda Flood Control Basin	180701050208	P*				E						E					E						E
Bull Creek	180701050204	P*				I						I					E						
Los Angeles Reservoir	180701050204	E	E	E		P						E					E		E				
Lower Van Norman Reservoir	180701050204	E*	E	E		E						E					E		E				
Upper Van Norman Reservoir	180701050204	E*										Pu					E						
Los Angeles River Reach 6 (above Balboa Blvd.)	180701050208	P*	P			E						E					E						E
Caballero Creek	180701050208	P*				I						I					E						
Aliso Canyon Wash (Los Angeles River Reach 6 to State Hwy 118)	180701050203	P*				I						I					E						
Aliso Canyon Creek (above State Hwy 118)	180701050203	P*				I						I					E						
Limekiln Canyon Wash	180701050203	P*				I						I					E						
Browns Canyon Wash (Los Angeles River Reach 6 to State Hwy 118)	180701050202	P*				I						I					E						
Browns Canyon Creek (above State Hwy 118)	180701050202	P*				I						I					E						
Arroyo Calabasas	180701050201	P*										P					P						
Dry Canyon Creek	180701050201	P*				I						I					E						
McCoy Canyon Creek	180701050201	P*				I						I					E						
Bell Creek	180701050201	P*				I						I					E						
Chatsworth Reservoir [y]	180701050201	E	E	E								E					E						
Dayton Canyon Creek	180701050201	P*				I						I					E						

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.
u: This reservoir is covered and thus inaccessible.
y: Currently dry and no plans for restoration.

Table 2-1. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
LOS ANGELES RIVER WATERSHED (cont.)																							
ISOLATED LAKES AND RESERVOIRS:																							
Eagle Rock Reservoir	180701050402	E*										Pu											
Echo Lake	180701040200	P*										P					E						
El Dorado Lakes	180701060606	P*										P					E						E
Elysian Reservoir	180701050403	E*	E	E								P					E						
Encino Reservoir	180701050208	E*	E	E								P					E						
Ivanhoe Reservoir	180701040200	E*	E	E								P					E						
Lincoln Park Lake Silver Reservoir	180701050403	P*										P					E						
Silver Lake Reservoir	180701040200	E*	E	E								P					E						
Toluca Lake	180701050208	P*										P					E						
SAN GABRIEL RIVER WATERSHED																							
San Gabriel River Estuary (Ends at Willow St.) [c,w]	180701060606		E					E		E					E	E	E		Ee	Ef	Ef	P	
Coyote Creek (San Gabriel River Estuary to La Canada Verde Creek)	180701060506	P*	P	P								P					P		E				
Coyote Creek (above La Canada Verde Creek)	180701060603	P*	P	P								P					P		E				
San Gabriel River Reach 1 (San Gabriel River Estuary to Firestone Blvd.)	180701060606	P*										P					P						
San Gabriel River Reach 2 (Firestone Blvd. to Whittier Narrows Dam)	180701060606	P*	P	P		I						I					E		E				
Whittier Narrows Flood Control Basin	180701060303	P*				E						E					E		P				
Legg Lake	180701060303	P*				E						E	E				E						E
San Gabriel River Reach 3 (Whittier Narrows Dam to San Jose Creek)	180701060601	P*				I						I					E						
San Gabriel River Reach 3 (San Jose Creek to Ramona Blvd.)	180701060601	P*				I						I					E						
San Jose Creek Reach 1 (San Gabriel River Reach 3 to Temple Ave.)	180701060502	P*				I						I					E						
San Jose Creek Reach 2 (Temple Ave. to Thompson Wash)	180701060501	P*				I						I					E						
Puente Creek	180701060502	P*				I						P					P						
Thompson Wash (San Jose Creek Reach 2 to Web Canyon)	180701060501	P*				I						I					E						
Thompson Creek (above Web Canyon)	180701060501	P*				I						I					E		E				
Thompson Creek Reservoir	180701060501	P*				I						I					E		E				
Walnut Creek Wash	180701060402	P*				I						I					E						E
Big Dalton Wash	180701060402	P*				I						P					P						
Big Dalton Canyon Creek	180701060402	P*				I						I					E						E
Mystic Canyon	180701060402	P*				I						I					E						
Big Dalton Reservoir	180701060402	P*				E						E					E						
Bell Canyon Creek	180701060402	P*				I						I					E						
Little Dalton Wash	180701060402	P*				I						P					P						
Little Dalton Canyon Creek	180701060402	P*				I						I					E						E
San Dimas Wash (lower) (Big Dalton wash to Ham Canyon)	180701060402	P*				I						I					E		E				
San Dimas Wash (upper) (above Ham Canyon)	180701060401	P*				E						I					E						
San Dimas Reservoir	180701060401	E*				E						E	E				E						
San Dimas Canyon Creek	180701060401	E*				E						E	E				E						E
West Fork San Dimas Canyon	180701060401	E*				E						E	P				E						E
Wolfskill Canyon	180701060401	E*				E						E	P				E		E				E
Puddingstone Reservoir	180701060402	E*			E	E						E	E				E		E				
Live Oak Wash	180701060402	E*				I	I					I					E						
Live Oak Creek	180701060402	E*				I	I					I					E						
Live Oak Reservoir	180701060402	E*				E	E					E					E						
Puddingstone Wash	180701060402	E*				I						I					E						
Marshall Creek and Wash (Puddingstone Reservoir to Via Arroyo)	180701060402	E*				I						I					E						

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.
c: Coastal waterbodies which are also listed in Coastal Features Table (2-3) or in Wetlands Table (2-4).
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f:Aquatic organisms utilize all bays, estuaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
w: These areas are engineered channels. All references to Tidal Prisms in Regional Board documents are functionally equivalent to estuaries.
u: This reservoir is covered and thus inaccessible.

Table 2-1. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
SAN GABRIEL RIVER WATERSHED (cont.)																							
Marshall Creek and Wash (above Via Arroyo)	180701060402	E*				I	I					I					E		E				E
Emerald Creek And Wash	180701060402	E*				I	I					I					E						
San Gabriel River Reach 4 (Ramona Blvd. to Santa Fe Dam)	180701060601	P*				I						I					E						
Santa Fe Flood Control Basin	180701060601	P*				I						I					E						E
UPPER SAN GABRIEL RIVER TRIBUTARIES																							
San Gabriel River Reach 5 (Santa Fe Dam to Huntington Dr.)	180701060601	P*				I						I					E						
San Gabriel River Reach 5 (Huntington Dr. to Van Tassel Canyon)	180701060601	E	E	E	E	E						E	E				E		E	<del>			
San Gabriel River Reach 5 (Van Tassel canyon to San Gabriel Reservoir)	180701060601	E	E	E	E	E						E	E				E		E		E		E
Bradbury Canyon Creek	180701060601	P*				I						I					E						
Sprinks Canyon Creek	180701060601	P*				I						I					E						
Maddock Canyon Creek	180701060601	P*				I						I					E						
Van Tassel Canyon	180701060601	P*				I						I					E		E				
Fish Canyon Creek	180701060601	P*	I			E						E					E		E		E		E
Roberts Canyon Creek	180701060601	P*				I						I					E		E				E
Morris Reservoir	180701060601	E	E	E	E	E			E			E	E				E				E		
San Gabriel Reservoir	180701060601	E	E	E	E	E			E			E	E				E						
East Fork San Gabriel River (San Gabriel Reservoir to Fish Fork)	180701060301	P*				E						E	E				E		E		E		E
East Fork San Gabriel River (above Fish Fork)	180701060303	P*				E						E	E				E		E		E		E
Cattle Canyon Creek	180701060302	P*				E						E	E				E		E		E		E
Coldwater Canyon Creek	180701060302	P*				E						E	E				E		E		E		E
Cow Canyon Creek	180701060302	P*				E						E	E				E		E		E		E
Allison Gulch	180701060303	P*				E						E	E				E				E		E
Fish Fork	180701060301	P*				E						E	E				E				E		E
West Fork San Gabriel River (San Gabriel Reservoir to Bear Creek)	180701060205	P*				E						E	E				E		E		E		E
West Fork San Gabriel River (above Bear Creek)	180701060202	P*				E						E	E				E		E		E		E
North Fork San Gabriel River	180701060204	P*				E						E	E				E		E		E		E
Bichota Canyon	180701060204	P*				E						E	E				E		P		E		
Coldbrook Creek	180701060204	P*				I						I					E				E		
Soldier Creek	180701060204	P*				I						I					E				E		
Cedar Creek	180701060204	P*				E						E	E				E		E		E		E
Crystal Lake	180701060204	P*										E	E				E				E		
Bear Creek	180701060205	P*				E						E	E				E		E		E		E
Cogswell Reservoir	180701060202	P*				E						E	E				E				E		
Devils Canyon Creek	180701060201	P*				E						E	E				E				E		E
ISLAND WATERCOURSES																							
Anacapa Island	180600140203	P*										P					E		E				
San Nicolas Island	180701070001	P*										P					E		Eaa				
Santa Barbara Island	180701070003	P*										P					E		E				
Santa Catalina Island	180701070002	E*				E						E					E		E				
Middle Ranch System	180701070003	P*				E						E					E		E				
San Clemente Island	180701070004	E*				E						E					E		E				
SAN ANTONIO CREEK WATERSHED [ab]																							
San Antonio Dam And Reservoir	180702030701	E*				E						E					E						
San Antonio Canyon Creek	180702030701	E		E	E	E			E			E	E				E				E		

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.
aa: Habitat of the Channel Island Fox.
ab: This watershed is also in Region 8 (801.23).

Table 2-1a. Beneficial Uses of Inland Surface Waters.

WATERSHED[a]	WBD No.	REC1	LREC-1	REC2	High Flow Suspension
VENTURA COUNTY COASTAL STREAMS					
Los Sauces Creek	180701010202	I		I	
Poverty Canyon	180701010202	I		I	
Madranio Canyon	180701010202	I		I	
Javon Canyon	180701010202	I		I	
Padre Juan Canyon	180701010202	I		I	
McGrath Lake	180701010202	Ed		Ed	
Big Sycamore Canyon Creek	180701040201	I		I	
Little Sycamore Canyon Creek	180701040202	I		I	
VENTURA RIVER WATERSHED					
Ventura River Estuary [c]	180701010106	E		E	
Ventura River Reach 1 (Ventura River Estuary to Main St.)	180701010106	E		E	
Ventura River Reach 2 (Main St. to Weldon Canyon)	180701010106	E		E	
Cañada Larga	180701010106	I		I	
Lake Casitas	180701010105	Ph		E	
Lake Casitas tributaries	180701010105	E		E	
Ventura River Reach 3 (Weldon Canyon to Casitas Vista Rd.)	180701010106	E		E	
Ventura River Reach 4 (Casitas Vista Rd. to San Antonio Creek)	180701010106	E		E	
Ventura River Reach 4 (San Antonio Creek to Camino Cielo Rd.)	180701010104	E		E	
Coyote Creek	180701010105	P			
San Antonio Creek (Ventura River Reach 4 to Lion Creek)	180701010106	E		E	
San Antonio Creek (above Lion Creek)	180701010103	E		E	
Lion Creek	180701010103	I		I	
Reeves Creek	180701010103	I		I	
Mirror Lake	180701010104	P		E	
Ojai Wetland	180701010104	P		E	
Ventura River Reach 5 (above Camino Cielo Rd.)	180701010104	E		E	
Matilija Creek Reach 1 (Ventura River Reach 5 to Matilija Reservoir)	180701010101	E		E	
Matilija Creek Reach 2 (above Matilija Reservoir)	180701010104	E		E	
Murietta Canyon Creek	180701010101	E		E	
North Fork Matilija Creek	180701010102	E		E	
Matilija Reservoir	180701010101	E		E	

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P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
c: Coastal waterbodies which are also listed in inland Surface Waters Tables (2-1) or in Wetlands Table (2-4).
d: Limited public access precludes full utilization.
h: Water contact recreational activities prohibited by Casitas MWD.

Table 2-1a. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	REC1	LREC-1	REC2	High Flow Suspension
SANTA CLARA RIVER WATERSHED					
Santa Clara River Estuary (Ends at Harbor Blvd.) [c]	180701020904	E		E	
Santa Clara River Reach 1					
Santa Clara River (Estuary to Highway 101 bridge)	180701020904	E		E	
Santa Clara River Reach 2					
Santa Clara River (Highway 101 bridge to Ellsworth Barranca)	180701020904	E		E	
Santa Clara River (Ellsworth Barranca to Freeman Diversion)	180701020903	E		E	
Santa Clara River Reach 3					
Santa Clara River (Freeman Diversion Dam to Santa Paula Creek)	180701020903	Ed		E	
Santa Clara River (Santa Paula Creek to Sespe Creek)	180701020902	Ed		E	
Santa Clara River (Sespe Creek to A Street, Fillmore)	180701020802	Ed		E	
Santa Clara River Reach 4A					
Santa Clara River (A Street, Fillmore to Piru Creek)	180701020802	E		E	
Santa Clara River Reach 4B					
Santa Clara River (Piru Creek to Blue Cut gaging station)	180701020403	E		E	
Santa Clara River Reach 5					
Santa Clara River (Blue Cut gaging station to West Pier Highway 99)	180701020403	E		E	
Santa Clara River Reach 6					
Santa Clara River (West Pier Highway 99 to Bouquet Canyon Rd.)	180701020403	E		E	
Santa Clara River Reach 7					
Santa Clara River (Bouquet Canyon Rd. to Lang gaging station)	180701020107	E		E	
Santa Clara River Reach 8					
Soledad Canyon (Lang gaging station to Agua Dulce Canyon Creek)	180701020107	E		E	
Soledad Canyon (Agua Dulce Canyon Creek to Aliso Canyon Creek)	180701020105	E		E	
Soledad Canyon (above Aliso Canyon Creek)	180701020102	E		E	
Santa Clara River Reach 9					
Santa Paula Creek (above Santa Paula Water Works Diversion Dam)	180701020901	E		E	
Santa Clara River Reach 10					
Sespe Creek (gaging station below Little Sespe Creek to Hot Springs Canyon)	180701020705	E		E	
Sespe Creek (Hot Springs Canyon to Piedra Blanca Creek)	180701020703	E		E	
Sespe Creek (Piedra Blanca Creek to Potrero John Creek)	180701020702	E		E	
Sespe Creek (above Potrero John Creek)	180701020701	E		E	
Santa Clara River Reach 11					
Piru Creek (gaging station below Santa Felicia Dam to Agua Blanca Creek)	180701020603	E		E	
Piru Creek (Agua Blanca Creek to Pyramid Lake)	180701020602	E		E	
Piru Creek (Pyramid Lake to Snowy Creek)	180701020508	E		E	
Piru Creek (Snowy Creek to Lockwood Creek)	180701020505	E		E	
Piru Creek (above Lockwood Creek)	180701020502	E		E	
Santa Paula Creek (Santa Clara River R4A to Santa Paula Water Works Diversion Dam)	180701020901	E		E	
Sisar Creek	180701020901	E		E	

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P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
c: Coastal waterbodies which are also listed in inland Surface Waters Tables (2-1) or in Wetlands Table (2-4).
d: Limited public access precludes full utilization.

Table 2-1a. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	REC1	LREC-1	REC2	High Flow Suspension
SANTA CLARA RIVER WATERSHED (Cont.)					
Sespe Creek (Santa Clara River R3 to gaging station below Little Sespe Creek)	180701020706	E		E	
Timber Creek	180701020703	E		E	
Bear Canyon	180701020703	E		E	
Trout Creek	180701020703	E		E	
Piedra Blanca Creek	180701020703	E		E	
Lion Canyon	180701020702	E		E	
Rose Valley Creek	180701020702	E		E	
Howard Creek	180701020702	E		E	
Tule Creek	180701020702	P		E	
Potrero John Creek	180701020701	E		E	
Hopper Creek	180701020801	E		E	
Piru Creek (Santa Clara River R4A to Santa Paula Water Works Diversion Dam)	180701020604	E		E	
Lake Piru	180701020603	E		E	
Lake Piru	180701020603	E		E	
Pyramid Lake	180701020509	E		E	
Gorman Creek	180701020507	I		I	
Canada de los Alamos	180701020506	I		I	
Lockwood Creek	180701020504	I		I	
Lockwood Creek	180701020504	I		I	
Tapo Canyon	180701020403	P		E	
Castaic Creek (Santa Clara River R5 to Castaic Lake)	180701020306	I		E	
Castaic Creek (Castaic Lake to Fish Canyon)	180701020305	I		E	
Castaic Creek (above Fish Canyon)	180701020304	I		E	
Castaic Lagoon	180701020306	E		E	
Castaic Lake	180701020305	E		E	
Castaic Lake	180701020304	E		E	
Elderberry Forebay	180701020305	Ek		E	
Elizabeth Lake Canyon	180701020304	I		E	
San Francisquito Canyon [l]	180701020402	I		I	
Drinkwater Reservoir	180701020402	Pk		E	
South Fork Santa Clara River	180701020401	I		I	
Bouquet Canyon (Santa Clara River R6 to Vasquez Canyon)	180701020401	Em		E	
Bouquet Canyon (above Vasquez Canyon)	180701020401	Em		E	
Dry Canyon Creek	180701020202	I		I	
Dry Canyon Reservoir [j]	180701020201	Pk		E	
Bouquet Reservoir	180701020201	Pk		E	
Mint Canyon Creek Reach 1 (Santa Clara River R7 to Rowher Canyon)	180701020106	Im		I	
Mint Canyon Creek Reach 2 (above Rowher Canyon)	180701020106	Im		I	
Agua Dulce Canyon Creek (Santa Clara River R8 to Escondido Canyon Rd.)	180701020104	I		I	
Agua Dulce Canyon Creek (above Escondido Canyon Rd.)	180701020104	I		I	
Aliso Canyon Creek	180701020101	E		E	
Lake Hughes	180701020301	E		E	
Munz Lake	180701020301	E		E	
Lake Elizabeth	180701020301	E		E	

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
k: Public access to reservoir and its surrounding watershed is prohibited by Los Angeles County Department of Public Works.
l: The majority of the reach is intermittent; there is a small area of rising ground water creating perennial flow.
m: Access prohibited by Los Angeles Department in the concrete-channelized areas.
j: Out of service.

Table 2-1a. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	REC1	LREC-1	REC2	High Flow Suspension
CALLEGUAS-CONEJO CREEK WATERSHED					
Calleguas Creek Estuary [c]	180701030107	Pn		E	
Calleguas Creek Reach 1					
Mugu Lagoon [c]	180701030102	Pn		E	
Calleguas Creek Reach 2					
Calleguas Creek (Estuary to Potrero Rd.)	180701030107	E		E	
Calleguas Creek Reach 3					
Calleguas Creek (Potrero Rd. to Conejo Creek)	180701030107	Eq		E	
Calleguas Creek Reach 4					
Revolon Slough (Calleguas Creek Rch 2 to Pleasant Valley Rd.)	180701030107	Eq		E	
Revolon Slough (Pleasant Valley Rd. to Central Ave.)	180701030106	Eq		E	
Calleguas Creek Reach 5					
Beardsley Channel (above Central Ave.)	180701030106	E		E	
Calleguas Creek Reach 6					
Arroyo Las Posas (Calleguas Creek Rch 3 to Long Canyon)	180701030103	E		E	
Arroyo Las Posas (Long Canyon to Hitch Rd.)	180701030103	E		E	
Calleguas Creek Reach 7					
Arroyo Simi (Hitch Rd. to Happy Camp Canyon)	180701030103	I		I	
Arroyo Simi (Happy Camp Canyon to Alamos Canyon)	180701030102	I		I	
Arroyo Simi (Alamos Canyon to Tapo Canyon Creek)	180701030102	I		I	
Arroyo Simi (above Tapo Canyon Creek)	180701030101	I		I	
Calleguas Creek Reach 8					
Tapo Canyon Creek (above Arroyo Simi)	180701030101	I		I	
Calleguas Creek Reach 9A					
Conejo Creek (Camrosa Diversion to Camarillo Rd.)	180701030105	Eq		E	
Conejo Creek (Camarillo Rd. to Arroyo Santa Rosa)	180701030105	I		I	
Calleguas Creek Reach 9B					
Conejo Creek (Calleguas Creek Rch 3 to Camrosa Diversion)	180701030105	Eq		E	
Calleguas Creek Reach 10					
Arroyo Conejo (Conejo Creek to North Fork Arroyo Conejo)	180701030105	I		I	
Calleguas Creek Reach 11 (Arroyo Santa Rosa)					
Arroyo Santa Rosa (above confl. with Conejo Creek)	180701030105	I		I	
Calleguas Creek Reach 12					
North Fork Arroyo Conejo (above confl. with Arroyo Conejo)	180701030104	E		E	
Calleguas Creek Reach 13					
Arroyo Conejo (above confl. with North Fork Arroyo Conejo)	180701030104	I		I	
Gillibrand Canyon Creek (Tapo Canyon Creek to Windmill Canyon)	180701030101	I		I	
Gillibrand Canyon Creek (above Windmill Canyon)	180701030101	I		I	
Lake Bard (Wood Ranch Reservoir)	180701030102	Pr		Er	

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
c: Coastal waterbodies which are also listed in Coastal Features Table (2-3) or in Wetlands table (2-4).
n: Area is currently under control of the Navy: swimming is prohibited.
q: Whenever flow conditions are suitable.
r: Public access prohibited by Calleguas MWD.

Table 2-1a. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	REC1	LREC-1	REC2	High Flow Suspension
LOS ANGELES COUNTY COASTAL STREAMS					
Arroyo Sequit	180701040202	E		E	
San Nicholas Canyon Creek	180701040202	I		I	
Los Alisos Canyon Creek	180701040202	I		I	
Lachusa Canyon Creek	180701040202	I		I	
Encinal Canyon Creek	180701040202	I		I	
Trancas Canyon Creek	180701040203	Em		E	
Dume Lagoon [c]	180701040203	E		E	
Dume Creek (Zuma Canyon)	180701040203	E		E	
Ramirez Canyon Creek	180701040204	I		I	
Escondido Canyon Creek	180701040204	I		I	
Latigo Canyon Creek	180701040204	I		I	
Solstice Canyon Creek	180701040204	E		E	
Puerco Canyon Creek	180701040204	I		I	
Corral Canyon Creek	180701040204	I		I	
Carbon Canyon Creek	180701040403	I		I	
Las Flores Canyon Creek	180701040403	I		I	
Piedra Gorda Canyon Creek	180701040403	I		I	
Pena Canyon Creek	180701040403	I		I	
Tuna Canyon Creek	180701040403	I		I	
Topanga Lagoon [c]	180701040401	E		E	
Topanga Canyon Creek	180701040401	I		I	
Santa Ynez Canyon	180701040403	I		E	
Santa Ynez Lake (Lake Shrine)	180701040403	Pk		E	
Santa Monica Canyon Channel	180701040402	Ps		I	
Rustic Canyon Creek	180701040402	I		I	
Sullivan Canyon Creek	180701040402	I		I	
Mandeville Canyon Creek	180701040402	I		I	
Coastal Streams of Palos Verdes	180701040500	I		I	
Canyon Streams of Palos Verdes	180701040701	I		I	
Bixby Slough	180701040701	E		E	
Machado Lake	180701040701	E		E	
Madrona Marsh	180701040701	P		E	
Stone Canyon Reservoir	180701040300	Pk		E	
Hollywood Reservoir	180701040300	Pk		E	
Franklin Canyon Reservoir	180701040300	Pk,u			
Upper Franklin Canyon Reservoir	180701040300	P		E	

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
c: Coastal waterbodies which are also listed in Coastal Features Table (2-3) or in Wetlands table (2-4).
k: Public access to reservoir and its surrounding watershed is prohibited by Los Angeles County Department of Public Works.
m: Access prohibited by Los Angeles County Department in the concrete-channelized areas.
s: Access prohibited by Los Angeles County Department of Public works.
u: This reservoir is covered and thus inaccessible.

Table 2-1a. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	REC1	LREC-1	REC2	High Flow Suspension
MALIBU CREEK WATERSHED					
Malibu Lagoon [c]	180701040104	E		E	
Malibu Creek	180701040104	E		E	
Cold Creek	180701040104	E		E	
Las Virgenes Creek	180701040103	Em		E	
Century Reservoir	180701040104	E		E	
Malibou Lake	180701040104	E		E	
Medea Creek Reach 1 (Malibou Lake to Lindero Creek Reach 1)	180701040102	Im		I	
Medea Creek Reach 2 (above Lindero Creek Reach 1)	180701040104	Em		E	
Lindero Creek Reach 1 (Medea Creek Reach 1 to Lake Lindero)	180701040102	I		I	
Lindero Creek Reach 2 (above Lake Lindero)	180701040102	I		I	
Triunfo Creek Reach 1 (Malibou Lake to Lobo Canyon)	180701040101	Im		I	
Triunfo Creek Reach 2 (Lobo Canyon to Westlake Lake)	180701040104	Im		I	
Westlake Lake	180701040101	E		E	
Potrero Valley Creek	180701040101	I		I	
Lake Eleanor Creek	180701040101	I		I	
Lake Eleanor	180701040101	E		E	
Las Virgenes (Westlake) Reservoir	180701040101	Pk,v		E	
Hidden Valley Creek	180701040101	I		I	
Lake Sherwood	180701040101	E		E	
BALLONA CREEK WATERSHED					
Ballona Creek Estuary (ends at Centinela Creek) [c,w]	180701040300	E		E	
Ballona Lagoon/ Venice Canals [c]	180701040403	E		E	
Ballona Wetlands [c]	180701040300	E		E	
Del Rey Lagoon [c]	180701040500	E		E	
Ballona Creek Reach 2 (Estuary to National Blvd.)	180701040300	Ps,au	E	E	Yav
Ballona Creek Reach 1 (above National Blvd.)	180701040300	Ps,au		E	Yav
LOS CERRITOS CHANNEL WATERSHED					
Los Cerritos Wetlands [c]	180701040702	E		E	
Los Cerritos Channel Estuary (Ends at Anaheim Rd.) [c]	180701040702	Es		E	
Sims Pond	180701040702	P		E	
Los Cerritos Channel	180701040702	P		I	
Colorado Lagoon	180701040702	E		E	

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).
au: The REC-1use designation does not apply to recreational activities associated with the swimmable goal as expressed in the Federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use in the Basin Plan, or the associated bacteriological objectives set to protect those activities. However, water quality objectives set to protect other REC-1 uses associated with the fishable goal as expressed in the Federal Clean Water Act section 1010(a)(2) shall remain in effect for waters where the (au) footnote appears.

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
c: Coastal waterbodies which are also listed in Coastal Features Table (2-3) or in Wetlands table (2-4).
k: Public access to reservoir and its surrounding watershed is prohibited by Los Angeles County Department of Public Works.
m: Access prohibited by Los Angeles County Department in the concrete-channelized areas.
s: Access prohibited by Los Angeles County Department of Public Works.
v: Public water supply reservoir. Owner prohibits public entry.
w: These areas are engineered channels. All references to Tidal Prisms in Regional Board documents are functionally equivalent to estuaries.

av: The High Flow Suspension only applies to water contact recreational activities associated with the swimmable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use, non-contact water recreation involving incidental water contact regulated under the REC-2 use, and the associated bacteriological objectives set to protect those activities. Water quality objectives set to protect (1) other recreational uses associated with the fishable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use and (2) other REC-2 uses (e.g., uses involving the aesthetic aspects of water) shall remain in effect at all times for waters where the (av) footnote appears.
** The dividing line between "Ballona Creek" and "Ballona Creek to Estuary" is the point at which the vertical channel walls transition to sloping walls.

Table 2-1a. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	REC1	LREC-1	REC2	High Flow Suspension
DOMINGUEZ CHANNEL WATERSHED					
Dominguez Channel Estuary (Ends at Vermont Ave.) [c,w]	180701060102	Es		E	
Dominguez Channel (Estuary to 135th St.)	180701060102	Ps		E	Yav
Dominguez Channel (above 135th St)	180701060101	Ps		E	Yav
LOS ANGELES RIVER WATERSHED					
Los Angeles River Estuary (Ends at Willow St.) [c,w]	180701050404	E		E	
Los Angeles River Reach 1 (Estuary to Carson St.)	180701050404	Es		E	Yav
Compton Creek	180701050404	Es		E	
Los Angeles River Reach 2 (Carson St. to Rio Hondo Reach 1)	180701050404	Es		E	Yav
Los Angeles River Reach 2 (Rio Hondo Reach 1 to Figueroa St.)	180701050403	Es		E	Yav
Rio Hondo Reach 1 (Los Angeles River Reach 2 to Santa Ana Freeway)	180701050403	Pm		E	Yav
Rio Hondo Reach 2 (Santa Ana Freeway to Whittier Narrows Dam)	180701050403	Im		E	Yav
Rio Hondo Reach 3 (above Whittier Narrows Dam)	180701050402	Im		E	Yav
Alhambra Wash	180701050403	Pm		I	
Rubio Wash	180701050403	Im		I	Yav
Rubio Canyon	180701050401	I		I	
Eaton Wash	180701050401	I		I	
Eaton Wash (below dam) (Rio Hondo Reach 3 to Eaton Dam)	180701050401	Im		I	Yav
Eaton Wash (above dam) (Eaton Dam to Mount Wilson Toll Rd.)	180701050401	I		I	
Eaton Reservoir	180701050401	P		Id	
Eaton Canyon Creek (above Mount Wilson Toll Rd.)	180701050401	E		E	
Arcadia Wash	180701050302	Pm		I	Yav
Arcadia Wash	180701050302	Pm		I	Yav
Santa Anita Wash (lower) (Rio Hondo Reach 3 to Elkins Ave.)	180701050302	Pm		E	Yav
Santa Anita Wash (upper) (Elkins Ave. to Big Santa Anita Reservoir)	180701050302	Em		E	
Little Santa Anita Canyon Creek	180701050302	I		I	
Big Santa Anita Reservoir	180701050302	Px		E	
Santa Anita Canyon Creek	180701050302	E		E	
Winter Creek	180701050302	I		E	
East Fork Santa Anita Canyon	180701050302	E		E	
Sawpit Wash	180701050302	Im		I	Yav
Sawpit Canyon Creek	180701050302	I		I	
Sawpit Reservoir	180701050302	Px		I	
Monrovia Canyon Creek	180701050302	I		I	
Arroyo Seco Reach 1 (Los Angeles River Reach 2 to Holly St.)	180701050209	I		I	
Arroyo Seco Reach 2 (Holly St. to Devils Gate Dam)	180701050209	Im		I	
Devils Gate Reservoir (lower)	180701050209	Im		I	
Devils Gate Reservoir (upper)	180701050209	I		I	
Arroyo Seco Reach 3 (above Devils Gate Dam)	180701050209	Em		E	
Millard Canyon Creek	180701050209	E		E	
El Prieto Canyon Creek	180701050209	I		I	
Little Bear Canyon Creek	180701050209	I		I	
Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)	180701050402	E		E	Yav
Verdugo Wash Reach 1 (Los Angeles River Rch 3 to Verdugo Rd./Towne St.)	180701050207	Pm		I	Yav
Verdugo Wash Reach 2 (above Verdugo Rd. @ Towne St.)	180701050207	Pm		I	Yav
Halls Canyon Channel	180701050207	Im		I	
Snover Canyon	180701050207	Im		I	Yav
Pickens Canyon	180701050207	Im		I	
Shields Canyon	180701050207	Im		I	Yav

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.

Footnotes are consistent for all beneficial use tables.
d: Limited public access precludes full utilization.
m: Access prohibited by Los Angeles County Department in the Concrete-channelized areas.
s: Access prohibited by Los Angeles County Department of Public Works.
x: Owner prohibits entry.

av: The High Flow Suspension only applies to water contact recreational activities associated with the swimmable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use, non-contact water recreation involving incidental water contact regulated under the REC-2 use, and the associated bacteriological objectives set to protect those activities. Water quality objectives set to protect (1) other recreational uses associated with the fishable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use and (2) other REC-2 uses (e.g., uses involving the aesthetic aspects of water) shall remain in effect at all times for waters where the (av) footnote appears.

Table 2-1a. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	REC1	LREC-1	REC2	High Flow Suspension
LOS ANGELES RIVER WATERSHED (cont.)					
Dunsmore Canyon Creek	180701050207	I		I	
Burbank Western Channel	180701050208	Pm		I	Yav
La Tuna Canyon Lateral and Creek	180701050208	Im		I	
Tujunga Wash	180701050208	Pm		I	Yav
Hansen Flood Control Basin & Lakes	180701050105	E		E	
Lopez Canyon Creek	180701050105	Im		I	
Little Tujunga Canyon Creek	180701050104	I		E	
Kagel Canyon Creek	180701050104	Im		I	
Big Tujunga Canyon Creek (Hansen Flood Control Basin to Big Tujunga Reservoir)	180701050105	E		E	
Big Tujunga Canyon Creek (above Big Tujunga Reservoir)	180701050103	E		E	
Upper Big Tujunga Canyon Creek	180701050103	E		E	
Haines Canyon Creek	180701050105	Im		I	Yav
Vasquez Creek	180701050105	E		E	
Clear Creek	180701050105	E		E	
Big Tujunga Reservoir	180701050105	Pk		E	
Mill Creek	180701050102	E		E	
Los Angeles River Reach 4 (Riverside Dr. to Sepulveda Dam)	180701050208	E		E	Yav
Pacoima Wash	180701050206	Pm		E	
Pacoima Reservoir	180701050205	E		E	
Pacoima Canyon Creek	180701050205	E		E	
May Canyon Creek	180701050206	I		E	
Wilson Canyon Creek	180701050206	Em		E	Yav
Stetson Canyon Creek	180701050204	Pm		E	Yav
Los Angeles River Reach 5 (Sepulveda Dam to Balboa Blvd.)	180701050208	E		E	Yav
Sepulveda Flood Control Basin	180701050208	E		E	
Bull Creek	180701050204	Im		I	
Los Angeles Reservoir	180701050204	Pk		E	
Lower Van Norman Reservoir	180701050204	E		E	
Upper Van Norman Reservoir	180701050204	Pk,u			
Los Angeles River Reach 6 (above Balboa Blvd.)	180701050208	E		E	Yav
Caballero Creek	180701050208	Im		I	Yav
Aliso Canyon Wash (Los Angeles River Reach 6 to State Hwy 118)	180701050203	Im		I	Yav
Aliso Canyon Creek (above State Hwy 118)	180701050203	Im		I	Yav
Limekiln Canyon Wash	180701050203	Im		I	
Browns Canyon Wash (Los Angeles River Reach 6 to State Hwy 118)	180701050202	Im		I	
Browns Canyon Creek (above State Hwy 118)	180701050202	Im		I	
Arroyo Calabasas	180701050201	Pm		I	Yav
Dry Canyon Creek	180701050201	Im		I	
McCoy Canyon Creek	180701050201	I		I	
Bell Creek	180701050201	Im		I	Yav
Chatsworth Reservoir [y]	180701050201	P		E	
Dayton Canyon Creek	180701050201	I		I	

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
k: Public access to reservoir and its surrounding watershed is prohibited by Los Angeles County Department of Public Works.
m: Access prohibited by Los Angeles County Department in the Concrete-channelized areas.
u: This reservoir is covered and thus inaccessible.
y: Currently dry and no plans for restoration.

av: The High Flow Suspension only applies to water contact recreational activities associated with the swimmable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use, non-contact water recreation involving incidental water contact regulated under the REC-2 use, and the associated bacteriological objectives set to protect those activities. Water quality objectives set to protect (1) other recreational uses associated with the fishable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use and (2) other REC-2 uses (e.g., uses involving the aesthetic aspects of water) shall remain in effect at all times for waters where the (av) footnote appears.

Table 2-1a. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	REC1	LREC-1	REC2	High Flow Suspension
LOS ANGELES RIVER WATERSHED (cont.)					
ISOLATED LAKES AND RESERVOIRS:					
Eagle Rock Reservoir	180701050402	Pk,u			
Echo Lake	180701040200	P		E	
El Dorado Lakes	180701060606	E		E	
Elysian Reservoir	180701050403	Pk		E	
Encino Reservoir	180701050208	Pk		E	
Ivanhoe Reservoir	180701040200	Pk		E	
Lincoln Park Lake Silver Reservoir	180701050403	P		E	
Silver Lake Reservoir	180701040200	Pk		E	
Toluca Lake	180701050208	Pk		E	
SAN GABRIEL RIVER WATERSHED					
San Gabriel River Estuary (Ends at Willow St.) [c,w]	180701060606	E		E	
Coyote Creek (San Gabriel River Estuary to La Canada Verde Creek)	180701060506	Pm		I	Yav
Coyote Creek (above La Canada Verde Creek)	180701060603	Pm		I	Yav
San Gabriel River Reach 1 (San Gabriel River Estuary to Firestone Blvd.)	180701060606	Em		E	Yav
San Gabriel River Reach 2 (Firestone Blvd. to Whittier Narrows Dam)	180701060606	Em		E	Yav
Whittier Narrows Flood Control Basin	180701060303	E		E	
Legg Lake	180701060303	E		E	
San Gabriel River Reach 3 (Whittier Narrows Dam to San Jose Creek)	180701060601	Im		I	Yav
San Gabriel River Reach 3 (San Jose Creek to Ramona Blvd.)	180701060601	Im		I	Yav
San Jose Creek Reach 1 (San Gabriel River Reach 3 to Temple Ave.)	180701060502	Pm		I	Yav
San Jose Creek Reach 2 (Temple Ave. to Thompson Wash)	180701060501	Pm		I	Yav
Puente Creek	180701060502	P		I	
Thompson Wash (San Jose Creek Reach 2 to Web Canyon)	180701060501	Im		I	Yav
Thompson Creek (above Web Canyon)	180701060501	I		I	
Thompson Creek Reservoir	180701060501	Px		I	
Walnut Creek Wash	180701060402	Im		I	
Big Dalton Wash	180701060402	Pm		I	Yav
Big Dalton Canyon Creek	180701060402	I		I	
Mystic Canyon	180701060402	I		I	
Big Dalton Reservoir	180701060402	Px		E	
Bell Canyon Creek	180701060402	I		I	
Little Dalton Wash	180701060402	Pm		I	
Little Dalton Canyon Creek	180701060402	I		I	
San Dimas Wash (lower) (Big Dalton wash to Ham Canyon)	180701060402	Im		I	Yav
San Dimas Wash (upper) (above Ham Canyon)	180701060401	Im		I	
San Dimas Reservoir	180701060401	Px		E	
San Dimas Canyon Creek	180701060401	E		E	
West Fork San Dimas Canyon	180701060401	E		E	
Wolfskill Canyon	180701060401	E		E	
Puddingstone Reservoir	180701060402	E		E	
Live Oak Wash	180701060402	I		I	
Live Oak Creek	180701060402	I		I	
Live Oak Reservoir	180701060402	E		E	
Puddingstone Wash	180701060402	Im		I	Yav
Marshall Creek and Wash (Puddingstone Reservoir to Via Arroyo)	180701060402	Im		I	Yav

E: Existing beneficial use

P: Potential beneficial use

I: Intermittent beneficial use

E,P, and I: shall be protected as required.

av: The High Flow Suspension only applies to water contact recreational activities associated with the swimmable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use, non-contact water recreation involving incidental water contact regulated under the REC-2 use, and the associated bacteriological objectives set to protect those activities. Water quality objectives set to protect (1) other recreational uses associated with the fishable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use and (2 other REC-2 uses (e.g., uses involving the aesthetic aspects of water) shall remain in effect at all times for waters where the (av) footnote appears.

Footnotes are consistent for all beneficial use tables.

m: Access prohibited by Los Angeles County Department in the Concrete-channelized areas.

u: This reservoir is covered and thus inaccessible.

x: Owner prohibits entry.

w: These areas are engineered channels. All references to Tidal Prisms in Regional Board documents are functionally equivalent to estuaries.

k: Public access to reservoir and its surrounding watershed is prohibited by Los Angeles County Department of Public Works.

Table 2-1a. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	REC1	LREC-1	REC2	High Flow Suspension
SAN GABRIEL RIVER WATERSHED (cont.)					
Marshall Creek and Wash (above Via Arroyo)	180701060402	Im		I	
Emerald Creek And Wash	180701060402	Im		I	Yav
San Gabriel River Reach 4 (Ramona Blvd. to Santa Fe Dam)	180701060601	Im		I	Yav
Santa Fe Flood Control Basin	180701060601	P		I	
UPPER SAN GABRIEL RIVER TRIBUTARIES					
San Gabriel River Reach 5 (Santa Fe Dam to Huntington Dr.)	180701060601	Im		I	Yav
San Gabriel River Reach 5 (Huntington Dr. to Van Tassel Canyon)	180701060601	E		E	
San Gabriel River Reach 5 (Van Tassel Canyon to San Gabriel Reservoir)	180701060601	E		E	
Bradbury Canyon Creek	180701060601	I		I	
Sprinks Canyon Creek	180701060601	I		I	
Maddock Canyon Creek	180701060601	I		I	
Van Tassel Canyon	180701060601	I		I	
Fish Canyon Creek	180701060601	E		E	
Roberts Canyon Creek	180701060601	I		I	
Morris Reservoir	180701060601	P		E	
San Gabriel Reservoir	180701060601	E		E	
East Fork San Gabriel River (San Gabriel Reservoir to Fish Fork)	180701060301	E		E	
East Fork San Gabriel River (above Fish Fork)	180701060303	E		E	
Cattle Canyon Creek	180701060302	E		E	
Coldwater Canyon Creek	180701060302	E		E	
Cow Canyon Creek	180701060302	E		E	
Allison Gulch	180701060303	E		E	
Fish Fork	180701060301	E		E	
West Fork San Gabriel River (San Gabriel Reservoir to Bear Creek)	180701060205	E		E	
West Fork San Gabriel River (above Bear Creek)	180701060202	E		E	
North Fork San Gabriel River	180701060204	E		E	
Bichota Canyon	180701060204	E		E	
Coldbrook Creek	180701060204	I		I	
Soldier Creek	180701060204	I		I	
Cedar Creek	180701060204	E		E	
Crystal Lake	180701060204	E		E	
Bear Creek	180701060205	E		E	
Cogswell Reservoir	180701060202	E		E	
Devils Canyon Creek	180701060201	E		E	
ISLAND WATERCOURSES					
Anacapa Island	180600140203	P			
San Nicolas Island	180701070001	P			
Santa Barbara Island	180701070003	E		E	
Santa Catalina Island	180701070002	E		E	
Middle Ranch System	180701070003	E		E	
San Clemente Island	180701070004	E		E	
SAN ANTONIO CREEK WATERSHED [ab]					
San Antonio Dam And Reservoir		E		E	
San Antonio Canyon Creek		E		E	

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
m: Access prohibited by Los Angeles County Department in the Concrete-channelized areas.
ab: This watershed is also in Region 8 (801.23).

av: The High Flow Suspension only applies to water contact recreational activities associated with the swimmable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use, non-contact water recreation involving incidental water contact regulated under the REC-2 use, and the associated bacteriological objectives set to protect those activities. Water quality objectives set to protect (1) other recreational uses associated with the fishable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use and (2) other REC-2 uses (e.g., uses involving the aesthetic aspects of water) shall remain in effect at all times for waters where the (av) footnote appears.

Table 2-1a. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	REC1	LREC-1	REC2	High Flow Suspension
VENTURA COUNTY COASTAL FEATURE[a]	**WBD NO.**				
Nearshore ^		E		E	
Offshore Zone		E		E	
Rincon Beach	180701010201	E		E	
Ventura River Estuary c	180701010106	E		E	
Ventura Keys (Marina)	180701010202	E		E	
Ventura Marina	180701010904	E		E	
Santa Clara River Estuary c	180701010904	E		E	
Mandalay Beach	180701010201	E		E	
McGrath Lake c	180701010201	Ed		Ed	
Edison Canal Estuary	180701010201	Eao		E	
Channel Islands Harbor	180701010201	Eap		E	
Mandalay Bay (Marina)	180701010201	Eaq		E	
Port Hueneme (Harbor)	180701010201	E		E	
Ormond Beach	180701010201	E		E	
Ormond Beach Wetlands c	180701010202	E		E	
Mugu Lagoon c	180701010202	Pn		E	
Calleguas Creek Estuary c	180701010202	Pn		E	
LOS ANGELES COUNTY COASTAL FEATURE[a]					
Nearshore Zone ^		E		E	
Offshore Zone		E		E	
Nicholas Canyon Beach	180701040402	E		E	
Trancas Beach	180701040403	E		E	
Zuma County (Westward) Beach	180701040403	E		E	
Dume State Beach	180701040404	E		E	
Dume Lagoon c	180701040403	E		E	
Escondido Beach	180701040404	E		E	
Dan Blocker Memorial (Corral) Beach	180701040404	E		E	

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
^: Nearshore is defined as the zone bounded by the shoreline and a line 1000 feet from the shoreline or the 30-foot depth contours, whichever is further from the shore line. Longshore extent is from Rincon Creek to the San Gabriel River estuary.

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.
c: Coastal waterbodies which are also listed in Coastal Features Table (2-3) or in Wetlands Table (2-4).
d: Limited public access precludes full utilization.
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f:Aquatic organisms utilize all bays, estuaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
n: Area is currently under control of the Navy: swimming is prohibited.
o: Marine Habitats of the Channel islands and Mugu Lagoon serve as pinniped haul-out areas for one or more species (i.e., sea lions).
p: Habitat of the Clapper Rail.
an: Areas of Special Biological Significance (along coast from Latigo Point to Laguna Point) and Big Sycamore Canyon and Abalone Cove Ecological Reserves and Point Femin Marine Life Refuge.
ar: Areas exhibiting large shellfish populations include Malibu, Point Dume, Point Fermin, White Point and Zuma Beach.
ap: Water contact recreational activities are limited to the beach area at the harbor by Marina Authorities.
aq: Water contact recreational activities are limited by City of Oxnard to within the easement area of each home.

Table 2-1a. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	REC1	LREC-1	REC2	High Flow Suspension
LOS ANGELES COUNTY COASTAL FEATURE[a] (CONT.)	**WBD NO.**				
Puerco Beach	180701040404	E		E	
Amarillo Beach	180701040404	E		E	
Malibu Beach	180701040404	E		E	
Malibu Lagoon c	180701040404	E		E	
Carbon Beach	180701040502	E		E	
La Costa Beach	180701040502	E		E	
Las Flores Beach	180701040502	E		E	
Las Tunas Beach	180701040502	E		E	
Topanga Beach	180701040502	E		E	
Topanga Lagoon c	180701040501	E		E	
Will Rogers State Beach	180701040502	E		E	
Santa Monica Beach	180701040502	E		E	
Venice Beach	180701040502	E		E	
Marina Del Rey		E			
Harbor	180701040502	E		E	
Public Beach Areas	180701040502	E		E	
All other Areas	180701040502	P		E	
Entrance Channel	180701040502	E		E	
Ballona Creek Estuary c, w	180701040200	E		E	
Ballona Lagoon/Venice Canals c	180701040502	E		E	
Ballona Wetlands c	180701040200	E		E	
Del Rey Lagoon c	180701040601	E		E	
Dockweiler Beach	180701040601	E		E	
Manhattan Beach	180701040601	E		E	
Hermosa Beach	180701040601	E		E	
King Harbor	180701040601	E		E	
Redondo Beach	180701040601	E		E	
Torrance Beach	180701040601	E		E	
Port Vicente Beach	180701040601	E		E	
Royal Palms Beach	180701040601	E		E	

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.
c: Coastal waterbodies which are also listed in Coastal Features Table (2-3) or in Wetlands Table (2-4).
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f:Aquatic organisms utilize all bays, estuaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
ar: Areas exhibiting large shellfish populations include Malibu, Point Dume, Point Fermin, White Point and Zuma Beach.
as: Most frequently used grunion spawning beaches. Other beaches may be used as well.
w: These areas are engineered channels. All references to Tidal Prisms in Regional Board documents are functionally equivalent to estuaries.

Table 2-1a. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	REC1	LREC-1	REC2	High Flow Suspension
LOS ANGELES COUNTY COASTAL FEATURE[a] (Cont.)	**WBD NO.**				
Whites Point County Beach	180701040601	E		E	
Cabrillo Beach	180701040302	E		E	
Los Angeles - Long Beach Harbor	180701040602			E	
Outer Harbor	180701040602	E		E	
Marinas	180701040602	E		E	
Public Beach Areas	180701040602	E		E	
All Other Inner Areas	180701040602	P		E	
Dominguez Channel Estuary c,w	180701040302	E		E	
Los Angeles River Estuary c,w	180701040404	E		E	
Alamitos Bay	180701040600	E		E	
Los Cerritos Wetlands c	180701040600	E		E	
Los Cerritos Channel Estuary c	180701040600	E		E	
San Gabriel Estuary c, w	180701040506	E		E	
Long Beach Marina	180701040600	P		E	
Public Beach Areas	180701040600	E		E	
All other Areas	180701040600	P		E	
Marine Stadium	180701040600	P		E	
Long Beach	180701040600	E		E	
ISLANDS:NEARSHORE ZONES ^					
Anacapa Island	180600140203	E		E	
San Nicolas Island	180701070001	E		E	
Begg Rock Nearshore Zone	180701070001	E		E	
Santa Barbara Island	180701070003	E		E	
Santa Catalina Island	180701070003	E		E	
Santa Catalina Island	180701070002	E		E	
San Clemente Island	180701070004	E		E	

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some designations may be considered for exemption at a later date (See pages 2-3, 4 for more details).
^: Nearshore is defined as the zone bounded by the shoreline and a line 1000 feet from the shoreline or the 30-foot depth contours, whichever is further from the shore line.

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.
c: Coastal waterbodies which are also listed in Coastal Features Table (2-3) or in Wetlands Table (2-4).
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f: Aquatic organisms utilize all bays, estuaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
n: Area is currently under control of the Navy: swimming is prohibited.
p: Habitat of the Clapper Rail.
an: Areas of Special Biological Significance (along coast from Latigo Point to Laguna Point) and Big Sycamore Canyon and Abalone Cove Ecological Reserves and Point Femin Marine Life Refuge.
ar: Areas exhibiting large shellfish populations include Malibu, Point Dume, Point Fermin, White Point and Zuma Beach.
ap: Water contact recreational activities are limited to the beach area at the harbor by Marina Authorities.

Table 2-1a. Beneficial Uses of Inland Surface Waters (Continued).

WATERSHED[a]	WBD No.	REC1	LREC-1	REC2	High Flow Suspension
WETLAND[a]	**WBD No.**				
Ventura River Estuary c	180701010106	E		E	
Santa Clara River Estuary c	180701020904	E		E	
McGrath Lake c	180701030201	Ed		Ed	
Ormond Beach Wetlands c	180701030202	E		E	
Mugu Lagoon c	180701030202	Pn		E	
Dume Lagoon c	180701040403	E		E	
Malibu Lagoon c	180701040104	E		E	
Topanga Lagoon c	180701040501	E		E	
Ballona Lagoon/Venice Canals c	180701040502	E		E	
Ballona Wetlands c	180701040200	E		E	
Del Rey Lagoon c	180701040601	E		E	
Los Cerritos Wetlands c	180701060600	E		E	

*: This list may not be all inclusive. More areas may be added as information becomes available.
E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
c: Coastal waterbodies which are also listed in inland Surface Waters Table (2-1) or in Wetlands Table (2-4).
d: Limited public access precludes full utilization.
n: Area is currently under control of the Navy: swimming is prohibited.

Table 2-2 Beneficial Uses of Ground Waters.[ac]

DWR[ad] Basin No.	BASIN	MUN	IND	PROC	AGR	AQUA
	PITAS POINT AREA ae	E	E	P	E	
4-1	**UPPER OJAI VALLEY**	E	E	E	E	
4-2	**LOWER OJAI VALLEY**	E	E	E	E	
4-3	**VENTURA RIVER VALLEY**					
4-3.01	Upper Ventura	E	E	E	E	
4-3.02	Lower Ventura	P	E	P	E	
4-4	**SANTA CLARA RIVER VALLEY af**					
4-4.02	Oxnard					
4-4.02	Oxnard Forebay	E	E	E	E	
4-4.02	Confined aquifers	E	E	E	E	
4-4.02	Unconfined and perched aquifers	E	P		E	
4-4.03	Mound					
4-4.03	Confined aquifers	E	E	E	E	
4-4.03	Unconfined and perched aquifers	E	P		E	
4-4.04	Santa Paula					
4-4.04	East of Peck Road	E	E	E	E	
4-4.04	West of Peck Road	E	E	E	E	
4-4.05	Fillmore					
4-4.05	Pole Creek Fan area	E	E	E	E	
4-4.05	South side of Santa Clara River	E	E	E	E	
4-4.05	Remaining Fillmore area	E	E	E	E	E
4-4.05	Topa Topa (upper Sespe) area	P	E	P	E	
4-4.06	Piru					
4-4.06	Upper area (above Lake Piru)	P	E	E	E	
4-4.06	Lower area east of Piru Creek	E	E	E	E	
4-4.06	Lower area west of Piru Creek	E	E	E	E	
4-4.07	Santa Clara River Valley East					
4-4.07	Mint Canyon	E	E	E	E	
4-4.07	South Fork	E	E	E	E	
4-4.07	Placerita Canyon	E	E	E	E	
4-4.07	Bouquet and San Francisquito Canyons	E	E	E	E	
4-4.07	Castaic Valley	E	E	E	E	
4-4.07	Saugus Aquifer	E				
4-5	**ACTON VALLEY af**					
4-5	Acton Valley	E	E	E	E	
4-5	Sierra Pelona Valley (Agua Dulce)	E	E		E	
4-5	Upper Mint Canyon	E	E	E	E	
4-5	Upper Bouquet Canyon	E	P	P	E	
4-5	Green Valley	E	P	P	E	
4-5	Lake Elizabeth - Lake Hughes area	E	P	P	E	
4-6	**PLEASANT VALLEY ag**					
4-6	Confined aquifers	E	E	E	E	
4-6	Unconfined and perched aquifers	P	E	E	E	

DWR[ad] Basin No.	BASIN	MUN	IND	PROC	AGR	AQUA
4-7	**ARROYO SANTA ROSA VALLEY ag**	E	E	E	E	
4-8	**LAS POSAS VALLEY ag**	E	E	E	E	
4-9	**SIMI VALLEY**					
	Simi Valley Basin					
	Confined aquifers	E	E	E	E	
	Unconfined aquifers	E	E	E	E	
	Gillibrand Basin	E	E	P	E	
4-10	**CONEJO VALLEY**	E	E	E	E	
4-11	**COASTAL PLAIN OF LOS ANGELES**					
4-11.01	Santa Monica	E	E	E	E	
4-11.02	Hollywood	E	E	E	E	
4-11.03	West Coast					
4-11.03	Underlying Ports of Los Angeles & Long Beach		E	E	E	
4-11.03	Underlying El Segundo, Seaward of Barrier		E	E	E	
4-11.03	Remainder of Basin	E	E	E	E	
4-11.04	Central	E	E	E	E	
4-12	**SAN FERNANDO VALLEY**	Eah	E	E	E	
4-13	**SAN GABRIEL VALLEY ai**	E	E	E	E	
4-15	**TIERRA REJADA**	E	P	P	E	
4-16	**HIDDEN VALLEY**	E	P		E	
4-17	**LOCKWOOD VALLEY**	E	E		E	
4-18	**HUNGRY VALLEY**	E	P	E	E	
4-19	**THOUSAND OAKS AREA aj**	E	E	E	E	
4-19	Triunfo Canyon area	P	P		E	
4-19	Lindero Canyon area	P	P		E	
4-19	Las Virgenes Canyon area	P	P		E	
4-20	**RUSSELL VALLEY**	E	P		E	
4-21	**CONEJO-TIERRA REJADA VOLCANIC ak**	E			E	
4-22	**MALIBU VALLEY al**					
4-22	Camarillo area	E	P		E	
4-22	Point Dume area	E	P		E	
4-22	Malibu Valley	P	P		E	
4-22	Topanga Canyon area	P	P		E	
4-23	**RAYMOND**	E	E	E	E	
	SAN PEDRO CHANNEL ISLANDS am					
	Anacapa Island	P	P			
	San Nicolas Island	E	P			
	Santa Catalina Island	E	P		E	
	San Clemente Island	P	P			
	Santa Barbara Island	P	P			

E: Existing beneficial use
P: Potential beneficial use
See pages 2-1 to 2-3 for description of beneficial use

Footnotes are consistent for all beneficial use tables

ac: Beneficial uses for ground waters outside of the major basins listed on this table and outlined in Fig 1-9 have not been specifically listed. However, ground waters outside of the major basins are, in many cases, significant sources of water. Furthermore, ground waters outside of the major basins are either potential or existing sources of water for downgradient basins, and as such, beneficial uses in the downgradient basins shall apply to these areas.

ad: Basins are numbered according to DWR Bulletin No. 118-Update 2003 (DWR, 2003).

ae: Ground waters in the Pitas Point area (between the lower Ventura River and Rincon Point) are not considered to comprise a major basin and, accordingly, have not been designated a basin number by the DWR or outlined on Fig. 1-9.

af: Santa Clara River Valley Basin was formerly Ventura Central Basin and Acton Valley Basin was formerly Upper Santa Clara Basin (DWR, 1980)

ag: Pleasant Valley, Arroyo Santa Rosa Valley, and Las Posas Valley Basins were formerly subbasins of Ventura Central (DWR, 1980).

ah: Nitrite pollution in the groundwater of the Sunland-Tujunga area currently precludes direct MUN uses. Since the ground water in this area can be treated or blended (or both), it retains the MUN designation.

ai: Raymond Basin was formerly a subbasin of San Gabriel Valley and is now a separate basin. The Main San Gabriel Basin was formerly separated into Eastern and Western areas. Since these areas had the same beneficial uses as Puente Basin all three areas have been combined into San Gabriel Valley. Any ground water upgradient of these areas is subject to downgradient beneficial uses and objectives, as explained in Footnote ac.

aj: These areas were formerly part of the Russell Valeey Basin (DWR, 1980)

ak: Groundwater in the Conejo-Tierra Rejada Volcanic Area occurs primarily in fractured volcanic rocks in the western Santa Monica Mountains and Conejo Mountain areas. These areas have not been delineated on Fig.1-9.

al: With the exception of ground water in Malibu Valley (DWR Basin No. 4-22) ground waters along the southern slopes of the Santa Monica Mountains are not considered to comprise a major basin and accordingly have not been designated a basin number by DWR

am: DWR has not designated basins for groundwaters on the San Pedro Channel Islands.

Table 2-3. Beneficial Uses of Coastal Waters.

COASTAL FEATURE[a]	WBD No.	MUN	IND	PROC	NAV	POW	COMM	WARM	COLD	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WETb
VENTURA COUNTY COASTAL																		
Nearshore ^			E		E		E				E	E	Ean	Ee	Ef	Ef	E	
Offshore Zone					E		E				E	E		Ee	Ef	Ef	E	
Rincon Beach	180701010201				E		E				E	E			E		E	
Ventura River Estuary c	180701010106				E		E	E		E	E	E		Ee	Ef	Ef	E	E
Ventura Keys (Marina)	180701010202				E		E	E			E	E						
Ventura Marina	180701010904		E		E		E				E	E					E	
Santa Clara River Estuary c	180701010904				E		E			E	E	E		Ee	Ef	Ef		E
Mandalay Beach	180701010201				E		E				E	E		Ee			E	
McGrath Lake c	180701010201						P			E		E		Ee				E
Edison Canal Estuary	180701010201		E								E	E		Ee				
Channel Islands Harbor	180701010201		E		E		E				E	E						
Mandalay Bay (Marina)	180701010201		E		E						E	E						
Port Hueneme (Harbor)	180701010201			E	E		E				E	E						
Ormond Beach	180701010201		E		E	E	E				E	E		Ee		P	E	
Ormond Beach Wetlands c	180701010202									E		E		Ee				E
Mugu Lagoon c	180701010202				E		Ed			E	E	Eo	E	Ee,p	Ef	Ef	Ed	E
Calleguas Creek Estuary c	180701010202				P		E			E		E		Ee,p	Ef	Ef		E
LOS ANGELES COUNTY COASTAL																		
Nearshore Zone ^			E		E		E				E	E	Ean	Ee	Ef	Ef	Ear	
Offshore Zone			E		E		E				E	E		Ee	Ef	Ef	E	
Nicholas Canyon Beach	180701040402				E		E				E	E				P	E	
Trancas Beach	180701040403				E		E				E	E				P	E	
Zuma County (Westward) Beach	180701040403				E		E				E	E				P	Ear	
Dume State Beach	180701040404				E		E				E	E				P	E	
Dume Lagoon c	180701040403				E		E			E		E		Ee	Pf	Pf		E
Escondido Beach	180701040404				E		E				E	E				P	E	
Dan Blocker Memorial (Corral) Beach	180701040404				E		E				E	E				P	E	

*: This list may not be all inclusive. More areas may be added as information becomes available.

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
^: Nearshore is defined as the zone bounded by the shoreline and a line 1000 feet from the shoreline or the 30-foot depth contours, whichever is further from the shoreline. Longshore extent is from Rincon Creek to the San Gabriel River Estuary.

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action action would require a detailed analysis of the area.
c: Coastal waterbodies which are also listed in inland Surface Waters Tables (2-1) or in Wetlands Table (2-4).
d: Limited public access precludes full utilization.
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f: Aquatic organisms utilize all bays, esturaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
o: Marine Habitats of the Channel islands and Mugu Lagoon serve as pinniped haul-out areas for one or more species (.e. sea lions)
p: Habitat of the Clapper Rail.
an: Areas of Special Biological Significance (along coast from Latigo Point to Laguna Point) and Big Sycamore Canyon and Abalone Cove Ecological Reserves and Point Fermin Marine Life Refuge.
ar: Areas exhibiting large shellfish populations include Malibu, Point Dume, Point Fermin, White Point and Zuma Beach.

Table 2-3. Beneficial Uses of Coastal Features (Continued).

COASTAL FEATURE[a]	WBD No.	MUN	IND	PROC	NAV	POW	COMM	WARM	COLD	EST	MAR	WLD	BIOL	RARE	MIGR	SPWN	SHELL	WETb
LOS ANGELES COUNTY COASTAL (CONT.)																		
Puerco Beach	180701040404				E		E				E	E				P	E	
Amarillo Beach	180701040404				E		E				E	E				P	E	
Malibu Beach	180701040404				E		E				E	E			E	Eas	Ear	
Malibu Lagoon c	180701040404				E					E	E	E		Ee	Ef	Ef		E
Carbon Beach	180701040502				E		E				E	E				P	E	
La Costa Beach	180701040502				E		E				E	E				P	E	
Las Flores Beach	180701040502				E		E				E	E				P	E	
Las Tunas Beach	180701040502				E		E				E	E				P	E	
Topanga Beach	180701040502				E		E				E	E				P	E	
Topanga Lagoon c	180701040501				E		E			E		E		Ee	Ef	Ef		E
Will Rogers State Beach	180701040502				E		E				E	E				P	E	
Santa Monica Beach	180701040502				E		E				E	E			E	Eas	E	
Venice Beach	180701040502				E		E				E	E		E	E	Eas	E	
Marina Del Rey																		
Harbor	180701040502				E		E				E	E					E	
Public Beach Areas	180701040502				E		E				E	E		E				
All other Areas	180701040502				E		E				E	E		E			E	
Entrance Channel	180701040502				E		E				E	E		E			E	
Ballona Creek Estuary c, w	180701040200				E		E			E	E	E		Ee	Ef	Ef	E	
Ballona Lagoon/Venice Canals c	180701040502				E		E			E	E	E		Ee	Ef	Ef	E	E
Ballona Wetlands c	180701040200									E		E		Ee	Ef	Ef		E
Del Rey Lagoon c	180701040601				E		E			E		E		Ee	Ef	Ef		E
Dockweiler Beach	180701040601		E		E		E				E	E				P		
Manhattan Beach	180701040601				E		E				E	E				P	E	
Hermosa Beach	180701040601				E		E				E	E				Eas	E	
King Harbor	180701040601		E		E		E				E	E		E				
Redondo Beach	180701040601		E		E		E				E	E		E	E	Eas	E	
Torrance Beach	180701040601				E		E				E	E			E	Eas	E	
Port Vicente Beach	180701040601				E		E				E	E				P	E	
Royal Palms Beach	180701040601				E		E				E	E				P	E	

*: This list may not be all inclusive. More areas may be added as information becomes available.

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action action would require a detailed analysis of the area.
c: Coastal waterbodies which are also listed in inland Surface Waters Tables (2-1) or in Wetlands Table (2-4).
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f: Aquatic organisms utilize all bays, esturaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
ar: Areas exhibitingnlarge shellfish populations include Malibu, Point Dume, Point Fermin, White Point and Zuma Beach
as: Most frequently used grunion spawning beaches. Other beaches may be used as well.
w: These areas are engineered channels. All references to Tidal Prisms in Regional Board documents are functionally equivalent to estuaries.

Table 2-3. Beneficial Uses of Coastal Features (Continued).

COASTAL FEATURE[a]	WBD No.	MUN	IND	PROC	NAV	POW	COMM	WARM	COLD	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WETb
LOS ANGELES COUNTY COASTAL (Cont.)																		
Whites Point County Beach	180701040601				E		E				E	E				P	E	
Cabrillo Beach	180701040302				E		E				E	E			E	Eas	E	
Los Angeles - Long Beach Harbor	180701040602																	
Outer Harbor	180701040602				E		E				E			E			P	
Marinas	180701040602		E		E		E				E			E			P	
Public Beach Areas	180701040602				E		E				E	E		E		P	E	
All Other Inner Areas	180701040602		E		E		E				E			Ee			P	
Dominguez Channel Estuary c,w	180701040302				P		E			E	E	E		Ee	Ef	Ef		
Los Angeles River Estuary c,w	180701040404		E		E		E			E	E	E		Ee	Ef	Ef	P	E
Alamitos Bay	180701040600		E		E		E			E	E	E		E			E	E
Los Cerritos Wetlands c	180701040600				E		E			E		E		Ee	Pf	Pf	E	E
Los Cerritos Channel Estuary c	180701040600		E		E		E			E	E	E		Ee	Ef	Ef	E	
San Gabriel Estuary c, w	180701040506		E		E		E			E	E	E		Ee	Ef	Ef	P	
Long Beach Marina	180701040600						E				E			E			E	
Public Beach Areas	180701040600				E		E				E			E		P		
All other Areas	180701040600						E				E			E			P	
Marine Stadium	180701040600						E				E			E			E	
Long Beach	180701040600				E		E				E	E			E	Eas	E	
ISLANDS:NEARSHORE ZONES ^																		
Anacapa Island	180600140203				E		E				E	Eo	Eat	E		P	E	
San Nicolas Island	180701070001				E		E				E	Eo	Eat	E		P	E	
Begg Rock Nearshore Zone	180701070001						E				E	Eo	Eat	E		P	E	
Santa Barbara Island	180701070003				E		E				E	Eo	Eat	E		P	E	
Santa Catalina Island	180701070003				E		E				E	Eo	Eat	E		P	E	
Santa Catalina Island	180701070002				E		E				E	Eo	Eat	E		P	E	
San Clemente Island	180701070004				E		E				E	Eo	Eat	E		P	E	

*: This list may not be all inclusive. More areas may be added as information becomes available.

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required.
*Asterisked MUN designations are designated under SB 88-63 and RB-03. Some designations may be considered for exemptions at a later date (See pages 2-3 and 2-4 for more details).
^: Nearshore is defined as the zone bounded by the shoreline and a line 1000 feet from the shoreline or the 30-foot depth contours, whichever is further from the shoreline.

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action action would require a detailed analysis of the area.
c: Coastal waterbodies which are also listed in inland Surface Waters Tables (2-1) or in Wetlands Table (2-4).
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f: Aquatic organisms utilize all bays, esturaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
o: Marine Habitats of the Channel islands and Mugu Lagoon serve as pinniped haul-out areas for one or more species (i.e., sea lions).
w: These areas are engineered channels. All references to Tidal Prisms in Regional Board documents are functionally equivalent to estuaries.
as: Most frequently used grunion spawning beaches. Other beaches may be used as well.
at: Areas of Special Biological Significance or ecological reserves.

Table 2-4. Beneficial Uses of Significant Coastal Wetlands.*

WETLAND[a]	WBD No.	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
Ventura River Estuary c	180701010106							E		E		E			E	E	E		Ee	Ef	Ef	E	E
Santa Clara River Estuary c	180701020904							E		E					E	E	E		Ee	Ef	Ef		E
McGrath Lake c	180701030201									P					E		E		Ee				E
Ormond Beach Wetlands c	180701030202														E		E		Ee				E
Mugu Lagoon c	180701030202							E		Ed					E	E	Eo	E	Ee,p	Ef	Ef	Ed	E
Dume Lagoon c	180701040403							E		E					E		E		Ee	Pf	Pf		E
Malibu Lagoon c	180701040104							E							E	E	E		Ee	Ef	Ef		E
Topanga Lagoon c	180701040501							E		E					E		E		Ee	Ef	Ef		E
Ballona Lagoon/Venice Canals c	180701040502							E		E					E	E	E		Ee	Ef	Ef	E	E
Ballona Wetlands c	180701040200														E		E		Ee	Ef	Ef		E
Del Rey Lagoon c	180701040601							E		E					E		E		Ee	Ef	Ef		E
Los Cerritos Wetlands c	180701060600							E		E					E		E		Ee	Pf	Pf	E	E

*: This list may not be all inclusive. More areas may be added as information becomes available.

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E, P, and I: shall be protected as required

Footnotes are consistent for all beneficial use tables.
a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area
c: Coastal waterbodies which are also listed in inland Surface Waters Tables (2-1) or in Wetlands Table (2-4).
d: Limited public access precludes full utilization.
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f: Aquatic organisms utilize all bays, esturaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
o: Marine Habitats of the Channel islands and Mugu Lagoon serve as pinniped haul-out areas for one or more species (.e. sea lions)
p: Habitat of the Clapper Rail.

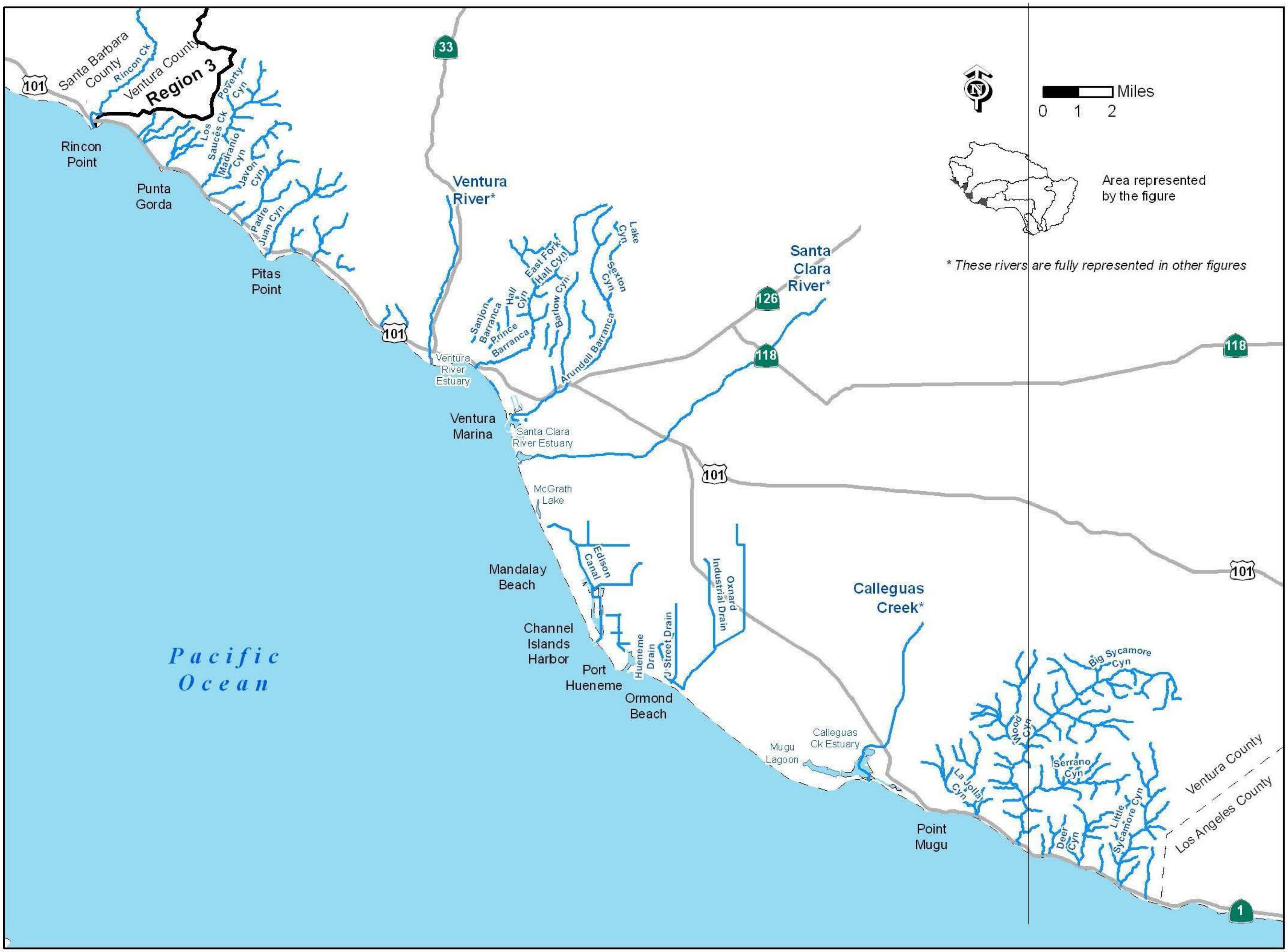

Figure 2-1. Miscellaneous streams and coastal features, Ventura County.

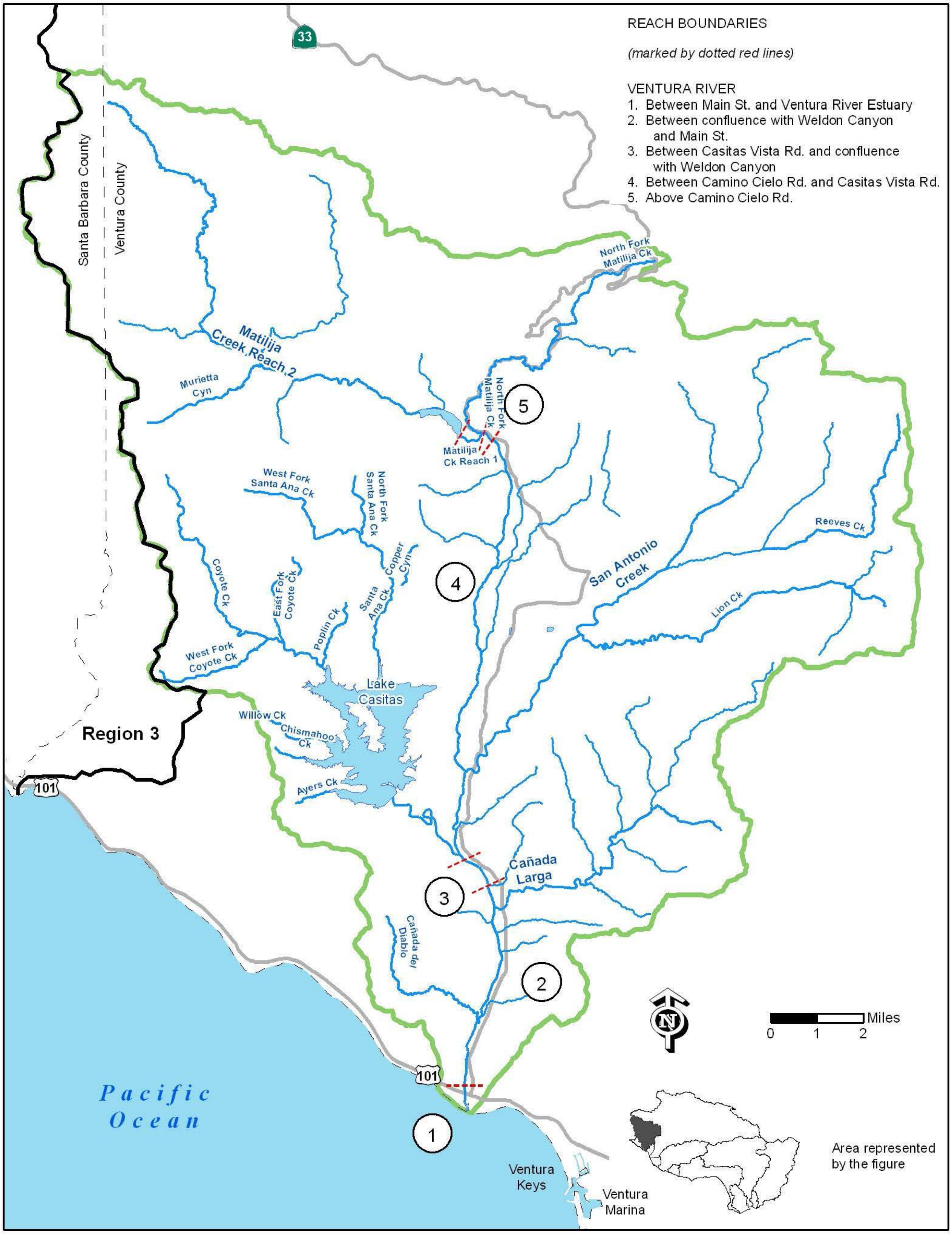

Figure 2-2. Major surface waters of the Ventura River watershed.

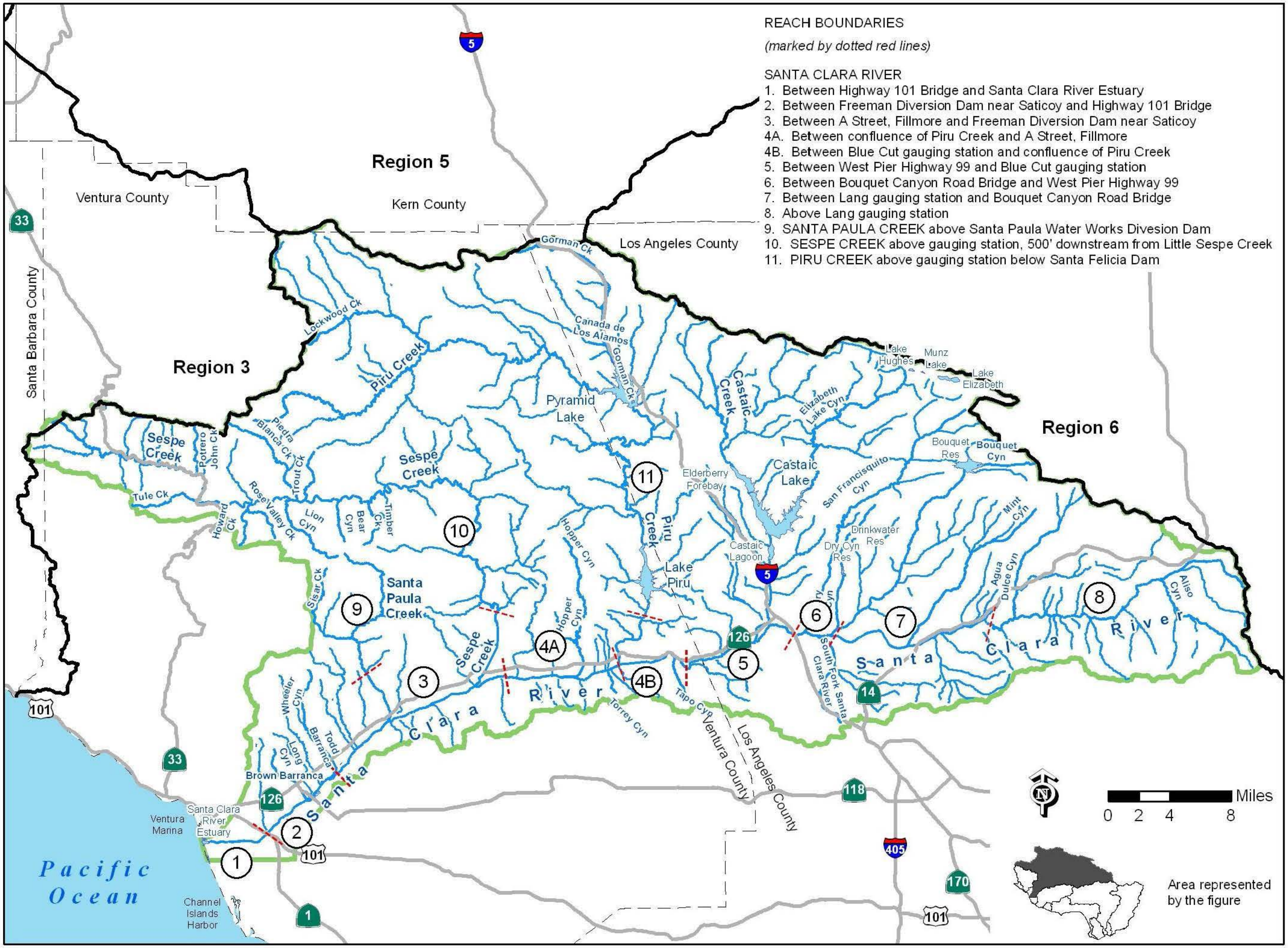

Figure 2-3. Major surface waters of the Santa Clara River watershed.

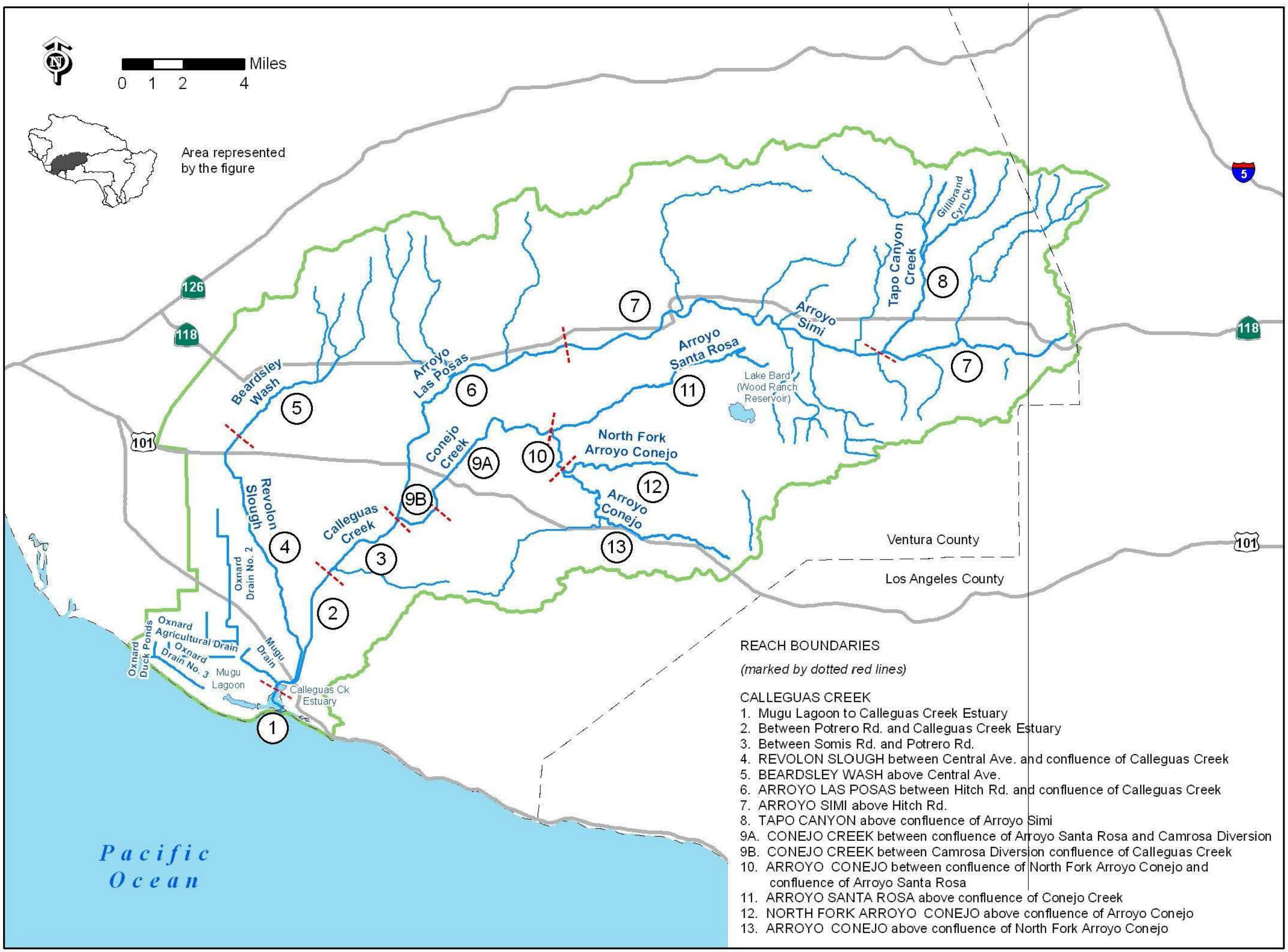

Figure 2-4. Major surface waters of the Calleguas-Conejo Creek watershed.

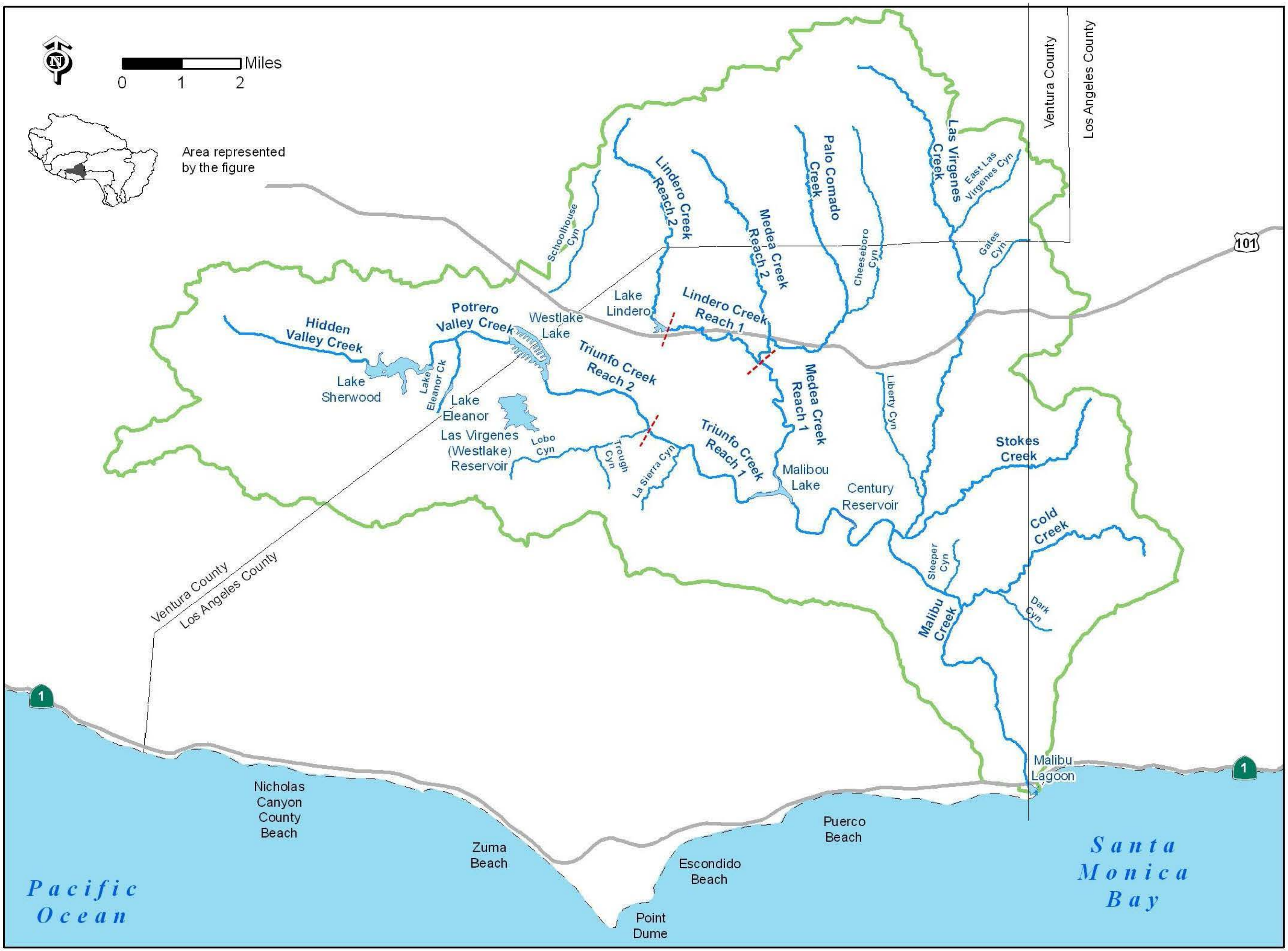

Figure 2-5. Major surface waters of the Malibu Creek watershed.

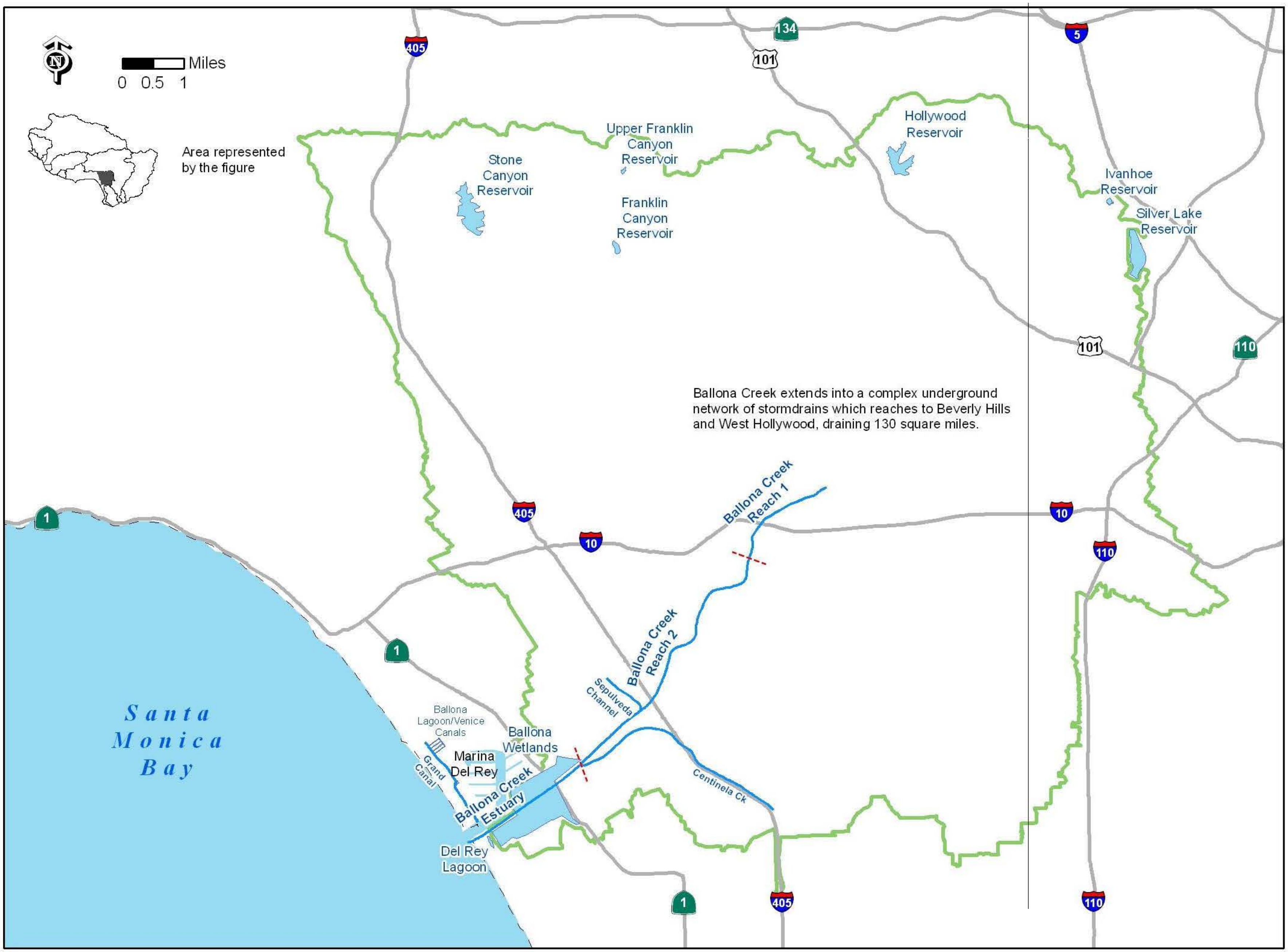

Figure 2-6. Major surface waters of the Ballona Creek watershed.

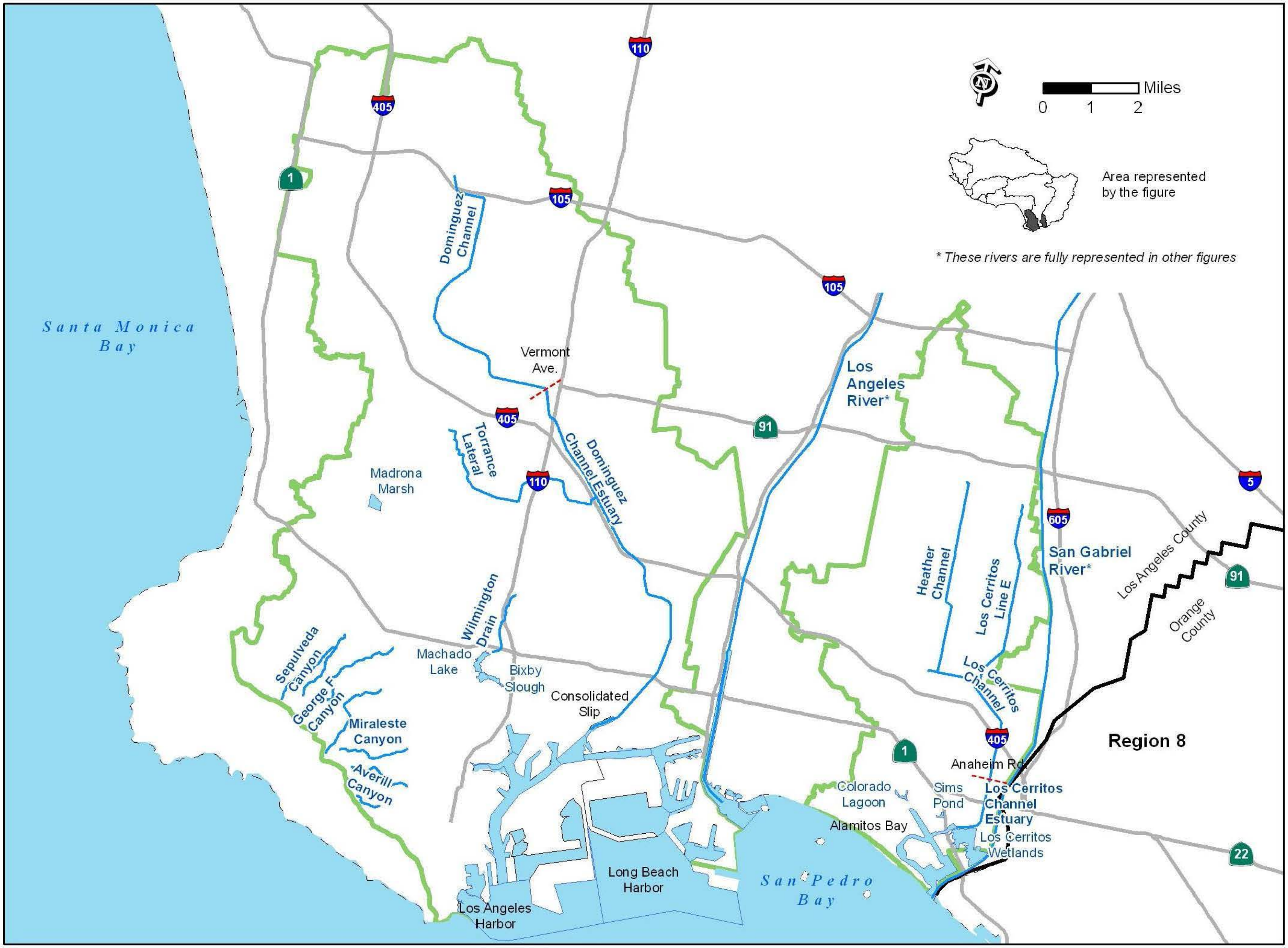

Figure 2-7. Major surface waters of the Dominguez Channel and Los Cerritos Channel watersheds.

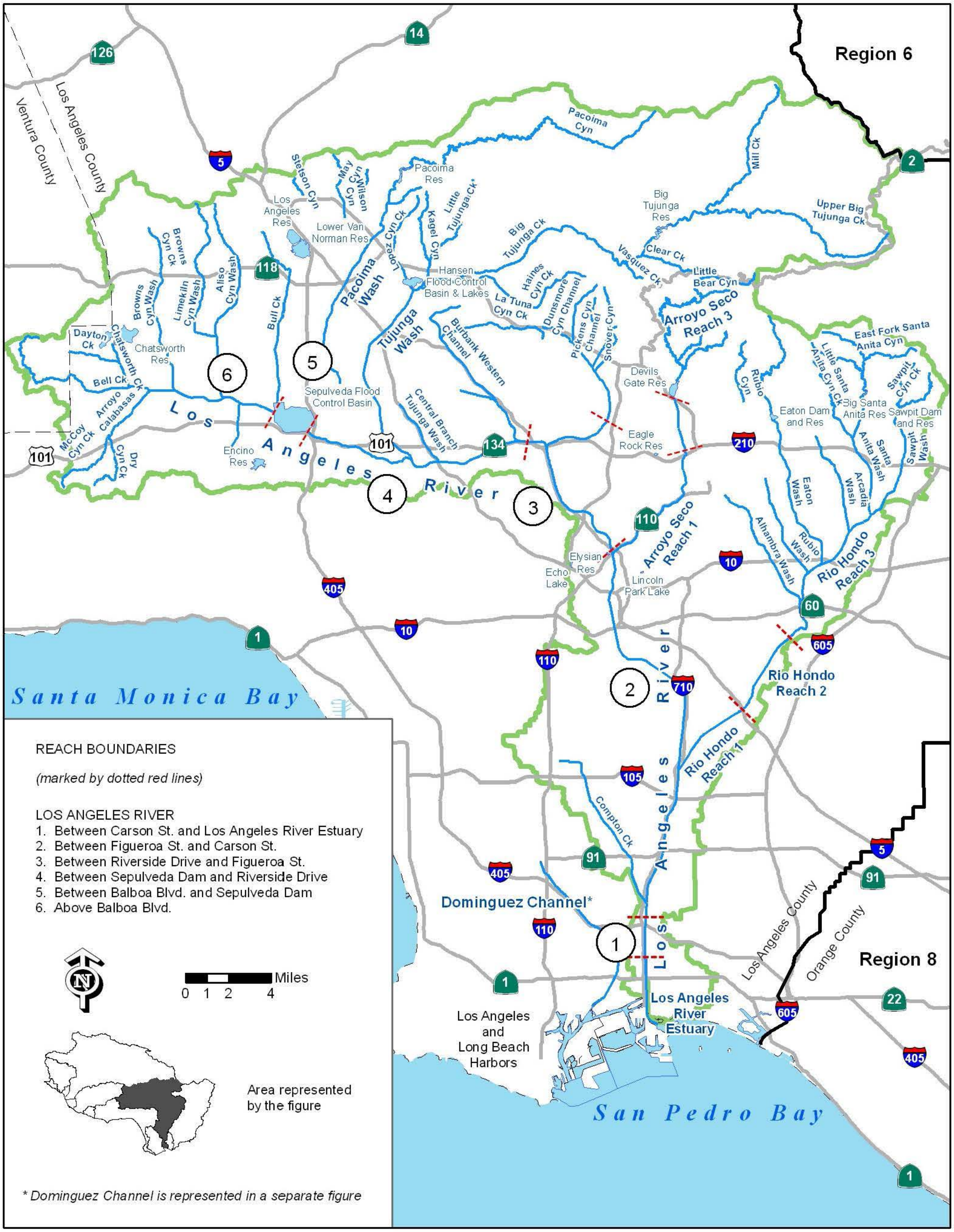

Figure 2-8. Major surface waters of the Los Angeles River watershed.

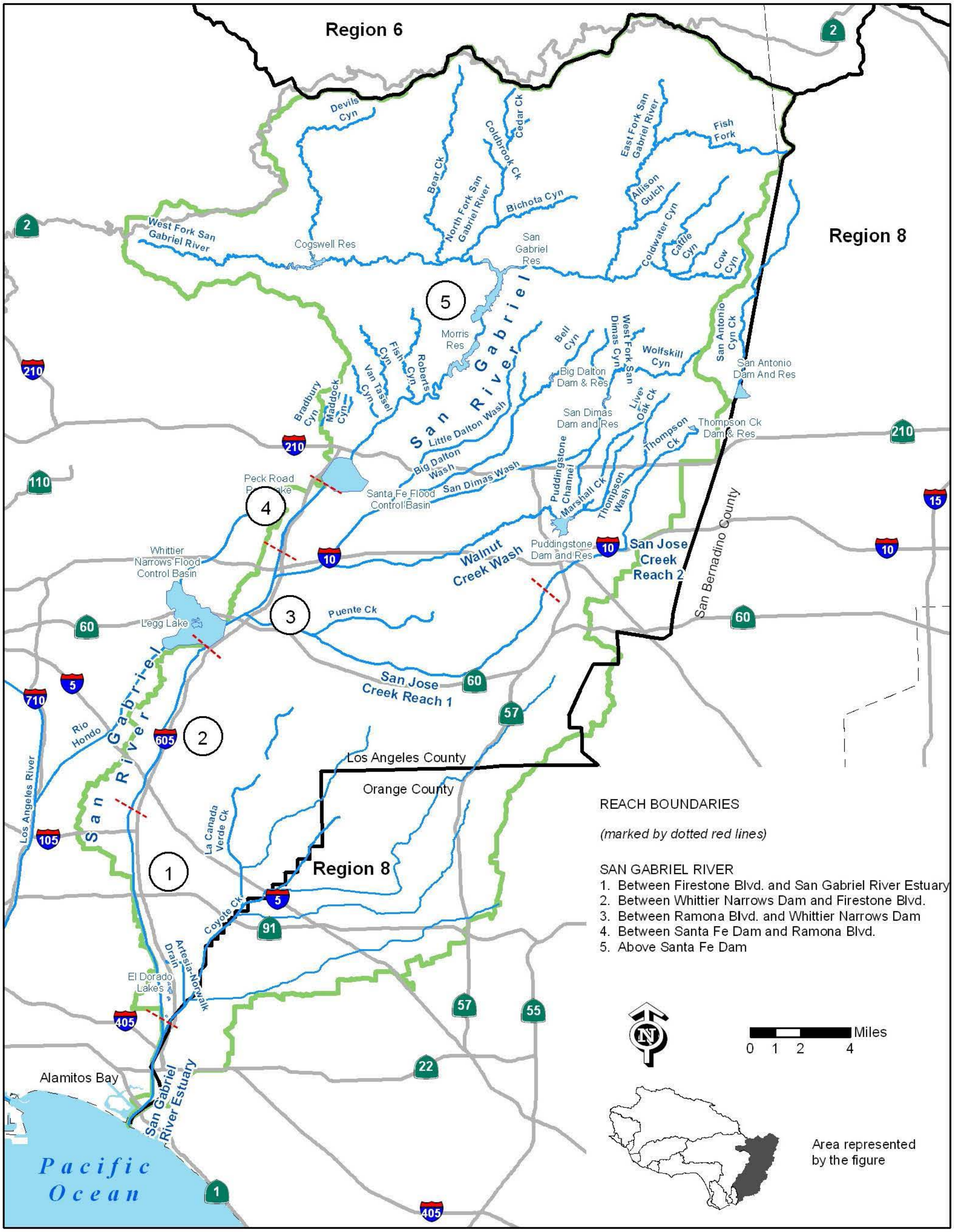

Figure 2-9. Major surface waters of the San Gabriel River watershed.

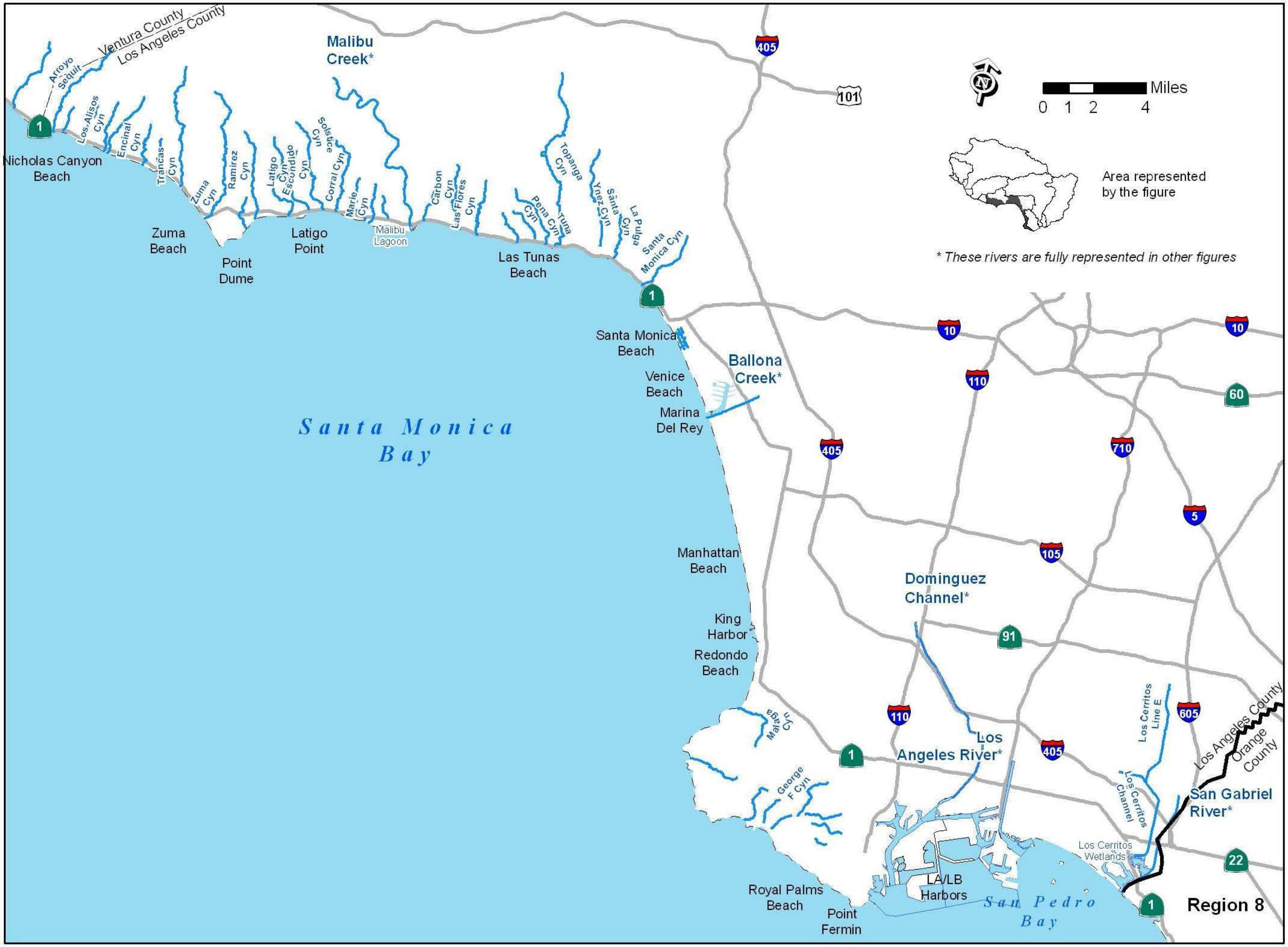

Figure 2-10. Miscellaneous streams and coastal features, Los Angeles County.

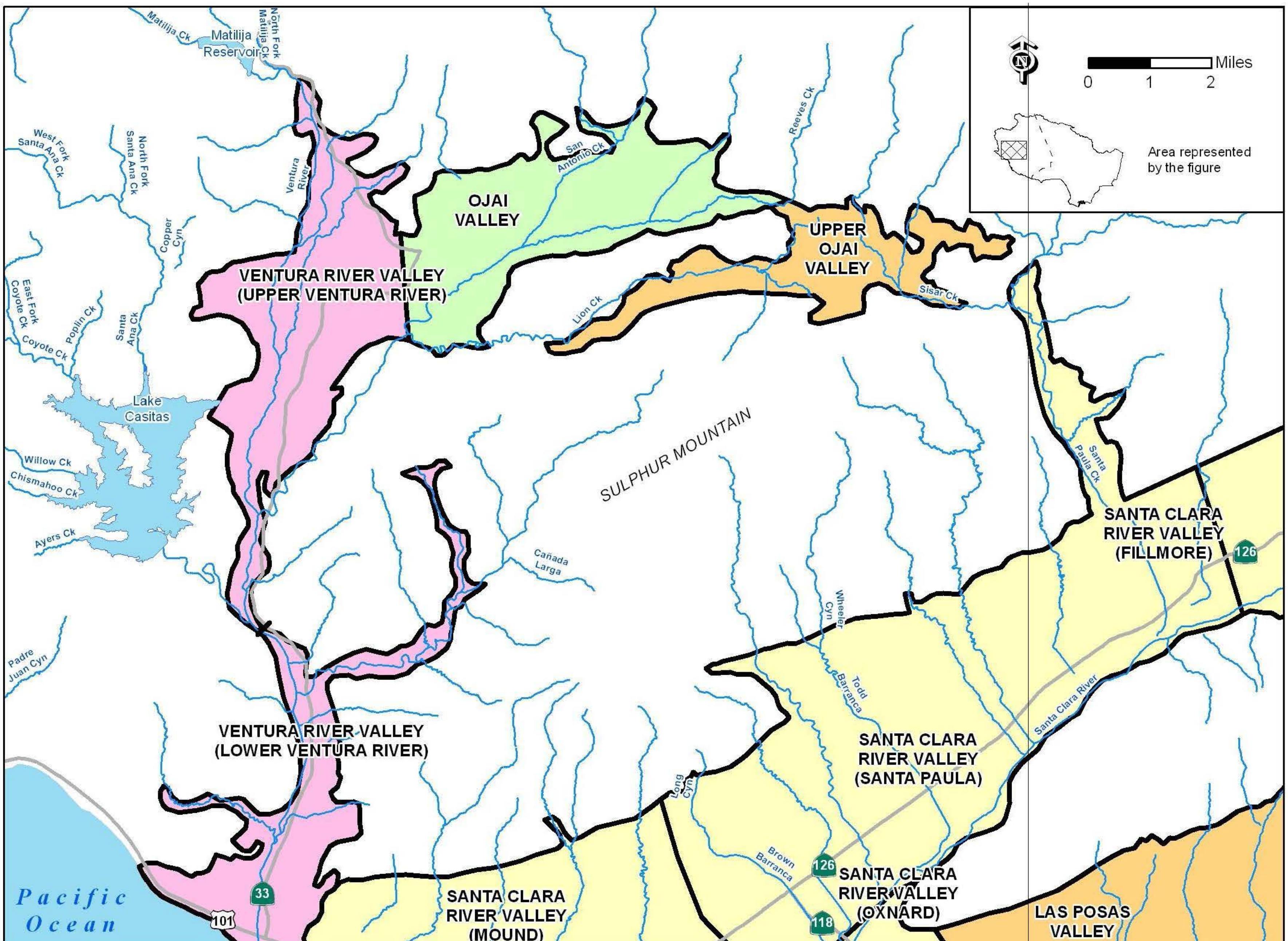

Figure 2-11. Ojai Valley and Ventura River Valley Groundwater Basins.

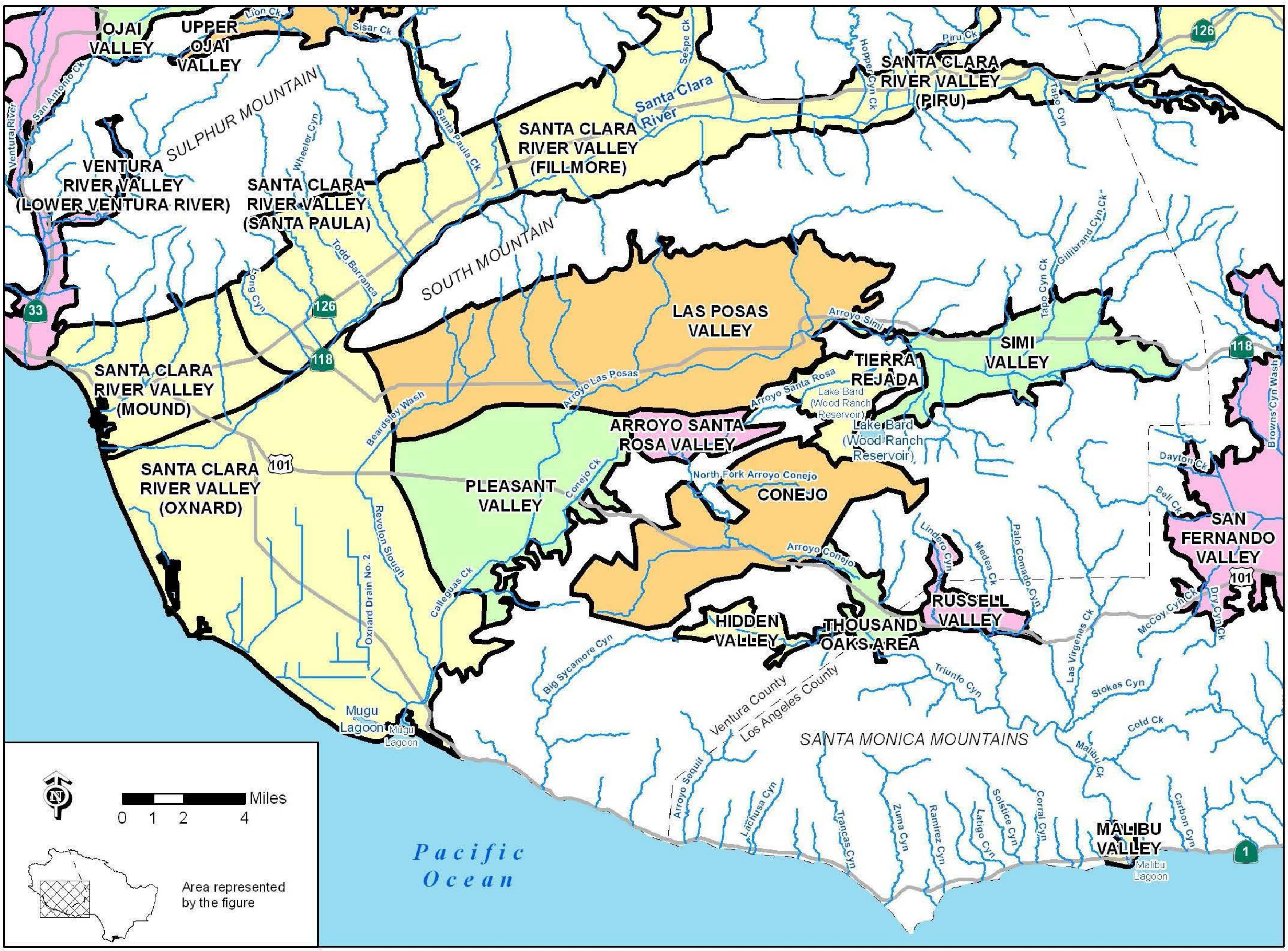

Figure 2-12. Ventura Central Groundwater Basins.

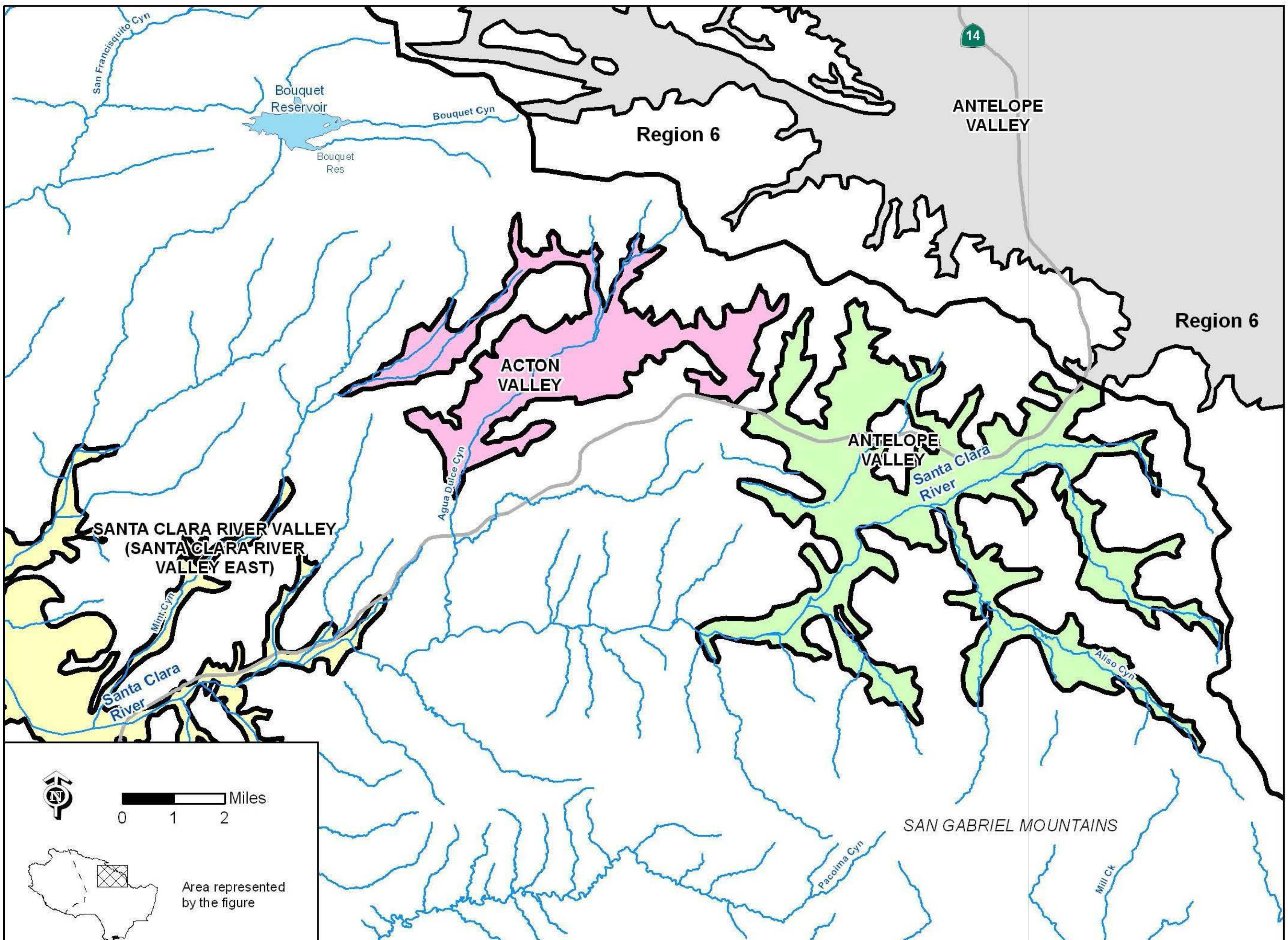

Figure 2-13. Upper Santa Clara Groundwater Basins.

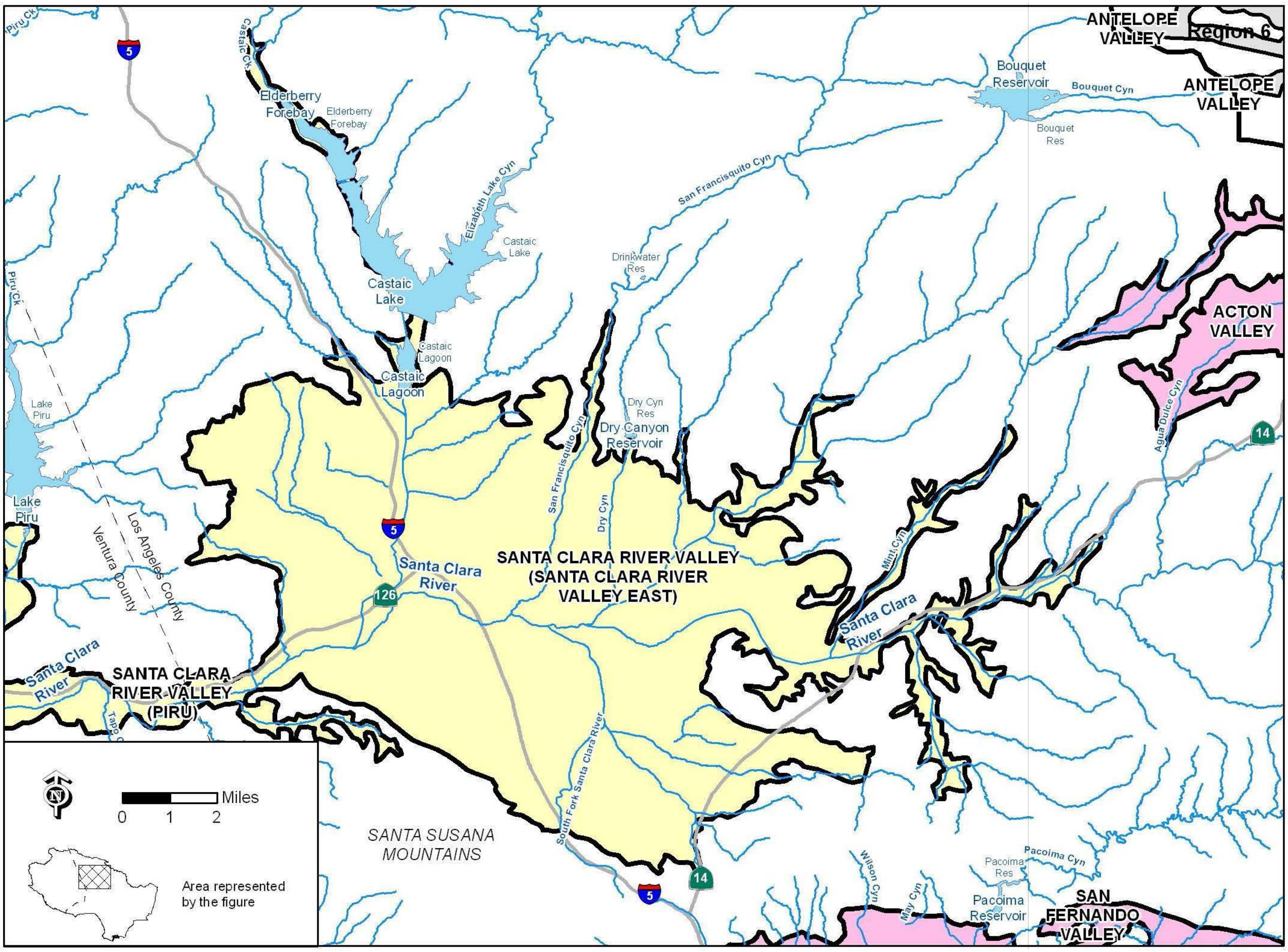

Figure 2-14. Eastern Santa Clara Groundwater Basins.

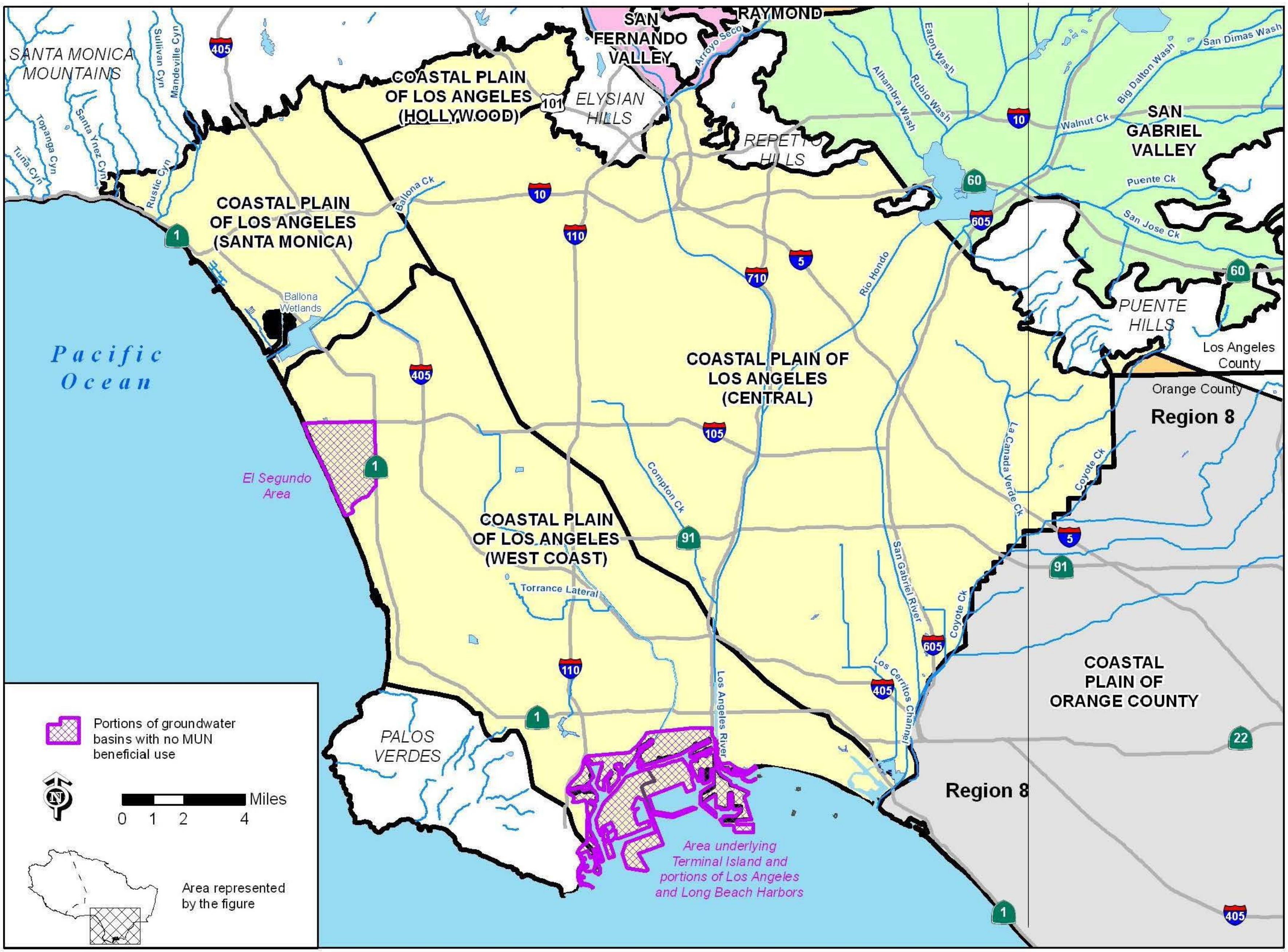

Figure 2-15. Los Angeles Coastal Groundwater Basins.

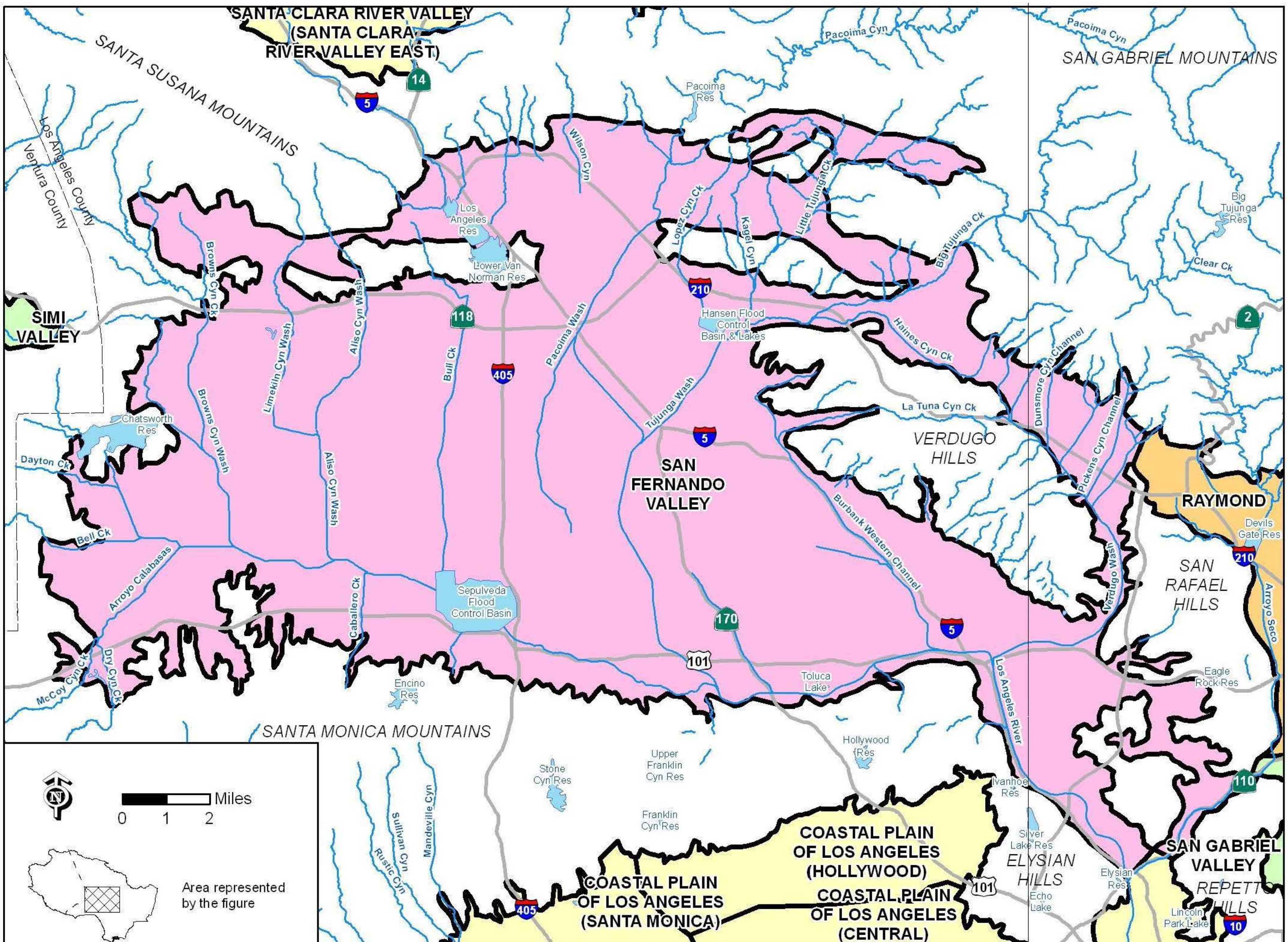

Figure 2-16. San Fernando Valley Groundwater Basins.

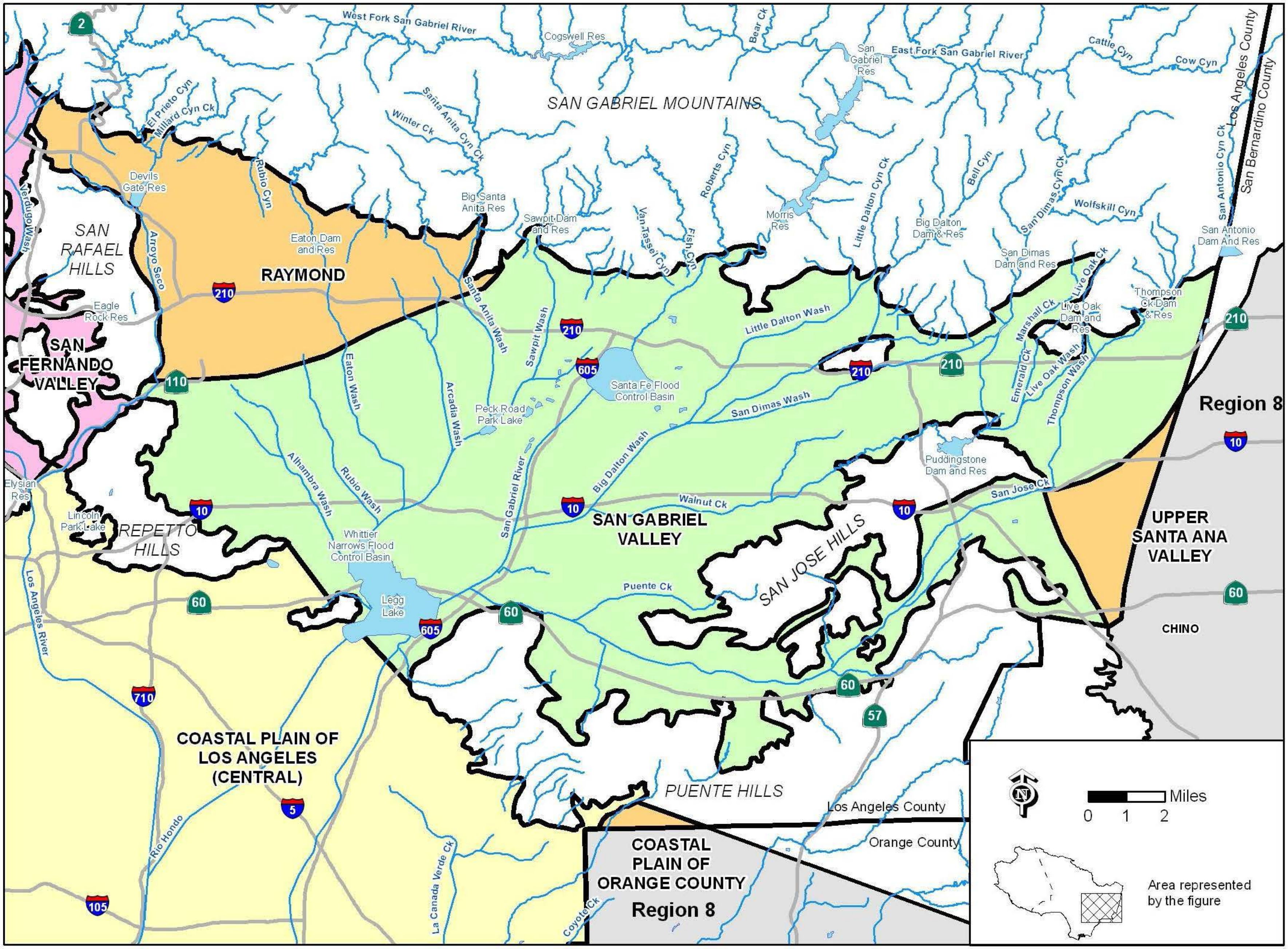

Figure 2-17. San Gabriel Valley and Upper Santa Ana Valley Groundwater Basins.

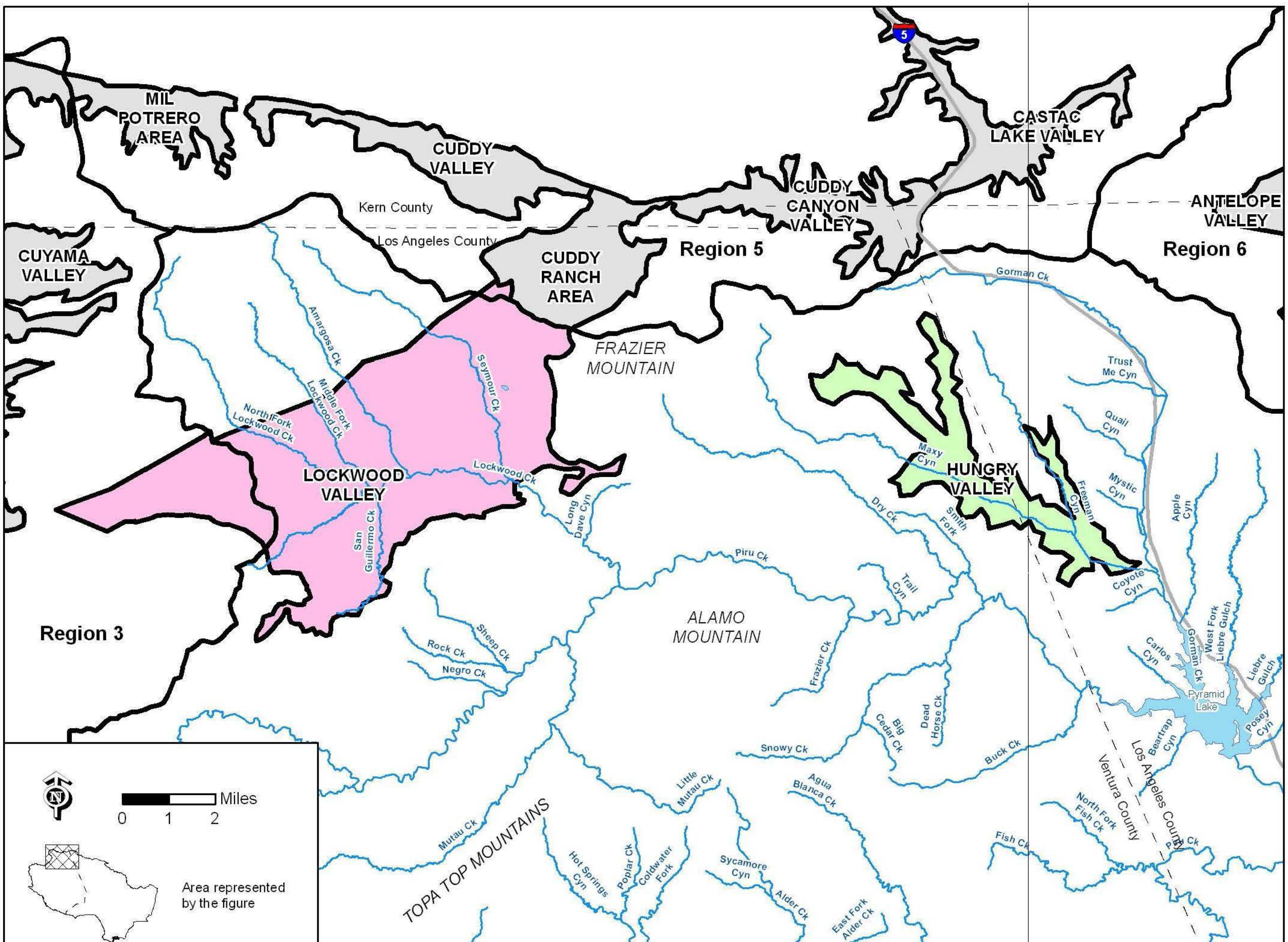

Figure 2-18. Lockwood Valley and Hungry Valley Groundwater Basins.

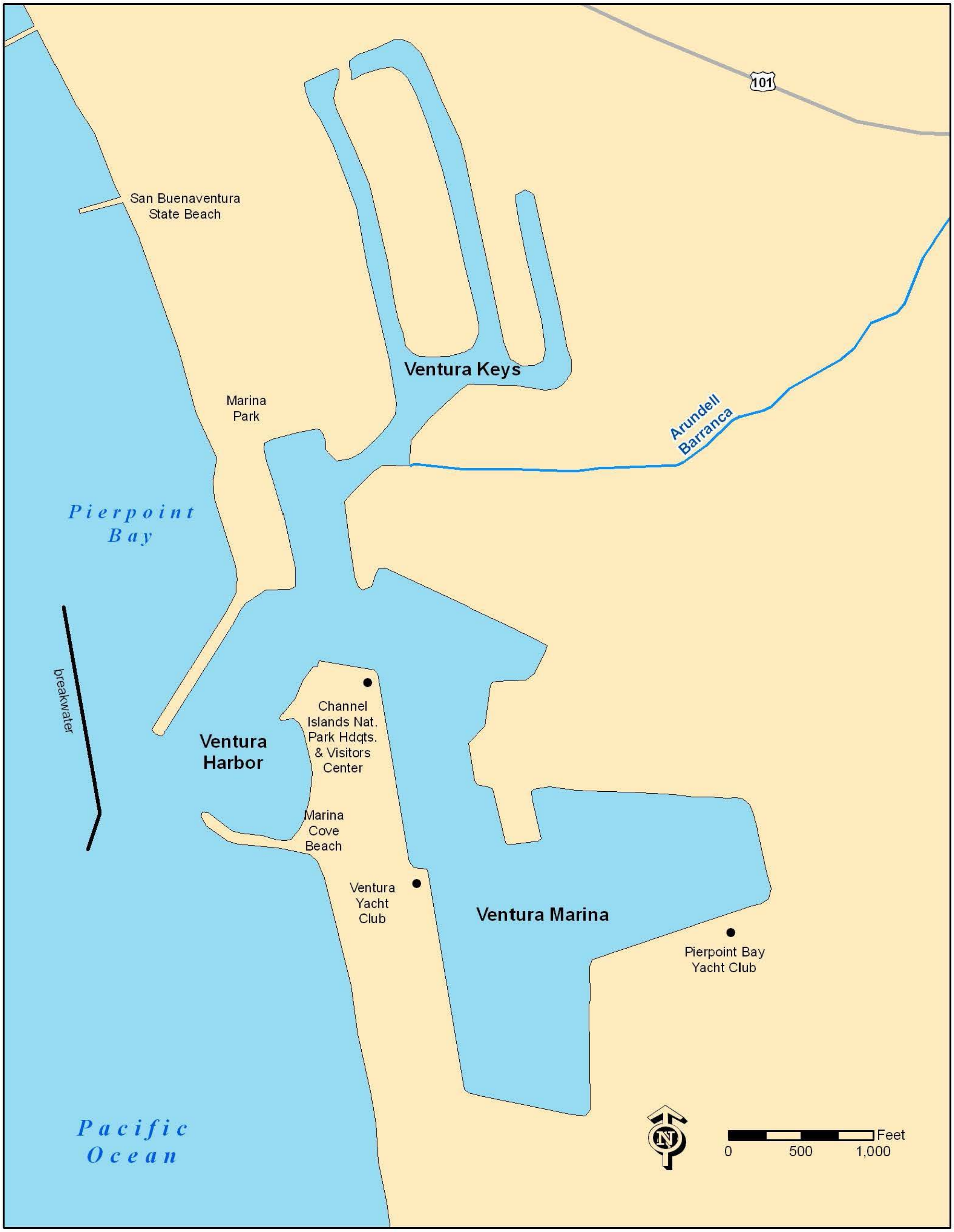

Figure 2-19. Ventura Harbor, Marina, and Keys.

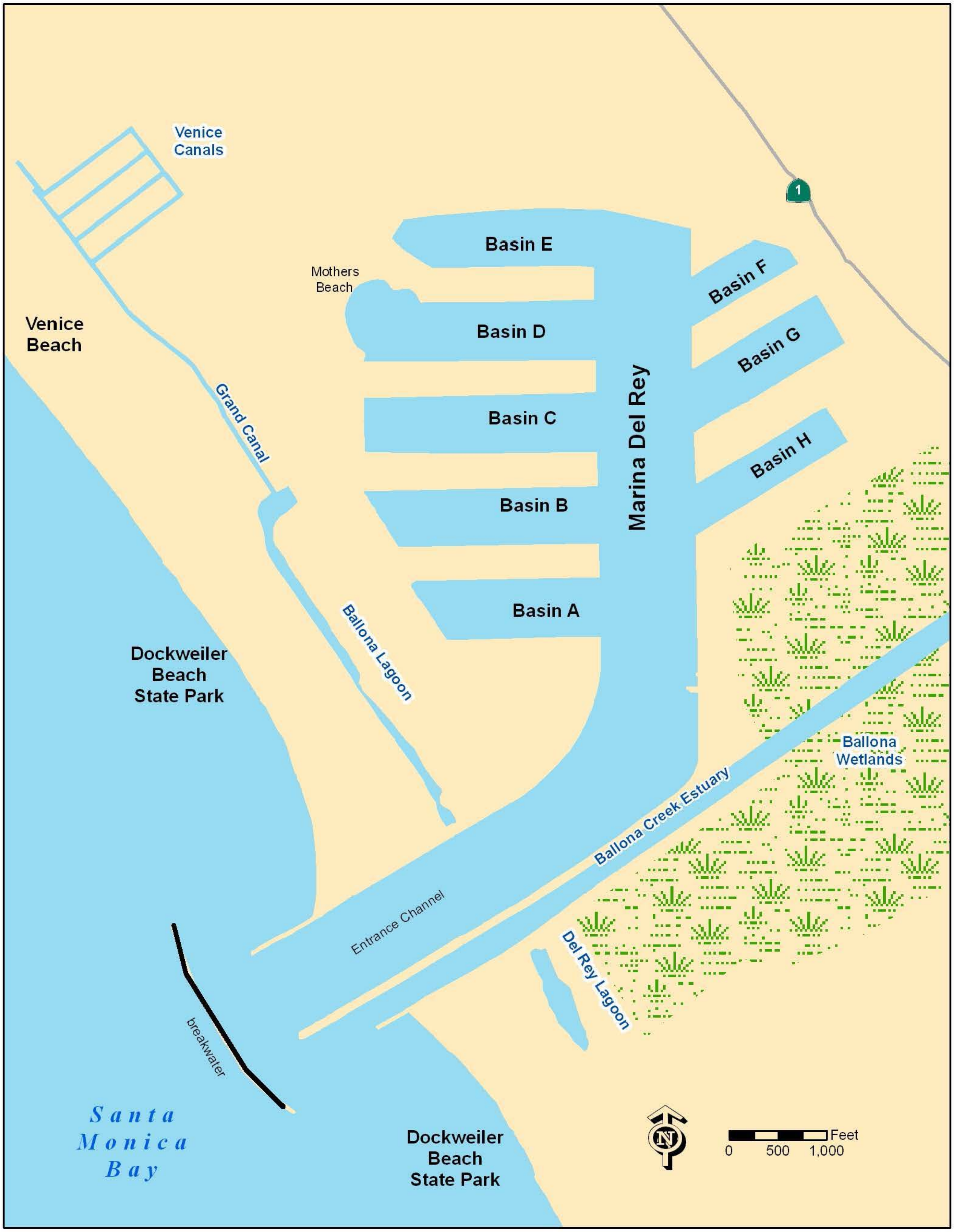

Figure 2-20. Marina Del Rey.

Figure 2-21. Los Angeles Harbor and Long Beach Harbor.

Figure 2-22. Alamitos Bay.

3. WATER QUALITY OBJECTIVES

Table of Contents

Introduction

The Clean Water Act (§303) requires states to develop water quality standards for all waters and to submit to the USEPA for approval all new or revised water quality standards which are established for inland surface and ocean waters. Water quality standards consist of a combination of beneficial uses (designated in Chapter 2) and water quality objectives (contained in this Chapter).

In addition to the federal mandate, the California Water Code (§13241) specifies that each Regional Water Quality Control Board shall establish water quality objectives. The Water Code defines water quality objectives as "the allowable limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area." Thus, water quality objectives are intended (i) to protect the public health and welfare and (ii) to maintain or enhance water quality in relation to the designated existing and potential beneficial uses of the water. Water quality objectives are achieved through Waste Discharge Requirements and other programs outlined in Chapter 4, Strategic Planning and Implementation. These objectives, when compared with future water quality data, also provide the basis for identifying trends toward degradation or enhancement of regional waters.

These water quality objectives supersede those contained in all previous Basin Plans and amendments adopted by the Los Angeles Regional Board. As new information becomes available, the Regional Board will review the objectives contained herein and develop new objectives as necessary. In addition, this Plan will be reviewed every three years (triennial review) to determine the need for modification.

Statement of Policy with Respect to Maintaining High Quality of Waters in California

A key element of California's water quality standards is the state's Antidegradation Policy. This policy, formally referred to as the *Statement of Policy with Respect to Maintaining High Quality Waters in California* (State Board Resolution No. 68-16), restricts degradation of surface or ground waters. In particular, this policy protects waterbodies where existing quality is higher than is necessary for the protection of beneficial uses.

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 68-16

STATEMENT OF POLICY WITH RESPECT TO
MAINTAINING HIGH QUALITY OF WATERS IN CALIFORNIA

WHEREAS the California Legislature has declared that it is the policy of the State that the granting of permits and licenses for unappropriated water and the disposal of wastes into the waters of the State shall be so regulated as to achieve highest water quality consistent with maximum benefit to the people of the State and shall be controlled so as to promote the peace, health, safety and welfare of the people of the State; and

WHEREAS water quality control policies have been and are being adopted for waters of the State; and

WHEREAS the quality of some waters of the State is higher than that established by the adopted policies and it is the intent and purpose of this Board that such higher quality shall be maintained to the maximum extent possible consistent with the declaration of the Legislature;

NOW, THEREFORE, BE IT RESOLVED:

1. Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.

2. Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

3. In implementing this policy, the Secretary of the Interior will be kept advised and will be provided with such information as he will need to discharge his responsibilities under the Federal Water Pollution Control Act.

BE IT FURTHER RESOLVED that a copy of this resolution be forwarded to the Secretary of the Interior as part of California's water quality control policy submission.

CERTIFICATION

The undersigned, Executive Officer of the State Water Resources Control Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on October 24, 1968.

Dated: October 28, 1968

Original signed by
Kerry W. Mulligan, Executive Officer
State Water Resources Control Board

Under the Antidegradation Policy, any actions that can adversely affect water quality in all surface and ground waters (i) must be consistent with the maximum benefit to the people of the state, (ii) must not unreasonably affect present and anticipated beneficial use of such water, and (iii) must not result in water quality less than that prescribed in water quality plans and policies. Furthermore, any actions that can adversely affect surface waters are also subject to the federal Antidegradation Policy (40 CFR 131.12), developed under the CWA. The USEPA, Region IX, has also issued detailed guidance for the implementation of federal antidegradation regulations for surface waters within its jurisdiction (USEPA, 1987).

Regional Objectives for Inland Surface Waters

Narrative or numerical water quality objectives have been developed for the following parameters (listed alphabetically) and apply to all inland surface waters and enclosed bays and estuaries (including wetlands) in the Region. *Water quality objectives are in italics.*

Ammonia

Ammonia is a pollutant routinely found in the wastewater effluent of Publicly Owned Treatment Works (POTWs), in landfill-leachate, as well as in run-off from agricultural fields where commercial fertilizers and animal manure are applied. Ammonia exists in two forms – un-ionized ammonia (NH_3) and the ammonium ion (NH_4^+). They are both toxic, but the neutral, un-ionized ammonia species (NH_3) is highly toxic to fish and other aquatic life. The ratio of toxic NH_3 to total ammonia ($NH_4^+ + NH_3$) is primarily a function of pH, but is also affected by temperature and other factors. Additional impacts can also occur as the oxidation of ammonia lowers the dissolved oxygen content of the water, further stressing aquatic organisms. Ammonia also combines with chlorine (often both are present) to form chloramines - persistent toxic compounds that extend the effects of ammonia and chlorine downstream.

Oxidation of ammonia to nitrate may lead to groundwater impacts in areas of recharge.

The freshwater one-hour average objective is dependent on pH and fish species (salmonids present or absent), but not temperature. It is assumed that salmonids may be present in waters designated in the Basin Plan as “COLD” or “MIGR” and that salmonids are absent in waters not designated in the Basin Plan as “COLD” or “MIGR,” in the absence of additional information to the contrary. The freshwater 30-day average objective is dependent on pH temperature, and the presence or absence of early life stages of fish (ELS). Implementation of the ELS Provision is described under “Implementation” subparagraph 3. The freshwater four-day average objective is 2.5 times the 30-day average objective.

The objectives for inland surface waters not characteristic of freshwater are based on US EPA Ambient Water Quality Criteria for Ammonia (Saltwater) -1989. Both the one-hour average and 4-day average objectives are fixed concentrations for un-ionized ammonia, independent of pH, temperature, or salinity.

In order to protect aquatic life, ammonia concentrations in inland surface waters characteristic of freshwater (“freshwater” as determined by the provisions described herein under “IMPLEMENTATION,” 1. Determination of Freshwater, Brackish Water, or Saltwater Conditions) shall not exceed the values calculated for the appropriate instream conditions shown in Tables 3-1 to 3-3 (per U.S. EPA’s most recent criteria guidance document, “1999 Update of Ambient Water Quality Criteria for Ammonia”).

For inland surface waters not characteristic of freshwater (as determined by the procedures in paragraph 1 of the Implementation Provisions below), the four-day average concentration of un-ionized ammonia shall not exceed 0.035 mg/L and the one-hour average concentration shall not *exceed 0.233 mg/L.*

The water quality objectives for ammonia in freshwater may be revised to reflect local waterbody characteristics using one or more of US EPA's procedures for deriving site-specific objectives (SSOs), which include the water-effect ratio (WER) procedure, recalculation procedure, and resident species procedure. In order to establish SSOs for a waterbody, a study must be conducted that is consistent with US EPA guidelines on deriving aquatic life criteria and SSOs, and the resultant SSOs must be fully approved through the Basin Plan amendment process.

In order to protect underlying groundwater basins, ammonia shall not be present at levels that when oxidized to nitrate, pose a threat to groundwater quality.

Table 3-1. One-hour Average Objective for Ammonia-N for Freshwaters (mg N/L)[1]

pH	Waters Designated COLD and/or MIGR	Waters Not Designated COLD and/or MIGR
6.5	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.1	42.0
6.9	26.2	39.1
7.0	24.1	36.1
7.1	22.0	32.8
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.4	23.0
7.5	13.3	19.9
7.6	11.4	17.0
7.7	9.65	14.4
7.8	8.11	12.1
7.9	6.77	10.1
8.0	5.62	8.40
8.1	4.64	6.95
8.2	3.83	5.72
8.3	3.15	4.71
8.4	2.59	3.88
8.5	2.14	3.20
8.6	1.77	2.65
8.7	1.47	2.20
8.8	1.23	1.84
8.9	1.04	1.56
9.0	0.885	1.32

Reference: U.S. EPA 1999 Update of Ambient Water Quality Criteria for Ammonia

1 *For freshwaters, the one-hour average concentration of total ammonia as nitrogen (in mg N/L) shall not exceed the values described by the following equations.*

For waters designated COLD and/or MIGR:

$$\text{One-hour Average Concentration} = \frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}$$

Or for waters not designated COLD and/or MIGR:

$$\text{One-hour Average Concentration} = \frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$$

Table 3-2. 30-day Average Objective for Ammonia-N for Freshwaters Applicable to Waters Subject to the “Early Life Present” Condition (mg N/L)

Temperature, °C

pH	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
6.5	6.67	6.46	6.06	5.68	5.33	4.99	4.68	4.39	4.12	3.86	3.62	3.39	3.18	2.98	2.80	2.62	2.46
6.6	6.57	6.36	5.97	5.59	5.25	4.92	4.61	4.32	4.05	3.80	3.56	3.34	3.13	2.94	2.75	2.58	2.42
6.7	6.44	6.25	5.86	5.49	5.15	4.83	4.52	4.24	3.98	3.73	3.50	3.28	3.07	2.88	2.70	2.53	2.37
6.8	6.29	6.10	5.72	5.36	5.03	4.72	4.42	4.14	3.89	3.64	3.42	3.20	3.00	2.82	2.64	2.47	2.32
6.9	6.12	5.93	5.56	5.21	4.89	4.58	4.30	4.03	3.78	3.54	3.32	3.11	2.92	2.74	2.57	2.41	2.25
7.0	5.91	5.73	5.37	5.04	4.72	4.43	4.15	3.89	3.65	3.42	3.21	3.01	2.82	2.64	2.48	2.32	2.18
7.1	5.67	5.49	5.15	4.83	4.53	4.25	3.98	3.73	3.50	3.28	3.08	2.88	2.70	2.53	2.38	2.23	2.09
7.2	5.39	5.22	4.90	4.59	4.31	4.04	3.78	3.55	3.33	3.12	2.92	2.74	2.57	2.41	2.26	2.12	1.99
7.3	5.08	4.92	4.61	4.33	4.06	3.80	3.57	3.34	3.13	2.94	2.76	2.58	2.42	2.27	2.13	2.00	1.87
7.4	4.73	4.59	4.30	4.03	3.78	3.55	3.32	3.12	2.92	2.74	2.57	2.41	2.26	2.12	1.98	1.86	1.74
7.5	4.36	4.23	3.97	3.72	3.49	3.27	3.06	2.87	2.69	2.53	2.37	2.22	2.08	1.95	1.83	1.72	1.61
7.6	3.98	3.85	3.61	3.39	3.18	2.98	2.79	2.62	2.45	2.30	2.16	2.02	1.90	1.78	1.67	1.56	1.47
7.7	3.58	3.47	3.25	3.05	2.86	2.68	2.51	2.36	2.21	2.07	1.94	1.82	1.71	1.60	1.50	1.41	1.32
7.8	3.18	3.09	2.89	2.71	2.54	2.38	2.23	2.10	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17
7.9	2.80	2.71	2.54	2.38	2.24	2.10	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17	1.10	1.03
8.0	2.43	2.36	2.21	2.07	1.94	1.82	1.71	1.60	1.50	1.41	1.32	1.24	1.16	1.09	1.02	0.957	0.897
8.1	2.10	2.03	1.91	1.79	1.68	1.57	1.47	1.38	1.29	1.21	1.14	1.07	1.00	0.938	0.879	0.824	0.773
8.2	1.79	1.74	1.63	1.53	1.43	1.34	1.26	1.18	1.11	1.04	0.973	0.912	0.855	0.802	0.752	0.705	0.661
8.3	1.52	1.48	1.39	1.30	1.22	1.14	1.07	1.00	0.941	0.882	0.827	0.775	0.727	0.682	0.639	0.599	0.562
8.4	1.29	1.25	1.17	1.10	1.03	0.966	0.906	0.849	0.796	0.747	0.700	0.656	0.615	0.577	0.541	0.507	0.475
8.5	1.09	1.06	0.990	0.928	0.870	0.816	0.765	0.717	0.672	0.630	0.591	0.554	0.520	0.487	0.457	0.428	0.401
8.6	0.920	0.892	0.836	0.784	0.735	0.689	0.646	0.606	0.568	0.532	0.499	0.468	0.439	0.411	0.386	0.362	0.339
8.7	0.778	0.754	0.707	0.663	0.622	0.583	0.547	0.512	0.480	0.450	0.422	0.396	0.371	0.348	0.326	0.306	0.287
8.8	0.661	0.641	0.601	0.563	0.528	0.495	0.464	0.435	0.408	0.383	0.359	0.336	0.315	0.296	0.277	0.260	0.244
8.9	0.565	0.548	0.513	0.481	0.451	0.423	0.397	0.372	0.349	0.327	0.306	0.287	0.269	0.253	0.237	0.222	0.208
9.0	0.486	0.471	0.442	0.414	0.389	0.364	0.342	0.320	0.300	0.281	0.264	0.247	0.232	0.217	0.204	0.191	0.179

* At temperatures below 14 °C, the objective is the same as that shown for 14 °C.
Reference: U.S. EPA 1999 Update of Ambient Water Quality Criteria for Ammonia[2]

2 *For freshwaters subject to the “Early Life Stage Present” condition, the thirty-day average concentration of total ammonia as nitrogen (in mg N/L) shall not*

exceed the values described by the following equation.

$$\text{30-day Average Concentration} = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) * MIN\left(2.85, 1.45*10^{0.028*(25-T)}\right)$$

Where T = temperature expressed in ºC.

In addition, for freshwaters, the highest four-day average within the 30-day period shall not exceed 2.5 times the 30-day average objective as calculated above.

Table 3-3. 30-day Average Objective for Ammonia-N for Freshwaters applicable to Waters Subject to the "Early Life Stage Absent" Condition (mg N/L)

	Temperature, °C								
pH	**0-7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15***
6.5	10.8	10.1	9.51	8.92	8.36	7.84	7.35	6.89	6.46
6.6	10.7	9.99	9.37	8.79	8.24	7.72	7.24	6.79	6.36
6.7	10.5	9.81	9.20	8.62	8.08	7.58	7.11	6.66	6.25
6.8	10.2	9.58	8.98	8.42	7.90	7.40	6.94	6.51	6.10
6.9	9.93	9.31	8.73	8.19	7.68	7.20	6.75	6.33	5.93
7.0	9.60	9.00	8.43	7.91	7.41	6.95	6.52	6.11	5.73
7.1	9.20	8.63	8.09	7.58	7.11	6.67	6.25	5.86	5.49
7.2	8.75	8.20	7.69	7.21	6.76	6.34	5.94	5.57	5.22
7.3	8.24	7.73	7.25	6.79	6.37	5.97	5.60	5.25	4.92
7.4	7.69	7.21	6.76	6.33	5.94	5.57	5.22	4.89	4.59
7.5	7.09	6.64	6.23	5.84	5.48	5.13	4.81	4.51	4.23
7.6	6.46	6.05	5.67	5.32	4.99	4.68	4.38	4.11	3.85
7.7	5.81	5.45	5.11	4.79	4.49	4.21	3.95	3.70	3.47
7.8	5.17	4.84	4.54	4.26	3.99	3.74	3.51	3.29	3.09
7.9	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71
8.0	3.95	3.70	3.47	3.26	3.05	2.86	2.68	2.52	2.36
8.1	3.41	3.19	2.99	2.81	2.63	2.47	2.31	2.17	2.03
8.2	2.91	2.73	2.56	2.40	2.25	2.11	1.98	1.85	1.74
8.3	2.47	2.32	2.18	2.04	1.91	1.79	1.68	1.58	1.48
8.4	2.09	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25
8.5	1.77	1.66	1.55	1.46	1.37	1.28	1.20	1.13	1.06
8.6	1.49	1.40	1.31	1.23	1.15	1.08	1.01	0.951	0.892
8.7	1.26	1.18	1.11	1.04	0.976	0.915	0.858	0.805	0.754
8.8	1.07	1.01	0.944	0.885	0.829	0.778	0.729	0.684	0.641
8.9	0.917	0.86	0.806	0.756	0.709	0.664	0.623	0.584	0.548
9.0	0.790	0.740	0.694	0.651	0.610	0.572	0.536	0.503	0.471

* At 15 °C and above, the 30-day average objective for waters subject to the "Early Life Stage Absent" conditions is the same as that for waters subject to the "Early Life Present" condition

Reference: U.S. EPA 1999 Update of Ambient Water Quality Criteria for Ammonia[3]

[3] *For freshwaters subject to the "Early Life Stage Absent" condition, the thirty-day average concentration of total ammonia as nitrogen (in mg N/L) shall not exceed the values described by the following equation.*

$$\text{30-day Average Concentration} = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) * 1.45 * 10^{0.028*(25-MAX(T,7))}$$

Where T = temperature expressed in ºC.
In addition, for freshwaters, the highest four-day average within the 30-day period shall not exceed 2.5 times the 30-day average objective as calculated above.

For the following waterbodies, the 30-day average water quality objective for ammonia shall be calculated as set forth below. In addition, the highest four-day average within the 30-day period shall not exceed 2.5 times the 30-day average objective shown in Table 3-4 “Site-specific 30-day Average Objectives for Ammonia by Waterbody Reach”. The regional one-hour average objective for ammonia-N for freshwaters, specified in Table 3-1, remains the applicable one-hour objective for these waterbodies.

Notwithstanding the provisions below, regulatory actions, including but not limited to TMDLs and Waste Discharge Requirements, to achieve applicable site-specific objectives must ensure that downstream standards will also be achieved and downstream beneficial uses will also be protected as far as the discharges’ impacts may be experienced.

As described in “Implementation”, “3. Selection of 30-day Average Objective – Early Life Stage Provision”, below, these waterbodies are subject to site-specific ELS provisions as set forth in Table 3-4 “Site-specific 30-day Average Objectives for Ammonia by Waterbody Reach”, which incorporate seasonality of early life stages of fish.

Where deemed necessary, additional receiving water monitoring shall be required of dischargers subject to SSOs to ensure that the SSOs are as protective of beneficial uses as the regional objectives are intended to be and downstream standards are achieved. This additional monitoring shall be required through the discharger’s NPDES permit monitoring and reporting program or other Board required monitoring programs. If monitoring indicates toxicity due to ammonia or a change in the waterbody that could impact the calculation or application of the SSOs, including either its chemical characteristics or the aquatic species present, including early life stages of fish, the Regional Board may reconsider the SSOs.

Table 3-4. Site-Specific 30-day Average Objectives for Ammonia by Waterbody Reach

WATERBODY	30-DAY AVERAGE OBJECTIVE
Los Angeles River, Reach 5 (Sepulveda Basin)	**ELS Present (from April 1 – September 30)** $CCC = \left(\frac{0.0676}{1+10^{7.688-pH}} + \frac{2.912}{1+10^{pH-7.688}}\right) * 0.854 * MIN(2.85, 2.85 * 10^{0.028*(25-T)})$ **ELS Absent (from October 1 – March 31)** $CCC = \left(\frac{0.0676}{1+10^{7.688-pH}} + \frac{2.912}{1+10^{pH-7.688}}\right) * 0.854 * 2.85 * 10^{0.028*(25-Max(T,7))}$
Los Angeles River, Reach 4 (Sepulveda Dam to Riverside Drive)	**ELS Absent (year round)** $CCC = \left(\frac{0.0676}{1+10^{7.688-pH}} + \frac{2.912}{1+10^{pH-7.688}}\right) * 0.854 * 2.85 * 10^{0.028*(25-Max(T,7))}$
Los Angeles River, Reach 3 (Riverside Drive to Figueroa Street)	**ELS Present (from April 1 – September 30)** $CCC = \left(\frac{0.0676}{1+10^{7.688-pH}} + \frac{2.912}{1+10^{pH-7.688}}\right) * 0.854 * MIN(2.85, 2.85 * 10^{0.028*(25-T)})$ **ELS Absent (from October 1 – March 31)** $CCC = \left(\frac{0.0676}{1+10^{7.688-pH}} + \frac{2.912}{1+10^{pH-7.688}}\right) * 0.854 * 2.85 * 10^{0.028*(25-Max(T,7))}$
Burbank Western Wash (Burbank Water Reclamation Plant to confluence with LA River)	**ELS Absent (year round)** $CCC = \left(\frac{0.0676}{1+10^{7.688-pH}} + \frac{2.912}{1+10^{pH-7.688}}\right) * 0.92 * 2.03 * 10^{0.028*(25-Max(T,7))}$
San Gabriel River, Reaches 2 and 3 (Confluence with San Jose Creek to Firestone Blvd.) (including all San Jose Creek WRP discharges)	**ELS Present (from April 1 – September 30)** $CCC = \left(\frac{0.0676}{1+10^{7.688-pH}} + \frac{2.912}{1+10^{pH-7.688}}\right) * 0.89 * MIN(2.85, 2.37 * 10^{0.028*(25-T)})$ **ELS Absent (from October 1 – March 31)** $CCC = \left(\frac{0.0676}{1+10^{7.688-pH}} + \frac{2.912}{1+10^{pH-7.688}}\right) * 0.89 * 2.37 * 10^{0.028*(25-Max(T,7))}$
San Gabriel River, Reach 1 (Firestone Blvd. to Willow St. or start of estuary)	**ELS Absent (year round)** $CCC = \left(\frac{0.0676}{1+10^{7.688-pH}} + \frac{2.912}{1+10^{pH-7.688}}\right) * 0.854 * 3.34 * 10^{0.028*(25-Max(T,7))}$

WATERBODY	30-DAY AVERAGE OBJECTIVE
Santa Clara River, Reach 6 (Bouquet Canyon Rd. Bridge to West Pier Hwy 99)	**ELS Present (from February 1 – September 30)** $CCC = \left(\frac{0.0676}{1 + 10^{7.688 - pH}} + \frac{2.912}{1 + 10^{pH - 7.688}} \right) * 0.854 * MIN(2.85, 3.24 * 10^{0.028*(25-T)})$ **ELS Absent (from October 1 – January 31)** $CCC = \left(\frac{0.0676}{1 + 10^{7.688 - pH}} + \frac{2.912}{1 + 10^{pH - 7.688}} \right) * 0.854 * 3.24 * 10^{0.028*(25-Max(T,7))}$
Santa Clara River, Reach 5 (West Pier Hwy 99 to Blue Cut gauging station)	**ELS Present (from February 1 – September 30)** $CCC = \left(\frac{0.0676}{1 + 10^{7.688 - pH}} + \frac{2.912}{1 + 10^{pH - 7.688}} \right) * 0.854 * MIN(2.85, 3.20 * 10^{0.028*(25-T)})$ **ELS Absent (from October 1 – January 31)** $CCC = \left(\frac{0.0676}{1 + 10^{7.688 - pH}} + \frac{2.912}{1 + 10^{pH - 7.688}} \right) * 0.854 * 3.20 * 10^{0.028*(25-Max(T,7))}$
San Jose Creek (Pomona WRP to confluence with San Gabriel River)	**ELS Present (from April 1 – September 30)** $CCC = \left(\frac{0.0676}{1 + 10^{7.688 - pH}} + \frac{2.912}{1 + 10^{pH - 7.688}} \right) * 0.92 * MIN(2.85, 2.02 * 10^{0.028*(25-T)})$ **ELS Absent (from October 1 – March 31)** $CCC = \left(\frac{0.0676}{1 + 10^{7.688 - pH}} + \frac{2.912}{1 + 10^{pH - 7.688}} \right) * 0.92 * 2.02 * 10^{0.028*(25-Max(T,7))}$
Rio Hondo (Upstream of Whittier Narrows Dam)	**ELS Present (from April 1 – September 30)** $CCC = \left(\frac{0.0676}{1 + 10^{7.688 - pH}} + \frac{2.912}{1 + 10^{pH - 7.688}} \right) * 0.854 * MIN(2.85, 3.04 * 10^{0.028*(25-T)})$ **ELS Absent (from October 1 – March 31)** $CCC = \left(\frac{0.0676}{1 + 10^{7.688 - pH}} + \frac{2.912}{1 + 10^{pH - 7.688}} \right) * 0.854 * 3.04 * 10^{0.028*(25-Max(T,7))}$
Coyote Creek (Long Beach WRP to confluence with San Gabriel River)	**ELS Absent (year round)** $CCC = \left(\frac{0.0676}{1 + 10^{7.688 - pH}} + \frac{2.912}{1 + 10^{pH - 7.688}} \right) * 0.854 * 2.96 * 10^{0.028*(25-Max(T,7))}$

IMPLEMENTATION

Implementation Provisions for the Application of Ammonia Objectives to Inland Surface Waters in the Los Angeles Region

***1. Determination of Freshwater, Brackish Water or Saltwater Conditions*[4]**

(1) For inland surface waters in which the salinity is equal to or less than 1 part per thousand 95% or more of the time, the applicable objectives are the freshwater objectives, based on the US EPA "1999 Update of Ambient Water Quality Criteria for Ammonia." (2) For waters in which the salinity is equal to or greater than 10 parts per thousand 95% or more of the time, the applicable objectives are a 4-day average concentration of 0.035 mg un-ionized NH_3/L and a one-hour average concentration of 0.233 mg un-ionized NH_3/L. (3) For waters in which the salinity is between 1 and 10 parts per thousand, the applicable objectives are the more stringent of the freshwater or saltwater objectives. (a) However, the Regional Board may by adoption of a resolution approve the use of either freshwater or saltwater objectives for an enclosed bay, wetland or estuary with findings that scientifically defensible information and data demonstrate that on a site-specific basis the biology of the water body is dominated by freshwater aquatic life and that freshwater objectives are more appropriate; or conversely, the biology of the water body is dominated by saltwater aquatic life and that saltwater objectives are more appropriate. When determining the biotic dominance of a water body, the following factors shall be considered: the nature of the conditions causing the dominance (e.g., natural vs. anthropogenic), the historical conditions of the water body, and the reversibility of the existing conditions.

2. Selection of One-hour Average Objective – Salmonids Present vs. Salmonids Absent

It is assumed that salmonids may be present in waters designated in the Basin Plan as "COLD" or "MIGR" and that salmonids are absent in waters not designated in the Basin Plan as "COLD" or "MIGR," in the absence of additional information to the contrary.

3. Selection of 30-day Average Objective – Early Life Stage (ELS) Provision

Early life stages of fish are presumptively present and must be protected at all times of the year unless the water body is listed in Table 3-5 or unless a site-specific study is conducted, which justifies applying the ELS absent condition or a seasonal ELS present condition. Any change in the implementation provision for the ELS present/absent condition, including the assignment of water bodies, must be approved through the Basin Plan Amendment process.

If recent data and information are submitted to the Regional Board that provide substantial evidence that the physical conditions of a water body listed in Table 3-5 have changed due to restoration efforts such that there is habitat suitable for Early Life Stages of fish and one or more fish species that reproduce below 15 degrees Celsius is known to be present, in that or the adjacent water bodies, the Regional Board shall reconsider this implementation provision to ensure protection of Early Life Stages of fish in the water body.

To justify the ELS absent provision, information regarding fish species distributions, spawning periods, nursery periods and the duration of early life stages found in the water body must be presented. Expert opinions from fisheries biologists and other scientists will be considered. Where it can be obtained, a consensus opinion from a diverse body of experts would carry significant weight in determining the presence or absence of the ELS. Information on water body temperature, including spatial, seasonal and inter-annual variability will also be considered. The determination of the time frame during the year when early life stages are most likely not to be present in numbers that, if chronic toxicity did occur, would affect the long-term success of the fish populations, should include adequate scientific justification. The Regional Board will use the record supporting a Basin Plan amendment as the basis upon which to approve or disapprove changes to these implementation provisions for the 30-day average ammonia objective. The record should clearly explain all the factors and information considered in arriving at the determination. The Regional Board will consider and weigh the breadth and depth of scientific evidence in determining whether to remove the early life stage specification of a water body.

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[4] *The procedure described in this section to determine which objectives should be applied is the same method employed in the California Toxics Rule (Title 40, Code of Federal Regulations, § 131.38(c)(3)).*

Where there is a site-specific ammonia objective for the water body, and the water body is not identified as ELS absent due to physical characteristics of the water body, separate implementation provisions to protect Early Life Stages of fish may apply, since the temperature threshold at which ELS are more sensitive than invertebrates may change based on these site-specific conditions. The potential for seasonality for all ELS present water bodies will be considered before the ELS provision is applied to water bodies with a site-specific objective.

Notwithstanding anything to the contrary herein, a watershed may have some reaches and tributaries with ELS present conditions and others with ELS absent conditions. Implementation actions to achieve applicable ammonia objectives must implement downstream objectives.

Table 3-5. Water Bodies Subject to 30-day Average Objective Applicable to "ELS Absent" Condition*

HUC 12 No.	Waterbody
CALLEGUAS-CONEJO CREEK WATERSHED	
180701030107	Calleguas Creek Reach 2 (Estuary to Potero Road)
180701030106	Revolon Slough (Calleguas Creek Rch 2 to Pleasant Valley Rd.)
180701030107	Revolon Slough (Pleasant Valley Rd. to Central Ave.)
180701030106	Reach 5 – Beardsley Channel (above Central Ave.)
180701030105	Conejo Creek
180701030107	Arroyo Conejo (Conejo Creek to North Fork Arroyo Conejo)
180701030104	Arroyo Conejo (above confl. with North Fork Arroyo Conejo)
180701030105	Arroyo Las Posas (Calleguas Creek Rch 3 to Long Canyon)
180701030103	Arroyo Las Posas (Long Canyon to Hitch Rd.)
180701030103	Arroyo Simi (Hitch Rd. to Happy Camp Canyon)
180701030102	Arroyo Simi (Happy Camp Canyon to Alamos Canyon)
180701030102	Arroyo Simi (Alamos Canyon to Tapo Canyon Creek)
180701030101	Arroyo Simi (above Tapo Canyon Creek)
MALIBU CREEK WATERSHED	
180701040104	Cold Creek
180701040102	Medea Creek Reach 1 (Malibou Lake to Lindero Creek Reach 1)
180701040102	Medea Creek Reach 2 (above Lindero Creek Reach 1)
180701040104	Triunfo Creek Reach 1 (Malibou Lake to Lobo Canyon)
180701040101	Triunfo Creek Reach 2 (Lobo Canyon to Westlake Lake)
BALLONA CREEK WATERSHED	
180701040300	Ballona Creek Reach 2 (Estuary to National Blvd.)
180701040300	Ballona Creek Reach 1 (above National Blvd.)
DOMINGUEZ CHANNEL WATERSHED	
180701060102	Dominguez Channel (Estuary to 135th St.)
180701060101	Dominguez Channel (above 135th St)
LOS ANGELES RIVER WATERSHED	
180701050402	Los Angeles River Reach 1 (Estuary to Carson St.)
180701050402	Los Angeles River Reach 2 (Carson St. to Rio Hondo Reach 1)
180701050401	Los Angeles River Reach 2 (Rio Hondo Reach 1 to Figueroa St.)

HUC 12 No.	Waterbody
180701050210	Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)
180701050208	Los Angeles River Reach 4 (Riverside Dr. to Sepulveda Dam)
180701050208	Los Angeles River Reach 5 (Sepulveda Dam to Balboa Blvd.)
180701050208	Los Angeles River Reach 6 (above Balboa Blvd.)
180701050303	Rio Hondo Reach 1 (Los Angeles River Reach 2 to Santa Ana Fwy)
180701050303	Rio Hondo Reach 2 (Santa Ana Fwy to Whittier Narrows Dam)
180701050302	Rio Hondo Reach 3 (except from Whittier Narrows to 4 miles north)
180701050209	Arroyo Seco Reach 3 (above Devils Gate Dam)
180701050208	Tujunga Wash
180701050402	Compton Creek
180701050209	Arroyo Seco Reach 1 (Los Angeles River Reach 2 to Holly St.)
180701050209	Arroyo Seco Reach 2 (Holly St. to Devils Gate Dam)
180701050208	Burbank Western Channel
180701050206	Pacoima Wash
SAN GABRIEL RIVER WATERSHED	
180701060606	San Gabriel River Reach 1 (San Gabriel River Estuary to Firestone Blvd.)
180701060606	San Gabriel River Reach 2 (Firestone Blvd. to Whittier Narrows Dam)
180701060601	San Gabriel River Reach 3 (Whittier Narrows Dam to San Jose Creek)
180701060601	San Gabriel River Reach 3 (San Jose Creek to Ramona Blvd.)
180701060601	San Gabriel River Reach 4 (Ramona Blvd. to Santa Fe Dam)
180701060601	San Gabriel River Reach 5 (Santa Fe Dam to Huntington Dr.)
180701060601	San Gabriel River Reach 5 (Huntington Dr. to Van Tassel Canyon)
180701060506	Coyote Creek (San Gabriel River Estuary to La Cañada Verde Creek)
180701060603	Coyote Creek (above La Cañada Verde Creek)
180701060502	San Jose Creek Reach 1 (San Gabriel River Reach 3 to Temple Ave.)
180701060501	San Jose Creek Reach 2 (Temple Ave. to Thompson Wash)

*Notes:

1) All wetlands/estuaries and lagoons are assumed to have ELS.
2) Whittier Narrows flood control basin is listed separately in the Basin Plan
3) Based on published literature and expert opinion, fish species known to reproduce in significant numbers below 15 degrees Celsius are absent in these water bodies, or the water bodies are known to have physical conditions that preclude reproduction and early development of these species in significant numbers. These species include: steelhead/rainbow trout, three-spine stickleback, brown trout, prickly sculpin, staghorn sculpin, striped mullet, starry flounder, arrow goby, and Pacific lamprey.

4. Existence of Threatened or Endangered Species

Where the Regional Board determines that endangered or threatened species in the Los Angeles Region are more sensitive to a pollutant than the species upon which the objectives are based, more stringent, site-specific *modifications of the objectives shall be performed using U.S. EPA approved methods.*[5] *Temperature and pH must be adjusted to match the conditions used to calculate the objectives. Tests to determine site-specific objectives for threatened and endangered species can be conducted in site water or laboratory water.*

5. Translation of Objectives into Effluent Limits[6]

If the Regional Board determines that water quality based effluent limitations are necessary to control ammonia in a discharge, the permit shall contain effluent limitations for ammonia using one of the following methods:

1. Use the following procedure based on a steady-state model:

Step 1: Identify the applicable water quality objectives for ammonia for the receiving water immediately downstream of the discharge.

Step 2a: For each water quality objective, calculate the effluent concentration allowance (ECA) using the following steady-state mass balance model:

If a mixing zone has not been authorized by the Regional Board, or when WQO ≤ B:

$$ECA = WQO$$

If a mixing zone has been authorized by the Regional Board:[7]

$$ECA = WQO + D\,(WQO - B) \qquad \text{when } WQO > B$$

Where: WQO = water quality objective (adjusted as described in Step 2b, if necessary, for temperature, pH, and salinity.)
D = dilution credit
B = ambient background concentration

The dilution credit (D) shall be derived taking into account water body characteristics and the type of discharge (i.e. completely-mixed or incompletely-mixed with the receiving water), using established procedures in the "Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California" (2000) or other appropriate U.S. EPA approved methodologies. The resulting dilution credit must be approved by the Executive Officer.

The ambient background concentration shall be the observed maximum as determined in accordance with procedures in the "Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California" (2000) or other appropriate U.S. EPA approved methodologies. The resulting ambient background concentration must be approved by the Executive Officer.

Step 2b: In order to adjust the un-ionized saltwater ammonia objective to an ECA expressed as total ammonia, the following equation shall be used:

$$[NH_4^+]+[NH_3] = [NH_3] + [NH_3]*10 \wedge (pK_a^s + 0.0324\,(298\text{-}T) + 0.0415\,P/T - pH)$$

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[5] *U.S. EPA. 1985. "Guidance for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and their Uses". U.S. EPA. 1994. "Water Quality Standards Handbook, Second Edition", Chapter 3, Section 3.7.4 "The Recalculation Procedure".*

[6] *The method whereby objectives are translated to effluent limits is similar to the method contained in the "Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California" (2000). The method is also consistent with that outlined in the U.S. EPA "Technical Support Document for Water Quality-based Toxics Control (1991).*

[7] *Mixing zones may be authorized on a discharge-by-discharge basis per the mixing zone provision in Chapter 4 of the Basin Plan.*

Where: $P = 1$ atm
T = temperature (^oK)
$pK_a^s = 0.116 * i + 9.245$, the stoichiometric acid hydrolysis constant of ammonium ions in saltwater based on i
$i = 19.9273\ S\ (1000\text{-}1.005109\ S)^{-1}$, the molal ionic strength of saltwater based on S
S = salinity

(Per U.S. EPA Ambient Water Quality Criteria for Ammonia (Saltwater)-1989)

Step 3: For each ECA calculated in Step 2, determine the long-term average discharge condition (LTA) by multiplying the ECA with a factor (multiplier) that adjusts for effluent variability. The multiplier shall be calculated as described below, or shall be found in Table 3-6. To use Table 3-6, the coefficient of variation (CV)[8] for the effluent ammonia concentration must first be calculated. If (a) the number of effluent data points is less than 10, or (b) at least 80 percent of the effluent data are reported as not detected, then the CV shall be set equal to 0.6. When calculating the CV in this procedure, if a data point is below the detection limit in an effluent sample, one-half the detection limit shall be used as the value in the calculation. Multipliers for one-hour average, four-day average, and 30-day average objectives for ammonia that correspond to the CV can be found in Table 3-6.

ECA Multipliers:

ECA multiplier$_{1\text{-}hour99}$ = $e^{(0.5s^2 - zs)}$

ECA multiplier$_{4\text{-}day99}$ = $e^{(0.5s_4^2 - zs_4)}$

ECA multiplier$_{30\text{-}day99}$ = $e^{(0.5s_{30}^2 - zs_{30})}$
Where s = standard deviation

$$s = [\ln(CV^2 + 1)]^{0.5}$$
$$s^2 = \ln(CV^2 + 1)$$
$$s_4 = [\ln(CV^2/4 + 1)]^{0.5}$$
$$s_4^2 = \ln(CV^2/4 + 1)$$
$$s_{30} = [\ln(CV^2/30 + 1)]^{0.5}$$
$$s_{30}^2 = \ln(CV^2/30 + 1)$$

$z = 2.326$ for 99^{th} percentile probability basis

LTA Equations:

$LTA_{1\text{-}hour99} = ECA_{1\text{-}hour} * \text{ECA multiplier}_{1\text{-}hour99}$

$LTA_{4\text{-}day99} = ECA_{4\text{-}day} * \text{ECA multiplier}_{4\text{-}day99}$

$LTA_{30\text{-}day99} = ECA_{30\text{-}day} * \text{ECA multiplier}_{30\text{-}day99}$

Step 4: Select the lowest (most limiting) of the LTAs derived in Step 3 (LTA_{min}).

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[8] *The coefficient of variation (CV) is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.*

Step 5: Calculate water quality based effluent limitations (a maximum daily effluent limitation, MDEL, and an average monthly effluent limitation, AMEL) by multiplying LTA_{min} (as selected in Step 4) with a factor (multiplier) that adjusts the averaging period and exceedance frequency of the objective, and the effluent monitoring frequency, as follows:

MDEL and AMEL Equations:

*MDEL = LTA_{min} * MDEL $multiplier_{99}$*

*AMEL = LTA_{min} * AMEL $multiplier_{95}$*

The MDEL and AMEL multipliers shall be calculated as described below, or shall be found in Table 3-7 using the previously calculated CV and monthly sampling frequency (n) of ammonia in the effluent. If the LTA_{min} selected in Step 4 is $LTA_{4\text{-}day99}$ and the sampling frequency is four times per month or less, then n shall be set equal to 4. If the LTA_{min} selected in Step 4 is $LTA_{30\text{-}day99}$ and the sampling frequency is 30 times per month or less, then n shall be set equal to 30.

MDEL and AMEL Multipliers:

MDEL $multiplier_{99}$ = $= e^{(zs-0.5s^2)}$

Where z = 2.326 for 99th percentile probability basis

$$s = [\ln(CV^2+1)]^{0.5}$$
$$s^2 = \ln(CV^2+1)$$

AMEL $multiplier_{95}$ = $e^{(zs_n-0.5s_n^2)}$

Where z = 1.645 for 95th percentile probability basis

$$s_n = [\ln(CV^2/n+1)]^{0.5}$$
$$s_n^2 = \ln(CV^2/n+1)$$

n = number of samples per month

2. *Apply a dynamic model approved by the Regional Board.*

3. *If a Total Maximum Daily Load (TMDL) for ammonia is in effect, the permit shall contain effluent limitations for ammonia that are based on the waste load allocation for ammonia in the TMDL.*

Table 3-6 - Effluent Concentration Allowance (ECA)
Multipliers for Calculating Long-Term Averages (LTAs)

Coefficient of Variation (CV)	One-hour Multiplier	4-day Multiplier	30-day Multiplier
	99th Percentile Occurrence Probability	99th Percentile Occurrence Probability 4 day	99th Percentile Occurrence Probability 30 day
0.1	0.797	0.891	0.959
0.2	0.643	0.797	0.919
0.3	0.527	0.715	0.882
0.4	0.440	0.643	0.846
0.5	0.373	0.581	0.812
0.6	0.321	0.527	0.78
0.7	0.281	0.481	0.75
0.8	0.249	0.440	0.721
0.9	0.224	0.404	0.693
1.0	0.204	0.373	0.667
1.1	0.187	0.345	0.642
1.2	0.174	0.321	0.619
1.3	0.162	0.300	0.596
1.4	0.153	0.281	0.575
1.5	0.144	0.264	0.555
1.6	0.137	0.249	0.535
1.7	0.131	0.236	0.517
1.8	0.126	0.224	0.5
1.9	0.121	0.214	0.483
2.0	0.117	0.204	0.468
2.1	0.113	0.195	0.453
2.2	0.110	0.187	0.438
2.3	0.107	0.180	0.425
2.4	0.104	0.174	0.412
2.5	0.102	0.168	0.4
2.6	0.100	0.162	0.388
2.7	0.098	0.157	0.377
2.8	0.096	0.153	0.366
2.9	0.094	0.148	0.356
3.0	0.093	0.144	0.346
3.1	0.091	0.141	0.337
3.2	0.090	0.137	0.328
3.3	0.089	0.134	0.32
3.4	0.088	0.131	0.312
3.5	0.087	0.128	0.304
3.6	0.086	0.126	0.297
3.7	0.085	0.123	0.29
3.8	0.084	0.121	0.283
3.9	0.083	0.119	0.277
4.0	0.082	0.117	0.271

Table 3-7 - Long-Term Average (LTA) Multipliers for Calculating Effluent Limitations

Coefficient of Variation	MDEL Multiplier	AMEL Multiplier		
	99th Percentile Occurrence Probability	95th Percentile Occurrence Probability		
(CV)		n=4	n=8	n=30
0.1	1.25	1.08	1.06	1.03
0.2	1.55	1.17	1.12	1.06
0.3	1.90	1.26	1.18	1.09
0.4	2.27	1.36	1.25	1.12
0.5	2.68	1.45	1.31	1.16
0.6	3.11	1.55	1.38	1.19
0.7	3.56	1.65	1.45	1.22
0.8	4.01	1.75	1.52	1.26
0.9	4.46	1.85	1.59	1.29
1.0	4.90	1.95	1.66	1.33
1.1	5.34	2.04	1.73	1.36
1.2	5.76	2.13	1.80	1.39
1.3	6.17	2.23	1.87	1.43
1.4	6.56	2.31	1.94	1.47
1.5	6.93	2.40	2.00	1.50
1.6	7.29	2.48	2.07	1.54
1.7	7.63	2.56	2.14	1.57
1.8	7.95	2.64	2.20	1.61
1.9	8.26	2.71	2.27	1.64
2.0	8.55	2.78	2.33	1.68

6. Receiving Water Compliance Determination

Per Implementation Provision No. 1, the following methods for determining compliance with proposed objectives shall be used:

If salinity sampled at a particular receiving water station indicates saline conditions (equal to or greater than 10 ppt), then saltwater objectives shall apply.

If salinity sampled at a particular receiving water station indicates freshwater conditions (equal to or less than 1 ppt), then freshwater objectives shall apply.

If salinity sampled at a particular receiving water station indicates brackish conditions (greater than 1 but less than 10 ppt), then the more stringent of the freshwater or saltwater objectives shall apply except where the Regional Board, by adoption of a resolution, approves the use of either freshwater or saltwater objectives per Implementation Provision 1(3)(a).

Bacteria, Coliform

Total and fecal coliform bacteria are used to indicate the likelihood of pathogenic bacteria in surface waters. Water quality objectives for total and fecal coliform bacteria vary with the beneficial uses of the waterbody and are described below:

In Marine Waters Designated for Water Contact Recreation (REC-1)

1. <u>Geometric Mean Limits</u>
a. Total coliform density shall not exceed 1,000/100 ml.
b. Fecal coliform density shall not exceed 200/100 ml.
c. Enterococcus density shall not exceed 35/100 ml.

2. <u>Single Sample Limits</u>
a. Total coliform density shall not exceed 10,000/100 ml.
b. Fecal coliform density shall not exceed 400/100 ml.
c. Enterococcus density shall not exceed 104/100 ml.
***d.** Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.*

In Fresh Waters Designated for Water Contact Recreation (REC-1)

<u>1.</u> <u>Geometric Mean Limits</u>
a. E. coli density shall not exceed 126/100 ml.

<u>2.</u> <u>Single Sample Limits</u>
a. E. coli density shall not exceed 235/100 ml.

In Fresh Waters Designated for Limited Contact Recreation (LREC-1)

<u>1.</u> <u>Geometric Mean Limits</u>
a. E. coli density shall not exceed 126/100 ml.

<u>2.</u> <u>Single Sample Limits</u>
a. E. coli density shall not exceed 576/100 ml.

The single sample limit for E. coli is based on EPA's determination of the most appropriate single sample maximum density for water bodies infrequently used for full-body recreation[9].

Implementation Provisions for Water Contact Recreation Bacteria Objectives

The geometric mean values should be calculated based on a statistically sufficient number of samples (generally not less than 5 samples equally spaced over a 30-day period).

If any of the single sample limits are exceeded, the Regional Board may require repeat sampling on a daily basis until the sample falls below the single sample limit in order to determine the persistence of the exceedance.

When repeat sampling is required because of an exceedance of any one single sample limit, values from all samples collected during that 30-day period shall be used to calculate the geometric mean.

The single sample bacteriological objectives shall be strictly applied except when provided for in a Total Maximum Daily Load (TMDL). In all circumstances, including in the context of a TMDL, the geometric mean objectives shall be strictly applied. In the context of a TMDL, the Regional Board may implement the single sample objectives in

9 U.S. EPA. 1986. Ambient Water Quality Criteria for Bacteria-1986. Report No. EPA 330/5-84-002. January 1986.

fresh and marine waters by using a 'reference system/antidegradation approach' or 'natural sources exclusion approach' as discussed below. A reference system is defined as an area and associated monitoring point that is not impacted by human activities that potentially affect bacteria densities in the receiving water body.

These approaches recognize that there are natural sources of bacteria, which may cause or contribute to exceedances of the single sample objectives for bacterial indicators. They also acknowledge that it is not the intent of the Regional Board to require treatment or diversion of natural water bodies or to require treatment of natural sources of bacteria from undeveloped areas. Such requirements, if imposed by the Regional Board, could adversely affect valuable aquatic life and wildlife beneficial uses supported by natural water bodies in the Region.

Under the reference system/antidegradation implementation procedure, a certain frequency of exceedance of the single sample objectives above shall be permitted on the basis of the observed exceedance frequency in the selected reference system or the targeted water body, whichever is less. The reference system/anti-degradation approach ensures that bacteriological water quality is at least as good as that of a reference system and that no degradation of existing bacteriological water quality is permitted where existing bacteriological water quality is better than that of the selected reference system.

Under the natural sources exclusion implementation procedure, after all anthropogenic sources of bacteria have been controlled such that they do not cause or contribute to an exceedance of the single sample objectives and natural sources have been identified and quantified, a certain frequency of exceedance of the single sample objectives shall be permitted based on the residual exceedance frequency in the specific water body. The residual exceedance frequency shall define the background level of exceedance due to natural sources. The 'natural sources exclusion' approach may be used if an appropriate reference system cannot be identified due to unique characteristics of the target water body. These approaches are consistent with the State Antidegradation Policy (State Board Resolution No. 68-16) and with federal antidegradation requirements (40 CFR 131.12).

The appropriateness of these approaches and the specific exceedance frequencies to be permitted under each will be evaluated within the context of TMDL development for a specific water body, at which time the Regional Board may select one of these approaches, if appropriate.

These implementation procedures may only be implemented within the context of a TMDL addressing municipal storm water, including the municipal storm water requirements of the Statewide Permit for Storm Water Discharges from the State of California Department of Transportation (Caltrans), and non-point sources discharges. These implementation provisions do not apply to NPDES discharges other than MS4 discharges.[10]

In Waters Designated for Non-contact Water Recreation (REC-2)

In waters designated for non-water contact recreation (REC-2) and not designated for water contact recreation (REC-1), the fecal coliform concentration shall not exceed a log mean of 2000/100 ml (based on a minimum of not less than four samples for any 30-day period), nor shall more than 10 percent of samples collected during any 30-day period exceed 4000/100 ml.

In Waters Designated for Shellfish Harvesting (SHELL)

In all waters where shellfish can be harvested for human consumption (SHELL), the median total coliform concentration throughout the water column for any 30-day period shall not exceed 70/100 ml, nor shall more than ten percent of the samples collected during any 30-day period exceed 230/100 ml for a five-tube decimal dilution

[10] *Municipal storm water discharges in the Los Angeles Region are those with permits under the Municipal Separate Storm Sewer System (MS4) NPDES Program. For example, the MS4 permits at the time of this amendment are the Los Angeles County Municipal Storm Water NPDES Permit, Ventura County Municipal Storm Water NPDES Permit, City of Long Beach Municipal Storm Water NPDES Permit, and elements of the statewide storm water permit for the California Department of Transportation (Caltrans).*

test or 330/100 ml when a three-tube decimal dilution test is used.

Bioaccumulation

Many pollutants can bioaccumulate in fish and other aquatic organisms at levels which are harmful for both the organisms as well as organisms that prey upon these species (including humans).

Toxic pollutants shall not be present at levels that will bioaccumulate in aquatic life to levels which are harmful to aquatic life or human health.

Biochemical Oxygen Demand (BOD_5)

The 5-day BOD test indirectly measures the amount of readily degradable organic material in water by measuring the residual dissolved oxygen after a period of incubation (usually 5 days at 20 °C), and is primarily used as an indicator of the efficiency of wastewater treatment processes.

Waters shall be free of substances that result in increases in the BOD which adversely affect beneficial uses.

Biostimulatory Substances

Biostimulatory substances include excess nutrients (nitrogen, phosphorus) and other compounds that stimulate aquatic growth. In addition to being aesthetical unpleasant (causing taste, odor, or color problems), this excessive growth can also cause other water quality problems.

Waters shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses.

Chemical Constituents

Chemical constituents in excessive amounts in drinking water are harmful to human health. Maximum levels of chemical constituents in drinking waters are listed in the California Code of Regulations and the relevant limits are described below.

Surface waters shall not contain concentrations of chemical constituents in amounts that adversely affect any designated beneficial use.

Water designated for use as Domestic or Municipal Supply (MUN) shall not contain concentrations of chemical constituents in excess of the limits specified in the following provisions of Title 22 of the California Code of Regulations which are incorporated by reference into this plan: Table 64431-A of Section 64431 (Inorganic Chemicals) and Table 64444-A of Section 64444 (Organic Chemicals). This incorporation by reference is prospective including future changes to the incorporated provisions as the changes take effect. (See Tables 3-8 and 3-9.)

Table 3-8. The Maximum Contaminant Levels: Inorganic Chemicals (for MUN beneficial use) specified in Table 64431-A of Section 64431 of Title 22 of the California Code of Regulations as of February 2013.

Constituent	Maximum Contaminant Level mg/L
Aluminum	1.
Antimony	0.006
Arsenic	0.010
Asbestos	7 MFL*
Barium	1.
Beryllium	0.004
Cadmium	0.005
Chromium	0.05
Cyanide	0.15
Fluoride	2.0
Mercury	0.002
Nickel	0.1
Nitrate (as NO_3)	45.
Nitrate + Nitrite (sum as nitrogen)	10.
Nitrite (as nitrogen)	1.
Perchlorate	0.006
Selenium	0.05
Thallium	0.002

(MFL = million fibers per liter; MCL for fibers> 10 microns long)

Chlorine, Total Residual

Disinfection of wastewaters with chlorine produces a chlorine residual. Chlorine and its reaction products are toxic to aquatic life.

Chlorine residual shall not be present in surface water discharges at concentrations that exceed 0.1 mg/L and shall not persist in receiving waters at any concentration that causes impairment of beneficial uses.

Color

Color in water can result from natural conditions (e.g., from plant material or minerals) or can be introduced from commercial or industrial sources. Color is primarily an aesthetic consideration, although extremely dark colored water can limit light penetration and cause additional water quality problems. Furthermore, color can impact domestic and industrial uses by discoloring clothing or foods. The secondary drinking water standard is 15 color units (DHS, 1992).

Waters shall be free of coloration that causes nuisance or adversely affects beneficial uses.

Exotic Vegetation

Exotic (non-native) vegetation introduced in and around stream courses is often of little value as habitat (food and cover) for aquatic-dependent biota. Exotic plants can quickly out-compete native vegetation and cause other water quality impairments.

Exotic vegetation shall not be introduced around stream courses to the extent that such growth causes nuisance or adversely affects beneficial uses.

Floating Material

Floating materials can be an aesthetic nuisance as well as provide substrate for undesirable bacterial and algal growth and insect vectors.

Waters shall not contain floating materials, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.

See additional regulatory guidelines described under the San Gabriel River (East Fork) Trash Total Daily Maximum Load (Chapter 7).

See additional regulatory guidelines described under the Los Angeles River Trash Total Maximum Daily Load (Chapter 7).

See additional regulatory guidelines described under the Ballona Creek Trash Total Maximum Daily Load (Chapter 7).

Table 3-9. The Maximum Contaminant Levels: Organic Chemicals (for MUN beneficial use) specified in Table 64444-A of Section 64444 of Title 22 of the California Code of Regulations as of February 2013

Constituent	Maximum Contaminant Level (mg/L)
(a) Volatile Organic Chemicals (VOCs)	
Benzene	0.001
Carbon Tetrachloride	0.0005
1,2-Dichlorobenzene	0.6
1,4-Dichlorobenzene	0.005
1,1-Dichloroethane	0.005
1,2-Dichloroethane	0.0005
1,1-Dichloroethylene	0.006
cis-1,2-Dichloroethylene	0.006
trans-1,2-Dichloroethylene	0.01
Dichloromethane	0.005
1,2-Dichloropropane	0.005
1,3-Dichloropropene	0.0005
Ethylbenzene	0.3
Methyl-tert-butyl ether	0.013
Monochlorobenzene	0.07
Styrene	0.1
1,1,2,2-Tetrachloroethane	0.001
Tetrachloroethylene	0.005
Toluene	0.15
1,2,4-Trichlorobenzene	0.005
1,1,1-Trichloroethane	0.200
1,1,2-Trichloroethane	0.005
Trichloroethylene	0.005
Trichlorofluoromethane	0.15
1,1,2-Trichloro-1,2,2-Trifluoroethane	1.2
Vinyl Chloride	0.0005
Xylenes	1.750*
(b) Non-Volatile Synthetic Organic Chemicals (SOCs)	
Alachlor	0.002
Atrazine	0.001
Bentazon	0.018
Benzo(a)pyrene	0.0002
Carbofuran	0.018
Chlordane	0.0001
2,4-D	0.07
Dalapon	0.2
Dibromochloropropane	0.0002
Di(2-ethylhexyl)adipate	0.4
Di(2-ethylhexyl)phthalate	0.004
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Ethylene Dibromide	0.00005
Constituent	**Maximum Contaminant Level (mg/L)**

Glyphosate	0.7
Heptachlor	0.00001
Heptachlor Epoxide	0.00001
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.03
Molinate	0.02
Oxamyl	0.05
Pentachlorophenol	0.001
Picloram	0.5
Polychlorinated Biphenyls	0.0005
Simazine	0.004
Thiobencarb	0.07
Toxaphene	0.003
2,3,7,8-TCDD (Dioxin)	3×10^{-8}
2,4,5-TP (Silvex)	0.05

*MCL is for either a single isomer or the sum of the isomers.

Methylene Blue Activated Substances (MBAS)

The MBAS procedure tests for the presence of anionic surfactants (detergents) in water. Positive results can indicate the presence of domestic wastewater. This test can be used to indicate impacts from septic systems. Surfactants disturb the surface tension which affects insects and can affect gills in aquatic life. The secondary drinking water standard for MBAS is 0.5 mg/L (DHS, 1992).

Waters shall not have MBAS concentrations greater than 0.5 mg/L in waters designated MUN.

Mineral Quality

Mineral quality in natural waters is largely determined by the mineral assemblage of soils and rocks and faults near the land surface. Point and nonpoint source discharges of poor quality water can degrade the mineral content of natural waters. High levels of dissolved solids renders waters useless for many beneficial uses. Elevated levels of boron affect agricultural use (especially citrus).

In the late 1980s, many dischargers started to experience compliance problems with chloride limits largely due to chloride levels in supply waters imported into the Region. In order to provide a long-term solution to chloride compliance problems while continuing to protect beneficial uses, the Regional Board adopted Resolution No. 97-002: Policy for Addressing Levels of Chloride in Discharges of Wastewater (Chapter 5). This Chloride Policy revised water quality objectives in selected surface waters based upon chloride levels in supply waters imported into the Region plus a loading factor. The policy also set forth measures to address salinity loading throughout the Region.

Due to concerns expressed about the potential for future adverse impacts to agricultural resources in Ventura County, water quality objectives for chloride in the Santa Clara River and Calleguas Creek watersheds were not revised under the Chloride Policy in 1997. However, the Regional Board granted variances (interim relief) from surface water chloride limits in NPDES permits that are based on existing water quality objectives in the Santa Clara River and Calleguas Creek watersheds. These variances expired in January 2001 and are no longer applicable.

Numerical mineral quality objectives for individual inland surface waters are contained in Table 3-10.

Nitrogen (Nitrate, Nitrite)

High nitrate levels in drinking water can cause health problems in humans. Infants are particularly sensitive and can develop methemoglobinemia (blue-baby syndrome). Excess nitrogen in surface waters also leads to excess aquatic growth and can contribute to elevated levels of NO_3 in ground water as well. The primary drinking water standard for nitrate (as NO_3) is 45 mg/L (DHS, 1992).

Waters shall not exceed 10 mg/L nitrogen as nitrate-nitrogen plus nitrite-nitrogen (NO_3-N + NO_2-N), 45 mg/L as nitrate (NO_3), 10 mg/L as nitrate-nitrogen (NO_3-N), or 1 mg/L as nitrite-nitrogen (NO_2-N) or as otherwise designated in Table 3-10.

Oil and Grease

Oil and grease are not readily soluble in water and form a film on the water surface. Oily films can coat birds and aquatic organisms, impacting respiration and thermal regulation, and causing death. Oil and grease can also cause nuisance conditions (odors and taste), are aesthetically unpleasant, and can restrict a wide variety of beneficial uses.

Waters shall not contain oils, greases, waxes or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause nuisance, or that otherwise adversely affect beneficial uses.

Oxygen, Dissolved (DO)

Adequate dissolved oxygen levels are required to support aquatic life. Depression of dissolved oxygen can lead to anaerobic conditions resulting in odors or, in extreme cases, in fish kills. Dissolved oxygen requirements are dependent on the beneficial uses of the waterbody.

A*t a minimum (see specifics below), the **mean** annual dissolved oxygen concentration of **all** waters shall be greater than 7 mg/L, and no single determination shall be less than 5.0 mg/L, except when natural conditions cause lesser concentrations.*

The dissolved oxygen content of all surface waters designated as WARM shall not be depressed below 5 mg/L as a result of waste discharges.

The dissolved oxygen content of all surface waters designated as COLD shall not be depressed below 6 mg/L as a result of waste discharges.

The dissolved oxygen content of all surface waters designated as both COLD and SPWN shall not be depressed below 7 mg/L as a result of waste discharges.

For that area known as the Outer Harbor area of Los Angeles-Long Beach Harbors, the mean annual dissolved oxygen concentrations shall be 6.0 mg/L or greater, provided that no single determination shall be less than 5.0 mg/L.

Table 3-10. Water Quality Objectives for Selected Constituents in Inland Surface Waters[a].

Reaches are in upstream to downstream order.

WATERSHED/STREAM REACH[b]	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron[c] (mg/L)	Nitrogen[d] (mg/L)	SAR[e] (mg/L)
Miscellaneous Ventura Coastal Streams	*no waterbody specific objectives* [f]					
Ventura River Watershed:						
Above Camino Cielo Road	700	300	50	1.0	5	5
Between Camino Cielo Road and Casitas Vista Road	800	300	60	1.0	5	5
Between Casitas Vista Road and confluence with Weldon Canyon	1000	300	60	1.0	5	5
Between confluence with Weldon Canyon and Main Street	1500	500	300	1.5	10	5
Between Main St. and Ventura River Estuary	*no waterbody specific objectives* [f]					
Santa Clara River Watershed:						
Above Lang gaging station	500	100	50	0.5	5	5
Between Lang gaging station and Bouquet Canyon Road Bridge	800	150	100	1.0	5	5
Between Bouquet Canyon Road Bridge and West Pier Highway 99	1000	300	100	1.5	10	5
Between West Pier Highway 99 and Blue Cut gaging station	1000	400	100	1.5	5	10
Between Blue Cut gaging station and Piru Creek	1300	600	100	1.5	5	5
Between Piru Creek and A Street, Fillmore	1300	600	100	1.5	5	5
Between A Street, Fillmore and Freeman Diversion "Dam" near Saticoy	1300	650	100[l]	1.5	5	5
Between Freeman Diversion "Dam" near Saticoy and Highway 101 Bridge	1200	600	150	1.5	-	-
Between Highway 101 Bridge and Santa Clara River Estuary	*no waterbody specific objectives* [f]					
Santa Paula Creek above Santa Paula Water Works Diversion Dam	600	250	45	1.0	5	5
Sespe Creek above gaging station, 500' downstream from Little Sespe Creek	800	320	60	1.5	5	5
Piru Creek above gaging station below Santa Felicia Dam	800	400	60	1.0	5	5
Calleguas Creek Watershed:						
Arroyo Simi and tributaries-upstream Madera Road	850	250	150	1.0	10	f

Table 3-10. Water Quality Objectives for Selected Constituents in Inland Surface Waters[a] (cont.)

Reaches are in upstream to downstream order.

WATERSHED/STREAM REACH[b]	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron[c] (mg/L)	Nitrogen[d] (mg/L)	SAR[e] (mg/L)
Arroyo Simi-downstream Madera Road, Arroyo Las Posas, and tributaries	850	250	150	1.0	10	f
Calleguas Creek and tributaries-between Potrero Road and Arroyo Las Posas. Includes Conejo Creek, Arroyo Conejo, and Arroyo Santa Rosa	850	250	150	1.0	10	f
Below Potrero Road	*no waterbody specific objectives* [f]					
Miscellaneous Los Angeles County Coastal Streams	*no waterbody specific objectives* [f]					
Malibu Creek Watershed	2000	500	500	2.0	10	-
Ballona Creek Watershed	*no waterbody specific objectives* [f]					
Dominguez Channel Watershed	*no waterbody specific objectives* [f]					
Los Angeles River Watershed:						
Los Angeles River and tributaries-upstream Sepulveda Flood Control Basin	950	300	150	g	8	g
Los Angeles River-between Sepulveda Flood Control Basin and Figueroa Street. Includes Burbank Western Channel only	950	300	190[k]	g	8	g
Other tributaries to Los Angeles River-between Sepulveda Flood Control Basin and Figueroa Street	950	300	150	g	8	g
Los Angeles River-between Figueroa Street and Los Angeles River Estuary (Willow Street). Includes Rio Hondo below Santa Ana Freeway only[h].	1500	350	190[k]	g	8	g
Other tributaries to Los Angeles River-between Figueroa Street and Los Angeles River Estuary. Includes Arroyo Seco downstream spreading grounds.	1500	350	150	g	8	g
Rio Hondo-between Whittier Narrows Flood Control Basin and Santa Ana Freeway	750	300	180[k]	g	8	g
Rio Hondo-upstream Whittier Narrows Flood Control Basin	750	300	150	g	8	g
Santa Anita Creek above Santa Anita spreading grounds	250	30	10	g	f	g
Eaton Canyon Creek above Eaton Dam	250	30	10	g	f	g
Arroyo Seco above spreading grounds	300	40	15	g	f	g
Big Tujunga Creek above Hansen Dam	350	50	20	g	f	g
Pacoima Awash above Pacoima spreading grounds	250	30	10	g	f	g

Table 3-10. Water Quality Objectives for Selected Constituents in Inland Surface Waters[a] (cont.)

Reaches are in upstream to downstream order.

WATERSHED/STREAM REACH[b]	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron[c] (mg/L)	Nitrogen[d] (mg/L)	SAR[e] (mg/L)
San Gabriel River Watershed						
San Gabriel River-Above Morris Dam	250	30	10	0.6	2	2
San Gabriel River-Between Morris Dam and Ramona Blvd.	450	100	100	0.5	8	g
San Gabriel River and tributaries-between Ramona Blvd. and Valley Blvd	750	300	150	*1.0*	8	g
San Gabriel River-between Valley Blvd and Firestone Blvd. Includes Whittier Narrows Flood Control Basin, and San Jose Creek-downstream 71 Freeway only.	750	300	180[k]	*1.0*	8	g
San Jose Creek and tributaries-upstream 71 Freeway.	750	300	150	*1.0*	8	g
San Gabriel River-Between Firestone Blvd. and San Gabriel River Estuary (downstream from Willow Street) Includes Coyote Creek.	*no waterbody specific objectives* [f]					
All other minor San Gabriel Mountain streams tributary to San Gabriel Valley[i]	300	40	15	g	f	g
Island Watercourses:						
Anacapa Island	*no waterbody specific objectives* [f]					
San Nicolas Island	*no waterbody specific objectives* [f]					
Santa Barbara Island	*no waterbody specific objectives* [f]					
Santa Catalina Island	*no waterbody specific objectives* [f]					
San Clemente Island	*no waterbody specific objectives* [f]					
Other Watercourses:						
San Antonio Creek[j]	225	25	6	--	--	--
Chino Creek[j]	--	--	--	--	--	--

a. As part of the State's continuing planning process, data will continue to be collected to support the development of numerical water quality objectives for waterbodies and constituents where sufficient information is presently unavailable. Any new recommendations for water quality objectives will be brought before the Regional Board in the future.

b. All references to watersheds, streams and reaches include all tributaries. Water quality objectives are applied to all waters tributary to those specifically listed in the table. See Figures 2-1 to 2-10 for locations.

c. Where naturally occurring boron results in concentrations higher than the stated objective, a site-specific objective may be determined on a case-by-case basis.

d. Nitrate-nitrogen plus nitrite-nitrogen (NO3-N + NO2-N). The lack of adequate nitrogen data for all streams precluded the establishment of numerical objectives for all streams.

e. Sodium adsorption ratio (SAR) predicts the degree to which irrigation water tends to enter into cation-exchange reactions in soil.

SAR = Na+/((Ca++ + Mg++)/2)1/2

f. Site-specific objectives have not been determined for these reaches at this time. These areas are often impaired (by high levels of minerals) and there is not sufficient historic data to designate objectives based on natural background conditions. The following table illustrates the mineral or nutrient quality necessary to protect different categories of beneficial uses and will be used as a guideline for establishing effluent limits in these cases. Protection of the most sensitive beneficial use(s) would be the determining criteria for the selection of effluent limits.

Recommended objective (mg/L)	**Beneficial Use Categories**				
	MUN (Drinking Water Standards) [1]	**PROC**	**AGR**	**AQ LIFE*(Frshwtr)**	**GWR**
TDS	500 (USEPA secondary MCL)	50-1500 [2,7,9]	450-2000 [2,3,6]		Limits based on appropriate groundwater basin objectives and/or beneficial uses
Chloride	250 (USEPA secondary MCL)	20-1000 [2,9]	100-355 [2,3,8]	230 (4 day ave. continuous conc) [4]	
Sulfate	400-500 (USEPA proposed MCL)	20-300 [2,9]	350-600 [2,8]		
Boron			0.5-4.0 [2,6,8]		
Nitrogen	10 (USEPA MCL)				

References: 1) USEPA CFR § 141 et seq., 2) McKee and Wolf, 1963, 3) Ayers and Westcot, 1985, 4) USEPA, 1988, 5) Water Pollution Control Federation, 1989, 6) USEPA, 1973, 7) USEPA 1980, 8) Ayers, 1977.
* Aquatic life includes a variety of Beneficial Uses including WARM, COLD, SPWN, MIGR and RARE.

g. Agricultural supply is not a beneficial use of the surface water in the specified reach.

h. Rio Hondo spreading grounds are located above the Santa Ana Freeway

i. The stated objectives apply to all other surface streams originating within the San Gabriel Mountains and extend from their headwaters to the canyon mouth.

j. These watercourses are primarily located in the Santa Ana Region. The water quality objectives for these streams have been established by Santa Ana Region. Dashed lines indicate that numerical objectives have not been established, however, narrative objectives shall apply. Refer to the Santa Ana Region Basin Plan for more details.

k. These objectives were updated through a Basin Plan amendment adopted by the Regional Board on January 27, 1997 (Resolution No. R97-02) and went into effect on February 26, 1998.

l. This objective was updated though a Basin Plan amendment adopted by the Regional Board on November 6, 2003 (Resolution No. R03-015) and went into effect on August 4, 2004.

Table 3-10a. Conditional Site Specific Objectives for Santa Clara River Surface Waters

WATERSHED/STREAM REACH	Chloride (mg/L)
Santa Clara River Watershed:	
Between Bouquet Canyon Road Bridge and West Pier Highway 99	150 (12-month average)
Between West Pier Highway 99 and Blue Cut gaging station	150 (12-month average)
Between Blue Cut gaging station and confluence of Piru Creek	117/130[a] (3-month average)[b]

a. The conditional site specific objective of 130 mg/L applies only if the following conditions and implementation requirements are met:
   1. Water supply chloride concentrations measured in Castaic Lake are ≥ 80 mg/L.
   2. The Santa Clarita Valley Sanitation District (SCVSD) shall provide supplemental water to salt-sensitive agricultural uses that are irrigated with surface water during periods when Reach 4B (between Blue Cut gaging station and confluence of Piru Creek) surface water exceeds 117 mg/L.
   3. By May 4, 2020, the 10-year cumulative net chloride loading above 117 mg/L ($CNCl_{117}$)[i] to Reach 4B of the Santa Clara River (SCR), calculated annually, from the SCVSD Water Reclamation Plants (WRPs) shall be zero or less.

      [i] $CNCl_{117} = Cl_{(Above\ 117)} - Cl_{(Below\ 117)} - Cl_{(Export\ Ews)}$

      Where:

      $Cl_{(Above\ 117)}$ = [WRP Cl Load[1]/Reach 4B Cl Load[2]] * [Reach 4B Cl $Load_{>117}$[3]]

      $Cl_{(Below\ 117)}$ = [WRP Cl Load[1]/Reach 4B Cl Load[2]] * [Reach 4B Cl $Load_{\leq 117}$[4]]

      $Cl_{(Export\ EWs)}$ = Cl Load Removed by Extraction Wells

      [1] WRP Cl Load is determined as the monthly average chloride (Cl) concentration multiplied by the monthly average flow measured at the Valencia WRP.

      [2] Reach 4B Cl Load is determined as the monthly average Cl concentration at SCVSD Receiving Water Station RF multiplied by the monthly average flow measured at USGS Gauging Station 11109000 (Las Brisas Bridge).

      [3] Reach 4B Cl $Load_{>117}$ means the calculated Cl load to Reach 4B when monthly average Cl concentration in Reach 4B is above 117 mg/L.

      [4] Reach 4B Cl $Load_{\leq 117}$ means the calculated Cl load to Reach 4B when monthly average Cl concentration in Reach 4B is below or equal to 117 mg/L.

   4. The chief engineer of the SCVSD signs under penalty of perjury and submits to the Regional Board a letter documenting the fulfillment of conditions 1, 2, and 3.

b. The averaging period for the critical condition SSO of 130 mg/L may be reconsidered based on results of chloride trend monitoring after the alternative water resources management (AWRM) system is applied.

The conditional site specific objectives for chloride in the surface water between Bouquet Canyon Road bridge and West Pier Highway 99, between West Pier Highway 99 and Blue Cut gaging station, and between Blue Cut gaging station and confluence of Piru Creek shall apply and supersede the existing water quality objectives in Table 3-10 only when chloride load reductions and/or chloride export projects are in operation by the SCVSD according to the implementation section in Table 7-6.1 of Chapter 7.

Pesticides

Pesticides are used ubiquitously for a variety of purposes; however, their release into the environment presents a hazard to aquatic organisms and plants not targeted for their use. The extent of risk to aquatic life depends on many factors including the physical and chemical properties of the pesticide. Those of greatest concern are those that persist for long periods and accumulate in aquatic life and sediments.

No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. There shall be no increase in pesticide concentrations found in bottom sediments or aquatic life.

Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of pesticides in excess of the limiting concentrations specified in Table 64444-A of Section 64444 (Organic Chemicals) of Title 22 of the California Code of Regulations which is incorporated by reference into this plan. This incorporation by reference is prospective including future changes to the incorporated provisions as the changes take effect. (See Table 3-9.)

pH

The hydrogen ion activity of water (pH) is measured on a logarithmic scale, ranging from 0 to 14. While the pH of "pure" water at 25 °C is 7.0, the pH of natural waters is usually slightly basic due to the solubility of carbon dioxide from the atmosphere. Minor changes from natural conditions can harm aquatic life.

The pH of inland surface waters shall not be depressed below 6.5 or raised above 8.5 as a result of waste discharges. Ambient pH levels shall not be changed more than 0.5 units from natural conditions as a result of waste discharge.

The pH of bays or estuaries shall not be depressed below 6.5 or raised above 8.5 as a result of waste discharges. Ambient pH levels shall not be changed more than 0.2 units from natural conditions as a result of waste discharge.

Polychlorinated Biphenyls (PCBs)

Polychlorinated biphenyls (PCBs) are a highly toxic and persistent group of organic chemicals that have been historically released into the environment. Many historic discharges still exist as sources in the environment.

The purposeful discharge of PCBs (the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260) to waters of the Region, or at locations where the waste can subsequently reach waters of the Region, is prohibited.

Pass-through or uncontrollable discharges to waters of the Region, or at locations where the waste can subsequently reach water of the Region, are limited to 70 pg/L (30 day average) for protection of human health and 14 ng/L and 30 ng/L (daily average) to protect aquatic life in inland fresh waters and estuarine waters respectively.

Priority Pollutants

The California Toxics Rule (CTR), located at 40 CFR 131.38, contains federally promulgated water quality criteria applicable to California waters for 126 priority pollutants for the protection of aquatic life and human health.

Implementation Provisions

The water quality criteria for metals contained in the CTR are expressed as a function of a water-effect ratio (WER). [11] *In the CTR, the US EPA has provided for the adjustment of these water quality criteria through the application by States of the WER procedure. The WER has a default value of 1.0 unless a site-specific WER is approved by the Regional Board. To use a WER other than the default of 1.0, a study must be conducted, establishing the ratio that represents the difference between toxicity in laboratory test water and toxicity in a specific water body based on ambient conditions. The study must be consistent with US EPA procedures on deriving WERs.*

Notwithstanding the provisions below, regulatory actions to achieve applicable criteria, as modified by site-specific WERs, must ensure that downstream standards will also be achieved.

Additional receiving water monitoring shall be required of dischargers subject to site-specific WER(s) to evaluate whether criteria, as modified by the WER(s), are as protective of beneficial uses as the CTR criteria are intended to be. If additional monitoring indicates a change in the chemical characteristics of the water body or toxicity, the Regional Board may reconsider the site-specific WER(s).

Copper

For the following water bodies, the copper water quality criteria contained in the CTR shall be modified using the site-specific WERs set forth below.

Table 3-11 Site-specific Water-Effect Ratios for Copper

Waterbody Name	Reach Name	Description of Reach/Area	Water-Effect Ratio
Mugu Lagoon	Reach 1	Lagoon fed by Calleguas Creek	1.51
Lower Calleguas Creek	Reach 2	Downstream (south) of Potrero Road to the lagoon	3.69

Radioactive Substances

Radioactive substances are generally present in natural waters in extremely low concentrations. Mining or industrial activities increase the amount of radioactive substances in waters to levels that are harmful to aquatic life, wildlife or humans.

Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the limits specified in Table 64442 of Section 64442 (Gross Alpha Particle Activity, Radium-226, Radium-228, and Uranium) and Table 64443 of Section 64443 (Beta Particle and Photon Radioactivity) of Title 22 of the California Code of Regulations which are incorporated by reference into this plan. This incorporation by reference is prospective including future changes to the incorporated provisions as the changes take effect. (See Table 3-12a and 3-12b.)

[11] *There are two exceptions where the criteria are not a function of a WER. The freshwater criteria for selenium are not a function of a WER. The freshwater and saltwater criteria for mercury are not a function of a WER.*

Table: 3-12a. The Maximum Contaminant Levels (MCLs) and Detection Levels for Purposes of Reporting (DLRs): Gross Alpha Particle Activity, Radium-226, Radium-228, and Uranium (for MUN beneficial use) specified in Table 64442 of Section 64442 of Title 22 of the California Code of Regulations as of February 2013

Radionuclide	MCL (pCi/L)	DLR (pCi/L)
Radium-226 Radium-228	5 (combined radium-226 & -228)	1 1
Gross Alpha particle activity (excluding radon and uranium)	15	3
Uranium	20	1

Table: 3-12b. The Maximum Contaminant Levels (MCLs) and Detection Levels for Purposes of Reporting (DLRs): Beta particles and Photon Radioactivity (for MUN beneficial use) specified in Table 64443 of Section 64443 of Title 22 of the California Code of Regulations as of February 2013

Radionuclide	MCL	DLR (pCi/L)
Beta/photon emitters	4 millirem/year annual dose equivalent to the total body or any internal organ	Gross Beta particle activity: 4pCi/L
Strontium - 90	8 pCi/L (= 4 millirem/yr dose to bone marrow)	2 pCi/L
Tritium	20,000 pCi/L (= 4 millirem/yr dose to total body)	1,000 pCi/L

Solid, Suspended, or Settleable Materials

Surface waters carry various amounts of suspended and settleable materials from both natural and human sources. Suspended sediments limit the passage of sunlight into waters, which in turn inhibits the growth of aquatic plants. Excessive deposition of sediments can destroy spawning habitat, blanket benthic (bottom dwelling) organisms, and abrade the gills of larval fish.

Waters shall not contain suspended or settleable material in concentrations that cause nuisance or adversely affect beneficial uses.

See additional regulatory guidelines described under the Los Angeles River Trash Total Maximum Daily Load (Chapter 7).

See additional regulatory guidelines described under the Ballona Creek Trash Total Maximum Daily Load (Chapter 7).

Taste and Odor

Undesirable tastes and odors in water are an aesthetic nuisance, can impact recreational and other uses, and can indicate the presence of other pollutants.

Waters shall not contain taste or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible aquatic resources, cause nuisance, or adversely affect beneficial uses.

Temperature

Discharges of wastewaters can cause unnatural and/or rapid changes in the temperature of receiving waters which can adversely affect aquatic life.

The natural receiving water temperature of all regional waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial *uses. Alterations that are allowed must meet the requirements below.*

For waters designated WARM, water temperature shall not be altered by more than 5 °F above the natural temperature. At no time shall these WARM-designated waters be raised above 80 °F as a result of waste discharges.

For waters designated COLD, water temperature shall not be altered by more than 5 °F above the natural temperature.

Temperature objectives for enclosed bays and estuaries are specified in the "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California" (Thermal Plan), including any revisions thereto. See Chapter 5 for a description of the Thermal Plan.

Toxicity

Toxicity is the adverse response of organisms to chemical or physical agents. When the adverse response is mortality, the result is termed acute toxicity. When the adverse response is not mortality but instead reduced growth in larval organisms or reduced reproduction in adult organisms (or other appropriate measurements), a critical life stage effect (chronic toxicity) has occurred. The use of aquatic bioassays (toxicity tests) is widely accepted as a valid approach to evaluating toxicity of waste and receiving waters.

All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in, human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration or other appropriate methods as specified by the State or Regional Board.

The survival of aquatic life in surface waters, subjected to a waste discharge or other controllable water quality factors, shall not be less than that for the same waterbody in areas unaffected by the waste discharge or, when necessary, other control water.

There shall be no acute toxicity in ambient waters, including mixing zones. The acute toxicity objective for discharges dictates that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival when using an established USEPA, State Board, or other protocol authorized by the Regional Board.

There shall be no chronic toxicity in ambient waters outside mixing zones. To determine compliance with this objective, critical life stage tests for at least three species with approved testing protocols shall be used to screen for the most sensitive species. The test species used for screening shall include a vertebrate, an invertebrate, and an aquatic plant. The most sensitive species shall then be used for routine monitoring. Typical endpoints for chronic toxicity tests include hatchability, gross morphological abnormalities, survival, growth, and reproduction.

Effluent limits for specific toxicants can be established by the Regional Board to control toxicity identified under Toxicity Identification Evaluations (TIEs).

Turbidity

Turbidity is an expression of the optical property that causes light to be scattered in water due to particulate matter such as clay, silt, organic matter, and microscopic organisms. Turbidity can result in a variety of water quality impairments. The secondary drinking water standard for turbidity is 5 NTU (nephelometric turbidity units).

Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in natural turbidity attributable to controllable water quality factors shall not exceed the following limits:

Where natural turbidity is between 0 and 50 NTU, increases shall not exceed 20%.

Where natural turbidity is greater than 50 NTU, increases shall not exceed 10%.

Allowable zones of dilution within which higher concentrations may be tolerated may be defined for each discharge in specific Waste Discharge Requirements.

Regional Narrative Objectives for Wetlands

In addition to the regional objectives for inland surface waters (including wetlands), the following narrative objectives apply for the protection of wetlands in the Region.

Hydrology

Natural hydrologic conditions necessary to support the physical, chemical, and biological characteristics present in wetlands shall be protected to prevent significant adverse effects on:

- *natural temperature, pH, dissolved oxygen, and other natural physical/chemical conditions,*
- *movement of aquatic fauna,*
- *survival and reproduction of aquatic flora and fauna, and*
- *water levels.*

Habitat

Existing habitats and associated populations of wetlands fauna and flora shall be maintained by:

- *maintaining substrate characteristics necessary to support flora and fauna which would be present naturally,*
- *protecting food supplies for fish and wildlife,*
- *protecting reproductive and nursery areas, and*
- *protecting wildlife corridors.*

Regional Objectives for Ground Waters

The following objectives apply to all ground waters of the Region:

Bacteria

Total and fecal coliform bacteria are used to indicate the likelihood of pathogenic bacteria in waters.

In ground waters used for domestic or municipal supply (MUN) the concentration of coliform organisms over any seven day period shall be less than 1.1/100 ml.

Chemical Constituents and Radioactivity

Chemical constituents in excessive amounts in drinking water are harmful to human health. Maximum levels of chemical constituents in drinking waters are listed in the California Code of Regulations and the relevant limits are described below.

Ground waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents and radionuclides in excess of the limits specified in the following provisions of Title 22 of the California Code of Regulations which are incorporated by reference into this plan: Table 64431-A of Section

64431 (Inorganic chemicals), Table 64444-A of Section 64444 (Organic Chemicals), Table 64442 of Section 64442 (Gross Alpha Particle Activity, Radium-226, Radium-228, and Uranium), and Table 64443 of Section 64443 (Beta Particle and Photon Radioactivity). This incorporation by reference is prospective including future changes to the incorporated provisions as the changes take effect. (See Tables 3-8, 3-9, 3-12a, and 3-12b.)

Ground waters shall not contain concentrations of chemical constituents in amounts that adversely affect any designated beneficial use.

Mineral Quality

Inorganic constituents in ground waters are largely influenced by thermodynamic reactions that occur as ground water comes into contact with various rock and soil types. For example, ground water that flows through beds of gypsum ($CaSO_4 \bullet 2H_2O$) typically has relatively high levels of calcium cations and sulfate anions. Ground water flowing through limestone ($CaCO_3$) also has relatively high levels of calcium cations, but coupled with bicarbonate anions instead of sulfate. Ground waters with these ions at levels greater than 120 mg/L (expressed as $CaCO_3$) are considered hard waters (Hem, 1989).

Human activities and land use practices can influence inorganic constituents in ground waters. Surface waters carrying abnormally high levels of salts (e.g., irrigation return flows) can degrade the ground waters that they recharge. Abnormally high levels of inorganic constituents can impair and preclude beneficial uses. For example, high levels of boron preclude agricultural use (especially for citrus crops) of ground waters. Hard waters present nuisance problems and may require softening prior to industrial use.

Numerical mineral quality objectives for individual groundwater basins are contained in Table 3-13.

Coastal Aquifer Variance Provision for Mineral Quality Objectives

In coastal aquifers where elevated concentrations of minerals are caused by natural sources due to an aquifer's proximity to the ocean, the Regional Board may grant a variance from implementing the mineral quality objectives specified in Table 3-13 when issuing waste discharge requirements (WDRs) or enforcement orders. Any variance granted pursuant to this variance provision shall be for no more than five years, and may be extended not more than once for an additional period of up to five years. Any further relief should be in the form of a Basin Plan amendment. A decision to issue or to extend a variance will be based upon the Regional Board's evaluation of the evidence submitted concerning the granting of the variance.

A discharger must submit to the Executive Officer a written request for a variance from compliance with the mineral quality objectives for groundwater. The request must include recent data and analysis that provide clear and convincing evidence that elevated mineral concentrations are natural in origin and result from the aquifer's proximity to the ocean. The discharger's request must include clear and convincing evidence and analysis that:

1. The aquifer's proximity to the ocean leads to one or more of the following:
    a) seawater intrusion;
    b) the presence of marine sediments high in mineral content;
    c) tidal fluctuations that regularly influence the chemistry of the aquifer.
2. The source of the elevated mineral concentrations is natural and not induced by current or past discharge of pollutants.
3. A discharge of minerals in excess of the mineral quality objectives in the coastal aquifer will not degrade adjacent, inland aquifers.
4. The discharger has not caused or significantly contributed to the elevated Mineral concentrations from which it seeks relief.

The Regional Board may only grant a variance after a duly noticed public meeting. The Regional Board's decision to grant or to deny a variance shall be based on the record, including the discharger's request, the circumstances leading to the elevated mineral concentrations at the site, and the comments of staff and interested persons. The Regional Board may only grant a variance upon the Regional Board's determination that the request satisfies the conditions specified above and that the variance is in the public interest. In granting a variance, the Regional Board must include appropriate requirements in the WDRs or enforcement order consistent with the State Water Resources Control Board's anti-degradation resolution (SWRCB Res. No. 68-16) and other applicable water quality standards as stipulated in regional and statewide water quality control plans.

Nitrogen (Nitrate, Nitrite)

High nitrate levels in drinking water can cause health problems in humans. Infants are particularly sensitive and can develop methemoglobinemia (blue-baby syndrome). The primary drinking water standard for nitrate (as NO_3) is 45 mg/L (DHS, 1992).

Human activities and land use practices can also influence nitrogen concentration in ground waters. For example, effluents from wastewater treatment plants, septic tanks and confined animal facilities can add high levels of nitrogen compounds to the ground water that they recharge. Irrigation water containing fertilizers can add high levels of nitrogen to ground water.

Ground waters shall not exceed 10 mg/L nitrogen as nitrate-nitrogen plus nitrite-nitrogen (NO_3-N + NO_2-N), 45 mg/L as nitrate (NO_3), 10 mg/L as nitrate-nitrogen (NO_3-N), or 1 mg/L as nitrite-nitrogen (NO_2-N).

Taste and Odor

Undesirable tastes and odors in water are an aesthetic nuisance and can indicate the presence of other pollutants.

Ground waters shall not contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

Table 3-13. Water Quality Objectives for Selected Constituents in Regional Ground Waters[a].

BASINS				Objectives (mg/l)[m]			
Basin	**Basin No[b]**	**1994 Basin Name**	**1994 Basin No**	**TDS**	**Sulfate**	**Chloride**	**Boron**
Pitas Point Area[c]		**Pitas Point Area**		**None specified**			
Upper Ojai Valley	**4-1**	**Ojai Valley**	**4-1**				
Upper Ojai Valley	4-1	Upper Ojai Valley	4-1				
Upper Ojai Valley	4-1	West of Sulfur Mountain Road	4-1	1000	300	200	1.0
Upper Ojai Valley	4-1	Central Area	4-1	700	50	100	1.0
Upper Ojai Valley	4-1	Sisar Area	4-1	700	250	100	0.5
Ojai Valley	**4-2**	**Lower Ojai Valley**	**4-2**				**0.5**
Ojai Valley	4-2	West of San Antonio-Senior Canyon	4-2	1000	300	200	0.5
Ojai Valley	4-2	East of San Antonio-Senior Canyon	4-2	700	200	50	
Ventura River Valley	**4-3**	**Ventura River Valley**	**4-3**				
Upper Ventura River	4-3.01	Upper Ventura	4-3	800	300	100	0.5
Upper Ventura River	4-3.01	San Antonio Creek Area	4-3	1000	300	100	1.0
Lower Ventura River	4-3.02	Lower Ventura	4-3	1500	500	30	1.5
Santa Clara River Valley[d]	**4-4**	**Ventura Central**	**4-4**				
Piru	4-4.06	Santa Clara-Piru Creek Area	4-4				
Piru	4-4.06	Upper Area (above Lake Piru)	4-4	1100	400	200	2.0
Piru	4-4.06	Lower Area East of Piru Creek	4-4	2500	1200	200	1.5
Piru	4-4.06	Lower Area West of Piru Creek	4-4	1200	600	100	1.5
Fillmore	4-4.05	Santa Clara-Sespe Creek Area	4-4				
Fillmore	4-4.05	Topa Topa (upper Sespe) Area	4-4	900	350	30	2.0
Fillmore	4-4.05	Fillmore Area	4-4				
Fillmore	4-4.05	Pole Creek Fan Area	4-4	2000	800	100	1.0
Fillmore	4-4.05	South Side of Santa Clara River	4-4	1500	800	100	1.1
Fillmore	4-4.05	Remaining Fillmore Area	4-4	1000	400	50	0.7
Santa Paula	4-4.04	Santa Clara-Santa Paula Area	4-4				
Santa Paula	4-4.04	East of Peck Road	4-4	1200	600	100	1.0

BASINS			Objectives (mg/l)[m]				
Basin	**Basin No[b]**	**1994 Basin Name**	**1994 Basin No**	**TDS**	**Sulfate**	**Chloride**	**Boron**
Santa Paula	4-4.04	West of Peck Road	4-4	2000	800	110	1.0
Mound	4-4.03	Oxnard Plain	4-4				
Mound	4-4.03	Confined Aquifers	4-4	1200	600	150	1.0
Mound	4-4.03	Unconfined & Perched Aquifers	4-4	3000	1000	500	
Oxnard	4-4.02	Oxnard Plain	4-4				
Oxnard	4-4.02	Oxnard Forebay	4-4	1200	600	150	1.0
Oxnard	4-4.02	Confined Aquifers	4-4	1200	600	150	1.0
Oxnard	4-4.02	Unconfined & Perched Aquifers		3000	1000	500	
Pleasant Valley[e]	**4-6**	**Pleasant Valley**	**4-6**				
Pleasant Valley	4-6	Confined Aquifers	4-6	700	300	150	1.0
Pleasant Valley	4-6	Unconfined & Perched Aquifers	4-6				
Arroyo Santa Rosa Valley[e]	**4-7**	**Arroyo Santa Rosa**	**4-7**	900	300	150	1.0
Las Posas Valley[e]	**4-8**	**Las Posas Valley**	**4-8**				
Las Posas Valley	4-8	South Las Posas Area	4-8				
Las Posas Valley	4-8	NW of Grimes Cyn Rd. & LA Ave. & Somis Rd.	4-8	700	300	100	0.5
Las Posas Valley	4-8	E of Grimes Cyn Rd & Hitch Blvd.	4-8	2500	1200	400	3.0
Las Posas Valley	4-8	S of LA Ave Between Somis Rd & Hitch Blvd.	4-8	1500	700	250	1.0
Las Posas Valley	4-8	Grimes Canyon Rd. & Broadway Area	4-8	250	30	30	0.2
Las Posas Valley	4-8	North Las Posas Area	4-8	500	250	150	1.0
Acton Valley[f]	**4-5**	**Upper Santa Clara**	**4-5**				
Acton Valley	4-5	Acton Valley	4-5	550	150	100	1.0
Acton Valley	4-5	Sierra Pelona Valley (Agua Dulce)	4-5	600	100	100	0.5
Acton Valley	4-5	Upper Mint Canyon	4-5	700	150	100	0.5
Acton Valley	4-5	Upper Bouquet Canyon	4-5	400	50	30	0.5
Acton Valley	4-5	Green Valley	4-5	400	50	25	
Acton Valley	4-5	Lake Elizabeth-Lake Hughes Area	4-5	500	100	50	0.5

BASINS				Objectives (mg/l)[m]			
Basin	**Basin No[b]**	**1994 Basin Name**	**1994 Basin No**	**TDS**	**Sulfate**	**Chloride**	**Boron**
Santa Clara River Valley East	**4-4.07**	**Eastern Santa Clara**	**4-4.07**				
Santa Clara River Valley East	4-4.07	Santa Clara-Mint Canyon	4-4.07	800	150	150	1.0
Santa Clara River Valley East	4-4.07	South Fork	4-4.07	700	200	100	0.5
Santa Clara River Valley East	4-4.07	Placentia Canyon	4-4.07	700	150	100	0.5
Santa Clara River Valley East	4-4.07	Santa Clara-Bouquet & San Fransisquito Canyons	4-4.07	700	250	100	1.0
Santa Clara River Valley East	4-4.07	Castaic Valley	4-4.07	1000	350	150	1.0
Santa Clara River Valley East	4-4.07	Saugus Aquifer	4-4.07				
Simi Valley	**4-9**	**Simi Valley**	**4-9**				
Simi Valley	4-9	Simi Valley Basin	4-9				
Simi Valley	4-10	Confined Aquifers	4-9	1200	600	150	1.0
Simi Valley	4-11	Unconfined & Perched Aquifers	4-9				
Simi Valley	4-12	Gillibrand Basin	4-9	900	350	50	1.0
Conejo Valley	**4-10**	**Conejo Valley**	**4-10**	**800**	**250**	**150**	**1.0**
Coastal Plain of Los Angeles	**4-11**	**Los Angeles Coastal Plain**	**4-11**				
Central	4-11.04	Central Basin	4-11	700	250	150	1.0
West Coast	4-11.03	West Coast Basin	4-11	800	250	250	1.5
Hollywood	4-11.02	Hollywood Basin	4-11	750	100	100	1.0
Santa Monica	4-11.01	Santa Monica Basin	4-11	1000	250	200	0.5
San Fernando Valley	**4-12**	**San Fernando Valley**	**4-12**				
San Fernando Valley	4-12	Sylmar Basin	4-12	600	150	100	0.5
San Fernando Valley	4-12	Verdugo Basin	4-12	600	150	100	0.5
San Fernando Valley	4-12	San Fernando Basin	4-12				
San Fernando Valley	4-12	West of Highway 405	4-12	800	300	100	1.5
San Fernando Valley	4-12	East of Highway 405 (overall)	4-12	700	300	100	1.5

BASINS			Objectives (mg/l)[m]				
Basin	**Basin No[b]**	**1994 Basin Name**	**1994 Basin No**	**TDS**	**Sulfate**	**Chloride**	**Boron**
San Fernando Valley	4-12	Sunland-Tujunga Area	4-12	400	50	50	0.5
San Fernando Valley	4-12	Foothill Area	4-12	400	100	50	1.0
San Fernando Valley	4-12	Area Encompassing RT-Tujunga -Erwin-N. Hollywood-Whithall-LA/Verdugo-Crystal Springs-Headworks-Glendale/Burbank Well Fields	4-12	600	250	100	1.5
San Fernando Valley	4-12	Narrows Area (below confluence of Verdugo Wash with the LA River	4-12	900	300	150	1.5
San Fernando Valley	4-12	Eagle Rock Basin	4-12	800	150	100	0.5
San Gabriel Valley[g]/Raymond[h]	**4-13**	**San Gabriel Valley**	**4-13**				
Raymond	4-23	Raymond Basin	4-13				
Raymond	4-23	Monk Hill Sub-Basin	4-13	450	100	100	0.5
Raymond	4-23	Santa Anita Area	4-13	450	100	100	0.5
Raymond	4-23	Pasadena Area	4-13	450	100	100	0.5
San Gabriel Valley	4-13	Main San Gabriel Basin	4-13				
San Gabriel Valley	4-13	Western Area[g]	4-13	450	100	100	0.5
San Gabriel Valley	4-13	Eastern Area[g]	4-13	600	100	100	0.5
San Gabriel Valley	4-13	Puente Basin	4-13	1000	300	150	1.0
Upper Santa Ana Valley/San Gabriel Valley	**8-2.01[i]**	**Upper Santa Ana Valley**	**4-14**				
San Gabriel Valley	4-13	Live Oak Area	8-2	450	150	100	0.5
San Gabriel Valley	4-13	Claremont Heights Area	8-2	450	100	50	
San Gabriel Valley	4-13	Pomona Area	8-2	300	100	50	0.5
Upper Santa Ana Valley/ San Gabriel Valley	8-2.01/4-13	Chino Area	8-2	450	20	15	
San Gabriel Valley	4-13	Spadra Area	8-2	550	200	120	1.0
Tierra Rejada	**4-15**	**Tierra Rejada**	**4-15**	**700**	**250**	**100**	**0.5**
Hidden Valley	**4-16**	**Hidden Valley**	**4-16**	**1000**	**250**	**250**	**1.0**

BASINS				Objectives (mg/l)[m]			
Basin	Basin No[b]	1994 Basin Name	1994 Basin No	TDS	Sulfate	Chloride	Boron
Lockwood Valley	**4-17**	**Lockwood Valley**	**4-17**	**1000**	**300**	**20**	**2.0**
Hungry Valley	**4-18**	**Hungry Valley & Peace Valley**	**4-18**	**500**	**150**	**50**	**1.0**
Conejo Valley	**4-10**	**Thousand Oaks Area**	**4-19**	**1400**	**700**	**150**	**1.0**
Russell Valley	**4-20**	**Russell Valley**	**4-20**				
Russell Valley	4-20	Russell Valley	4-20	1500	500	250	1.0
Thousand Oaks Area	4-19	Triunfo Canyon Area	4-20	2000	500	500	2.0
Thousand Oaks Area	4-20	Lindero Canyon Area	4-20	2000	500	500	2.0
Thousand Oaks Area	4-21	Las Virgenes Canyon Area	4-20	2000	500	500	2.0
Conejo-Tierra Rejada Volcanic Area[j]	No DWR#	**Conejo-Tierra Rejada Volcanic Area**	**4-21**				
Malibu Valley	**4-22**	**Santa Monica Mountains-Southern Slopes[k]**	**4-22**				
Malibu Valley	No DWR#	Camarillo Area		1000	250	250	1.0
Malibu Valley	No DWR#	Point Dume Area		1000	250	250	1.0
Malibu Valley	4-22	Malibu Valley	4-22	2000	500	500	2.0
Malibu Valley	No DWR#	Topanga Canyon Area		2000	500	500	2.0
San Pedro Channel Islands[l]	No DWR#	**San Pedro Channel Islands**					
Anacapa Island	No DWR#	Anacapa Island	No DWR#				
San Nicholas Island	No DWR#	San Nicholas Island	No DWR#	1100	150	350	
Santa Catalina Island	No DWR#	Santa Catalina Island	No DWR#	1000	100	250	1.0
San Clemente Island	No DWR#	San Clemente Island	No DWR#				
Santa Barbara	No DWR#	Santa Barbara Island	No DWR#				

a. Objectives for ground waters outside of the major basins listed on this table and outlined in Figure 1-9 have not been specifically listed. However, ground waters outside of the major basins are, in many cases, significant sources of water. Furthermore, ground waters outside of the major basins are either potential or existing sources of water for downgradient basins and, as such, objectives in the downgradient basins shall apply to these areas.

b. Basins are numbered according to Bulletin 118-Update 2003 (Department of Water Resources, 2003).

c. Ground waters in the Pitas Point area (between the lower Ventura River and Rincon Point) are not considered to comprise a major basin, and accordingly have not been designated a basin number by the California Department of Water Resources (DWR) or outlined on Figure 1-9.

d. The Santa Clara River Valley (4-4) was formerly Ventura Central Basin

e. Pleasant Valley (4-6), Arroyo Santa Rosa Valley (4-7) and Las Posas Valley (4-8) Ground Water Basins were former sub-basins of the Ventura Central Basin (DWR, 1980).

f. Acton Valley Basin was formerly Upper Santa Clara Basin (DWR, 1980)

g. San Gabriel Valley is a combination of what were formerly the Western and Eastern areas of the Main San Gabriel Basin, and the Puente Basin. All of the groundwater in the former Main San Gabriel Basin is covered by the objectives listed under Main San Gabriel Basin – Eastern Area and Western Area. Walnut Creek, Big Dalton Wash, and Little Dalton Wash separate the Eastern Area from the Western Area (see the dashed line on Figure A2-17 in Appendix II). Any ground water upgradient of these areas is subject to downgradient beneficial uses and objectives, as explained in Footnote a.

h. Raymond Basin was formerly a sub-basin of the San Gabriel Valley and is now a separate basin.

i. The border between Regions 4 and 8 crosses the Upper Santa Ana Valley and San Gabriel Valley Ground Water Basins.

j. Ground water in the Conejo-Tierra Rejada Volcanic Area occurs primarily in fractured volcanic rocks in the western Santa Monica Mountains and Conejo Mountain areas. These areas have not been delineated on Figure 1-9.

k. With the exception of ground water in Malibu Valley (DWR Basin No. 4-22), ground waters along the southern slopes of the Santa Monica Mountains are not considered to comprise a major basin and accordingly have not been designated a basin number by the California Department of Water Resources (DWR) or outlined on Figure 1-9.

l. DWR has not designated basins for ground waters on the San Pedro Channel Islands

m. The Regional Board may grant, at its sole discretion, individual dischargers a variance from the numeric mineral quality objectives for groundwater specified in Table 3-13 under the conditions and procedures specified in “Coastal Aquifer Variance Provision for Mineral Quality Objectives” set forth in the Regional Objectives for Ground Waters.

Table 3-13a. Conditional Site Specific Objectives for Selected Constituents in Regional Groundwaters

DWR Basin No.	BASIN	Chloride (mg/L)
4-4	**Santa Clara River Valley**	
	Lower area east of Piru Creek[1]	150 (rolling 12-month average)
4-4.07	**Santa Clara River Valley East**	
	Santa Clara—Bouquet & San Francisquito Canyons	150 (rolling 12-month average)
	Castaic Valley	150 (rolling 12-month average)

1. This objective only applies to the San Pedro formation. Existing objective of 200 mg/L applies to shallow alluvium layer above San Pedro formation.

The conditional site specific objectives for chloride in the groundwater in Santa Clara--Bouquet & San Francisquito Canyons, Castaic Valley, and the lower area east of Piru Creek (San Pedro Formation) shall apply and supersede the existing regional groundwater quality objectives only when chloride load reductions and/or chloride export projects are in operation by the SCVSD according to the implementation section in Table 7-6.1 of Chapter 7.

Statewide Objectives for Ocean Waters

The State Board's *Water Quality Control Plan for Ocean Waters of California* (Ocean Plan), *Water Quality Control Plan for Enclosed Bays and Estuaries of California*, and the *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan) and any revision thereto, shall also apply to all ocean waters of the Region. These plans are described in Chapter 5, Plans and Policies. Copies of these plans can be obtained at the Office of Legislative and Public Affairs (OLPA) in Sacramento or at the Regional Board office.

Site Specific Objectives

While many pollutants are regulated under federal, state or regionally applied water quality standards, the Regional Board supports the idea of developing site-specific objectives (SSOs) in appropriate circumstances. Site-specific, or reach-specific, objectives are already in place for some parameters (i.e., mineral quality). These were established to protect a specific beneficial use or were based on antidegradation policies. The development of site-specific objectives requires complex and resource intensive studies; resources will limit the number of studies that will be performed in any given year. In addition, a Use Attainability Analysis (UAA) study will be necessary if the attainment of designated aquatic life or recreational beneficial uses is in question. UAAs include waterbody surveys and assessments which define existing uses, determine appropriateness of the existing and designated uses, and project potential uses by examining the waterbody's physical, chemical, and biological characteristics. Under certain conditions, a designated use may be changed if attaining that use would result in substantial and widespread economic and social impacts. Uses that have been attained cannot be removed under a UAA analysis. If a UAA study is necessary, that study must be completed before a SSO can be determined. Early planning and coordination with Regional Board staff will be critical to the development of a successful plan for developing SSOs.

Site-specific objectives must be based on sound scientific data in order to assure protection of beneficial uses. There may be several acceptable methods for developing site-specific objectives. A detailed workplan will be developed with Regional Board staff and other agencies (if appropriate) based on the specific pollutant and site involved. State Board staff and the USEPA will participate in the development of the studies so that there is agreement on the process from the beginning of the study.

Although each study will be unique, there are several elements that should be addressed in order to justify the need for a site-specific objective. These may include, but are not limited to:

- Demonstration that the site in question has different beneficial uses (e.g., more or less sensitive species) as demonstrated in a UAA or that the site has physical or chemical characteristics that may alter the biological availability or toxicity of the chemical.

- Provide a thorough review of current technology and technology-based limits which can be achieved at the facility(ies) on the study reach.

- Provide a thorough review of historical limits and compliance with these limits at all facilities in the study reach.

- Conduct a detailed economic analysis of compliance with existing, proposed objectives.

- Conduct an analysis of compliance and consistency with all federal, state, and regional plans and policies.

Once it is agreed that a site-specific objective is needed, the studies are performed, and an objective is developed, the following criteria must be addressed in the proposal for the new objective.

- Assurance that aquatic life and terrestrial predators are not currently threatened or impaired from bioaccumulation of the specific pollutant and that the biota will not be threatened or impaired by the proposed site-specific level of this pollutant. Safe tissue concentrations will be determined from the literature and from consultation with the California Department of Fish and Game and the U.S. Fish and Wildlife Service.

  For terrestrial predators, the presence, absence, or threat of harmful bioaccumulated pollutants will be determined through consultation with the California Department of Fish and Game and the U.S. Fish and Wildlife Service.

- Assurance that human consumers of fish and shellfish are currently protected from bioaccumulation of the study pollutant, and will not be affected from bioaccumulation of this pollutant under the proposed site-specific objective.

- Assurance that aquatic life is currently, and will be protected from chronic toxicity from the proposed site-specific objective.

- Assurance that the integrity of the aquatic ecosystem will be protected under the proposed site-specific objective.

- Assurance that no other beneficial uses will be threatened or impaired by the proposed site-specific objective.

Compliance with Water Quality Objectives

On January 30, 2003, the Regional Board adopted Resolution No. 2003-001 amending this Basin Plan to incorporate language authorizing compliance schedules in NPDES permits. Resolution No. 2003-001 was subsequently approved by the State Water Resources Control Board, Office of Administrative Law, and the U.S. Environmental Protection Agency. On April 15, 2008, the State Water Resources Control Board adopted Resolution No. 2008-0025, which established a state-wide *Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits*. State Water Resources Control Board Resolution No. 2008-0025 superseded all existing provisions authorizing compliance schedules in Basin Plans, including Regional Board Resolution No. 2003-001, except for existing compliance schedule provisions in TMDL implementation plans that are in effect as of the effective date of Resolution No. 2008-0025. Further information on State Water Resources Control Board Resolution No. 2008-0025 is discussed in Chapter 5, Plans and Policies.

4. STRATEGIC PLANNING AND IMPLEMENTATION

Table of Contents

Introduction

The Regional Board's mission is to achieve and maintain water quality objectives that are necessary to protect all beneficial uses of the waters in the Region. Depending on the nature of the water quality problem, several different strategies, as outlined below, are employed to accomplish this mission.

- ***Control of Point Source Pollutants:*** Pollutants from point sources are transported to waterbodies in controlled flows at well-defined locations. Examples of point sources include discharges from municipal and industrial wastewater treatment facilities.

  Programs that protect water quality from point source pollutants are primarily regulatory in nature. Permitting programs such as California's Waste Discharge Requirements (established in the 1950s) and the federal National Pollutant Discharge Elimination System (established in the 1970s) are examples of key regulatory programs. Significant progress toward the control of point source pollutants has been made through these permitting programs.

- ***Control of Nonpoint Source Pollutants:*** Pollutants from nonpoint sources are diffuse, both in terms of their origin and mode of transport to surface and ground waters. Unlike pollutants from point sources, pollutants from nonpoint sources often enter waters in sudden pulses and large quantities as rain, irrigation, and other types of runoff that mobilize and transport contaminants into surface and ground waters. Nationwide, pollutants from nonpoint sources represent the greatest threat to water quality. Examples of nonpoint sources in southern California include lawn and garden chemicals that are transported by storm water or water from lawn sprinklers; household and automotive care products that are dumped or drained on streets and into storm drains; fertilizers and pesticides that are washed from agricultural fields by rain or irrigation waters; sediment that erodes from construction sites; and various pollutants deposited by atmospheric deposition.

Nonpoint source pollutants are more difficult to control than point source pollutants, and different control strategies are required. For example, traditional permitting programs are neither a practical nor effective means of protecting water quality from lawn and garden chemicals. Accordingly, the Regional Board is integrating non-regulatory programs with regulatory programs in order to control pollutants from nonpoint sources. Emphasis is placed on pollution prevention through careful management of resources, as opposed to "cleaning up" the waterbody after the fact. Through public outreach – an example of a non-regulatory program – residents are informed of threats to the quality of the waters in their communities and are encouraged to voluntarily implement Best Management Practices (BMPs) that will eliminate or reduce nonpoint sources of pollution. When necessary, local governments are encouraged to develop and implement ordinances that supplement the Regional Board's public outreach efforts. This flexible

Table 4-1. "Threat to Water Quality" and "Complexity" Definitions.

Category	Definition	Example
THREAT TO WATER QUALITY		
Category I (Major threat)	Those discharges which could cause the long-term loss of a designated beneficial use of the receiving water, render unusable a ground water or surface water resource used as a significant drinking water supply, require closure of an area used for contact recreation, result in long-term deleterious effects on shellfish spawning or growth areas of aquatic resources, or directly expose the public to toxic substances.	Loss of a drinking water supply
Category II (Moderate threat)	Those discharges of waste which could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objective, cause secondary drinking water standards to be violated, or cause a nuisance. The discharge could have a major adverse impact on receiving biota, cause aesthetic impairment to a significant human population, or render unusable a potential domestic or municipal water supply.	Aesthetic impairment from nuisance from a waste treatment facility.
Category III (Minor threat)	Those discharges of waste which could degrade water quality without violating water quality objectives, or cause a minor impairment of designated beneficial uses compared with Category I and Category II.	Small pulses of water from low volume cooling water discharges.
COMPLEXITY		
Category "a"	Any major NPDES discharger; any discharge of toxic wastes; any small volume discharge containing toxic waste or having numerous discharge points or ground water monitoring; any Class I waste management unit.	Small volume complex discharger with numerous discharge points, leak detection systems or ground water monitoring wells.
Category "b"	Any discharger not included above which has a physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or any Class II or Class III waste management units.	Marinas with petroleum products, solid wastes or sewage pump-out facilities.
Category "c"	Any discharger for whom waste discharge requirements have been or would be prescribed pursuant to Section 13263 of the Water Code not included as a Category "a" or Category "b" as described above.	Discharges having no waste treatment systems or that must comply with best management practices, discharges having passive treatment and disposal systems, or dischargers having waste storage system with land disposal such as dairy waste ponds.
NPDES Major or Minor		
Major	Publicly owned treatment works with a yearly average flow of over 0.5 million gallons per day (MGD) or an industrial source with a yearly average flow of over 0.1 MGD and those with lesser flows but with acute or potential adverse environmental impacts.	
Minor	All other dischargers that are not categorized as a Major.	

approach can be an effective means of controlling pollutants from many nonpoint sources.

- ***Remediation of Pollution:*** The Regional Board oversees remediation of both ground and surface waters through the investigation of polluted ground water and enforcement of corrective actions needed to restore water quality. These activities are managed through eight programs, namely: Underground Storage Tanks; Well Investigations; Spills, Leaks, Investigations and Cleanups (SLIC); Aboveground Petroleum Storage Tanks; U.S. Department of Defense (DOD) and Department of Energy (DOE) Sites; Resource Conservation and Recovery Act (RCRA); Toxic Pits Cleanup Act; and Bay Protection and Toxic Cleanup.

These programs are designed to return polluted sites to productive use by identifying and eliminating the sources of pollutants, preventing the spread of pollution, and restoring water quality.

Control of Point Source Pollutants

Introduction – General Information about Regional Board Permitting Programs

All wastewater discharges in the Region – whether to surface or ground waters – are subject to Waste Discharge Requirements (WDRs). Likewise, all reuses of treated wastewaters are subject to Water Reclamation Requirements (WRRs). In addition, because the USEPA has delegated responsibility to the State and Regional Boards for implementation of the federal National Pollutant Discharge Elimination System (NPDES) program, WDRs for discharges to surface waters also serve as NPDES permits. These programs are the legal means to regulate controllable discharges. It is illegal to discharge wastes into any waters of the State and to reuse treated wastewaters without obtaining appropriate WDRs, WRRs, or NPDES permits (all of which are hereinafter referred to as Requirements).

Any facility or person who discharges, or proposes to discharge, wastes or makes a material change to the character, location, or volume of waste discharges to waters in the Los Angeles Region (other than into a community sewer system) must describe the quantity and nature of the proposed discharge in a report of waste discharge (ROWD) or an NPDES application. Upon review of the ROWD or NPDES application and all other pertinent information (including comments received at a public hearing), the Regional Board will consider the issuance of Requirements that incorporate appropriate measures and limitations to protect public health and water quality. The basic components of the Requirements include:

- discharge limitations (including, if required, effluent and receiving water limits);
- standard requirements and provisions outlining the discharger's general discharge requirements and monitoring and reporting responsibilities; and
- a monitoring program in which the discharger is required to collect and analyze samples and submit monitoring reports to the Regional Board on a prescribed schedule.

Discharges are categorized according to their threat to water quality and operational complexity (Table 4-1). In addition, discharges to surface waters are categorized as major or minor discharges. Filing and annual fees are based on these categories. WDRs or WRRs usually do not have an expiration date but are reviewed periodically on a schedule based on the level of threat to water quality. NPDES permits are adopted for a five-year period.

Most Requirements are tailored to specific waste discharges. In some cases, however, discharges can be regulated under general Requirements (Table 4-2), which simplify the permit process for certain types of discharges. These general Requirements are issued administratively to the discharger after a completed ROWD or NPDES application has been filed and the Executive Officer has determined that the discharge meets the conditions specified in the general Requirements.

Point source discharges include wastewaters from municipal sewage treatment plants, industrial and manufacturing facilities, shipyards and power generation stations (see examples in Table 4-3). The Regional Board currently administers approximately 1,200 Requirements for these discharges, including 37 sewage treatment facilities with design flows of over 100,000 gallons per day (Table 4-4; Figure 4-1). Major or significant

Table 4-2. Summary of General WDRs* and NPDES Permits Issued by the State Board and the Regional Board.

General WDRs and NPDES Permits	Examples of eligible dischargers
General WDR for land treatment of petroleum hydrocarbon contaminated soil in Los Angeles and Santa Clara River Basins (Order No. 90-148).	Refineries, leaking underground and above ground tanks, and leaking pipelines.
General NPDES permit and WDR for discharges of ground water to surface waters in Los Angeles River and Santa Clara River Basins (Order No. 91-92).	Construction de-watering discharges and well test waters.
General WDR for discharge of non-hazardous contaminated soils and other wastes in Los Angeles River and Santa Clara River Basins (Order No. 91-93).	Petroleum-contaminated soil, excavation soils.
General WDR for private subsurface sewage disposal systems in areas where ground water is used or may be used for domestic purposes (Order No. 91-94).	New residential developments.
General NPDES permit and WDR for discharges of hydrostatic test water to surface waters in Los Angeles River and Santa Clara River Basins (Order No. 91-111) .	Waste waters from hydrostatic testing of pipe(s), tanks(s), in any storage vessels.
General NPDES permit and WDR for discharges of storm water associated with industrial activities excluding construction activities (Order No. 91-13-DWQ).**	Surface runoff discharges from industrial sites or facilities.
General NPDES permit and WDR for discharges of storm water runoff associated with construction activity (Order No. 92-08-DWQ).**	Surface runoff from construction sites.
General NPDES permit and WDR for discharge of ground water from investigation and/or clean up of petroleum fuel pollution to surface waters in the Los Angeles and Santa Clara River Basins (Order No. 92-91).	Treated ground water to cleanup waters polluted with petroleum fuel, ground water extracted during pump tests, and well development and purging.
General WDR for specified discharges to ground water in Santa Clara River and Los Angeles River Basins (Order No. 93-10).	Hydrostatic testing of tanks, pipes, and storage vessels; construction dewatering; dust control application; water irrigation storage systems; subterranean seepage dewatering; well development and test pumping; aquifer testing; and monitoring well construction.

* General WDRs can be issued by the Executive Officer without formal Board Action.
** State Board Order.

dischargers of the Region, as of February 1994, fall into the categories shown in Table 4-5.

Waste Discharge Requirements (WDRs)

All discharges, whether to land or water, are subject to the California Water Code (§13263) and will be issued WDRs by the Regional Board. Furthermore, discharges to land are also subject to Title 23, California Code of Regulations, either under Chapter 15 (e.g., mining operations and landfills) or under other chapters (e.g., wastewater treatment, erosion control projects, and certain septic systems).

WDRs usually do not have an expiration date (with the exception of dredging WDRs and some Chapter 15 WDRs).

Land and groundwater-related WDRs (i.e., "Non-NPDES" WDRs) are described in this section. WDRs for discharges to surface waters, that also serve as NPDES permits, are described in the National Pollutant Discharge Elimination System Program section. In general, "Non-NPDES" WDRs regulate discharges of privately or publicly treated domestic wastewater, cooling tower bleed off, process and wash-down wastewater, and oil field brines. These WDRs usually protect the beneficial uses of groundwater basins but some WDRs are

Table 4-3. Examples of Industrial and Municipal Point Source Discharges to Surface Waters.

Discrete Discharge	Examples of pollutants*	Examples of Affected Waterbodies
Oil refinery wastewaters	Oil, chemical additives, dissolved mineral salts, VOCs (BTEX**), BOD, suspended solids, metals, temperature	Santa Monica Bay, Dominguez Channel, Long Beach and Los Angeles Harbors
Oil field drilling brine disposal *Regulated by the California Department of Conservation, Division of Oil and Gas*	BOD, COD, TDS, chloride, settleable solids, suspended solids, oil and grease, sulfur, heavy metals	Re-injection in groundwater basins
Zoo wastewaters	Suspended solids, BOD, bacteria	Los Angeles River
Municipal wastewater treatment plants (See Table 4-4 for more information)	BOD, COD, TDS, chloride, sulfate, nutrients, NH3, residual chlorine, metals, organic chemicals	Most inland waters, Pacific Ocean
Cooling tower water (contact and non-contact), boiler blowdown	Suspended solids, oil and grease, dissolved minerals, settleable solids, chemical additives, temperature	Most inland rivers and streams
Power generation plants	Temperature, chemical additives, minerals	Los Angeles River, Los Cerritos Channel, Santa Monica Bay, Los Angeles Harbor, San Gabriel River Estuary, Pacific Ocean
Ground water from remediation or from construction de-watering	TDS, chloride, sulfate, VOC's, (BTEX), and other petroleum hydrocarbons	Region-wide
Manufacturing (process/wash) waste water	Temperature, residual chlorine	Most inland rivers and streams
Aquaculture wastewater	Suspended solids and nutrients	Pacific Ocean
Shipyard, boatyard wastes	Oil and grease, metals (Pb, Cr), suspended solids, settleable solids, TBT, temperature, chemical additives	Long Beach Harbor, Los Angeles Harbor, Pacific Ocean

* These examples are possible pollutants. Actual presence in all discharges is not implied.
** BTEX is benzene-toluene-ethylbenzene-xylene

issued to protect surface waters in areas where ground water is known to exfiltrate from groundwater basins to surface waters.

Types of waste discharge that require WDRs under these laws and regulations include:

- On-site disposal systems (septic systems)
- Holding/equalization tanks
- Evaporation ponds
- Percolation ponds and leachfields
- Landfills
- Land treatment units (bioremediation)
- Dredging
- Oil field brines

Land Disposal

The Regional Board issues WDRs for wastewaters originating from landfills, surface impoundments, waste piles and land treatment units, mines, and confined animal feedlots. These WDRs can be issued in cooperation with other state agencies (Table 4-6). The Regional Board also administers the Solid Waste Assessment Test (SWAT) Program to identify any landfills that have "leaked" wastes.

The Regional Board can also direct responsible parties to abate any condition of nuisance or pollution from closed, illegal, or abandoned disposal sites.

Table 4-4. Sewage Treatment Facilites with Design Flow Greater than 100,000 Gallons per Day.

Facility Name	1993 Average flow/Peak flow-MGD	Design flow 1993/ Projected 2000-MGD	Receiving waterbody	Reclamation/ percolation ponds	Treatment level	Future plans
Avalon, City of: Avalon Wastewater Treatment Facility	0.65/ 2.00	1.2/ 2.0	Pacific Ocean		Secondary	Plant expansion plan (1994) with biological secondary treatment
Burbank, City of: Burbank Water Reclamation Plant	7.37/ 16.00	9/ 15	Burbank Western Channel	Plans to increase sales for irrigation	Tertiary	Plant expansion plan (1994-1996)
Camarillo Sanitation District: Water Reclamation Plant	3.9/ 7.0	6.75/ same	Conejo Creek	Future plans	Secondary	Plan to construct phase II by 2004 with possible filtration
County Sanitation Districts of Los Angeles County: Joint Water Pollution Control Plant	340/ 460 * (200 secondary)	385 advanced primary (200 secondary)/ same	Pacific Ocean	N/A	Advanced primary/ secondary	Plan for full secondary
County Sanitation Districts of Los Angeles County: La Canada Water Reclamation Plant	0.124/ NA	0.2/ same	none	Irrigation	Secondary	Plan to connect to District's Joint Outfall
County Sanitation Districts of Los Angeles County: Long Beach Water Reclamation Plant	17.3/ 24.9 *	25/ same	Coyote Creek	Plans to increase reclaimed use by ground water injection and other by 1995	Tertiary	Plan to expand capacity by 2010
County Sanitation Districts of Los Angeles County: Los Coyotes Water Reclamation Plant	37.8/ 45.0 *	37.5/ same	San Gabriel River	Reclaimed use	Tertiary	Plan for increased volume
County Sanitation Districts of Los Angeles County: Pomona Water Reclamation Plant	13.2/ 21.3 *	15/ same	San Jose Creek	Industrial, agriculturdal and irrigation use	Tertiary	Plan for increased volume
County Sanitation Districts of Los Angeles County: San Jose Creek Water Reclamation Plant	71.7/ 116.1 *	100/ same	San Gabriel River and San Jose Creek	Groundwater recharge and irrigation	Tertiary	Plan for increased volume
County Sanitation Districts of Los Angeles County: Saugus Water Reclamation Plant	6.3/ 10.5 * (excess is diverted to Valencia)	5.6/ 7.0	Santa Clara River	Plans for reclaimed use	Tertiary	Plan for increased volume
County Sanitation Districts of Los Angeles County: Valencia Water Reclamation Plant	8.8/ 14.6 *	7.5/ 13.5	Santa Clara River	Plans for reclaimed use	Tertiary	Plan for expansion
County Sanitation Districts of Los Angeles County: Whittier Narrows Water Reclamation Plant	12.5/ 18.0 *	15.0/ same	San Gabriel River and Rio Hondo	Groundwater recharge and plans for other reuse	Tertiary	Plan for increased volume

Table 4-4. Sewage Treatment Facilites with Design Flow Greater than 100,000 Gallons per Day (continued).

Facility Name	1993 Average flow/Peak flow-MGD	Design flow 1993/ Projected 2000-MGD	Receiving waterbody	Reclamation/ percolation ponds	Treatment level	Future plans
Las Virgenes Municipal Water District: Tapia Water Reclamation Facility	8/ 13	16/ same	Malibu Creek	Plans increased sales of reclaimed water (Current: 90% of effluent from June-Sept.)	Tertiary	Anaerobic sludge digestion, centrifuge dewatering, in-vessel composting and beneficial reuse
Los Angeles, City of, Department of Public Works: Donald C. Tillman Water Reclamation Plant	75/ 100	80/ same	Los Angeles River	Japanese garden, Wildlife Lake, Lake Balboa. Irrigation. Future groundwater recharge.	Tertiary	Possible increase in capacity
Los Angeles, City of, Department of Public Works: Hyperion Treatment Plant	350/ 476	420/ 450	Santa Monica Bay	West Basin Municipal District plans to reclaim 70 MGD by 1995 at new facility. Other reuse.	Primary/ secondary	Upgrade (1998) to full secondary pure oxygen, two stage anaerobic digestion
Los Angeles, City of, Department of Public Works: Los Angeles-Glendale Water Reclamation Plant	20/ 27	20/ 50	Los Angeles River	Plans to increase reclaimed water sales. Industrial use.	Tertiary	Plan expansion project
Los Angeles, City of, Department of Public Works: Terminal Island Treatment Plant	18/ 26 (dry) 40 (wet)	30/ same	Los Angeles Harbor	Plans for reclaimed use (5 MGD) in 1996	Secondary	Full effluent filtration
Los Angeles, City of, Department of Recreation and Parks: LA Zoo Wastewater Treatment Plant	4.0/ 0.5	2.5/ 8.0	Los Angeles River (over flow) otherwise City sanitary sewer	N/A	Primary/chlori nated	New facility under construction
Los Angeles, County of, Department of Public Works: Malibu Mesa Wastewater Treatment Plant	0.175/ 0.20	0.20/ same	Winter and Marie Canyons	Landscape spray irrigation	Tertiary	No changes anticipated
Los Angeles, County of, Department of Public Works: Trancas Sewage Treatment Plant	0.058/ 0.15	0.12/ same	N/A	Leaching fields	Tertiary	No changes anticipated
Los Angeles, County of, Mech Dept.: Acton Rehabilitation Center	0.026/ ?	0.15/	N/A	N/A	Secondary	No changes anticipated
Ojai Valley Sanitary District: Ojai Valley Wastewater Treatment Plant	2.26/ 3.24	3.0/ same	Ventura River	Plans for reclaimed water	Secondary	New facility plan (1996) for Tertiary treatment
Oxnard, City of, Department of Public Works: Oxnard Wastewater Treatment Plant	18/ 25	37.1/ same	Pacific Ocean	Plans for reclaimed water	Secondary	Plan for tertiary treatment
San Buenaventura, City of: Ventura Water Reclamation Plant	7.6/ 15.0	14/ 16	Santa Clara River Tidal Prism	Plan to increase use of reclaimed water	Tertiary	Plan to update electrical systems.
Simi Valley County Sanitation District: Simi Valley Water Quality Control Plant	9.0/ 22.5	12.5/ same	Arroyo Simi	?	Tertiary	Depends on outcome of study

Table 4-4. Sewage Treatment Facilites with Design Flow Greater than 100,000 Gallons per Day (continued).

Facility Name	1993 Average flow/Peak flow-MGD	Design flow 1993/ Projected 2000-MGD	Receiving waterbody	Reclamation/ percolation ponds	Treatment level	Future plans
Thousand Oaks, City of, Utility Department: Hill Canyon Wastewater Treatment Plant	8.6/ 18.0	10.8/ 14.0	Arroyo Conejo	Future irrigation plans	Tertiary	Advanced treatment using nitrification/denitrification processes
Thousand Oaks, City of, Utility Department: Olsen Road Water Reclamation Plant	0.175/ 0.225	0.75/ same**	Arroyo Conejo	Future irrigation plans	Secondary	Tertiary treatment by filtration
US Navy: NALF San Clemente Island	0.015/ 0.029	0.030/ same	Pacific Ocean	Plan to use reclaimed water for dust control	Secondary	Additional flow equalization capacity, increased drying bed, change to new chemical treatment and aeration
Ventura, County of, Water Works District: Moorpark Wastewater Treatment Plant	1.92/ 2.12	3.0/ 3.5	Calleguas Creek	Reclaimed use and percolation ponds	Tertiary/ Secondary	New tertiary facility. Plans to construct a reclaimed distribution system
Ventura, County of, Water Works District: Nyeland Acres Wastewater Treatment Plant	0.107/ 0.128	0.22/ same	Revolon Slough	no	Secondary	Conversion of STEP system to a gravity collection system
Ventura, County of, Water Works District: Piru Treatment Facility	0.12/ 0.147	0.20/ same	Santa Clara River	Percolation ponds	Secondary	No changes anticipated
Ventura Regional Sanitation District and Camrosa CWD: Camrosa Wastewater Treatment Plant	1.2/ 1.4	1.5/ same	Calleguas Creek	Reclamation reservoir and irrigation	Secondary	Plans to upgrade plant
Ventura Regional Sanitation District: City of Fillmore Wastewater Treatment Plant	1.0/ 1.3	1.3/ 1.6	Santa Clara River	Percolation ponds	Secondary	Currently under expansion
Ventura Regional Sanitation District: Liquid Waste Treatment Fac. #1, sludge treatment	0.04/ 0.06	0.15/ same	N/A	No	Primary	No changes anticipated
Ventura Regional Sanitation District: Montalvo Treatment Plant	0.25/ 0.35	0.36/ same	N/A	Percolation Ponds	Secondary	No changes anticipated
Ventura Regional Sanitation District: Santa Paula Wastewater Treatment Plant	2.04/ 2.6	2.5/ same	Santa Clara River	Groundwater recharge	Tertiary	No changes anticipated
Ventura Regional Sanitation District: Saticoy Sanitation District	0.12/ 0.32	0.30/ same	N/A	Percolation ponds	Primary	No changes anticipated

* Partial 1993 data (first 4 to 6 months).
** The actual flow is not expected to exceed 0.3 MGD

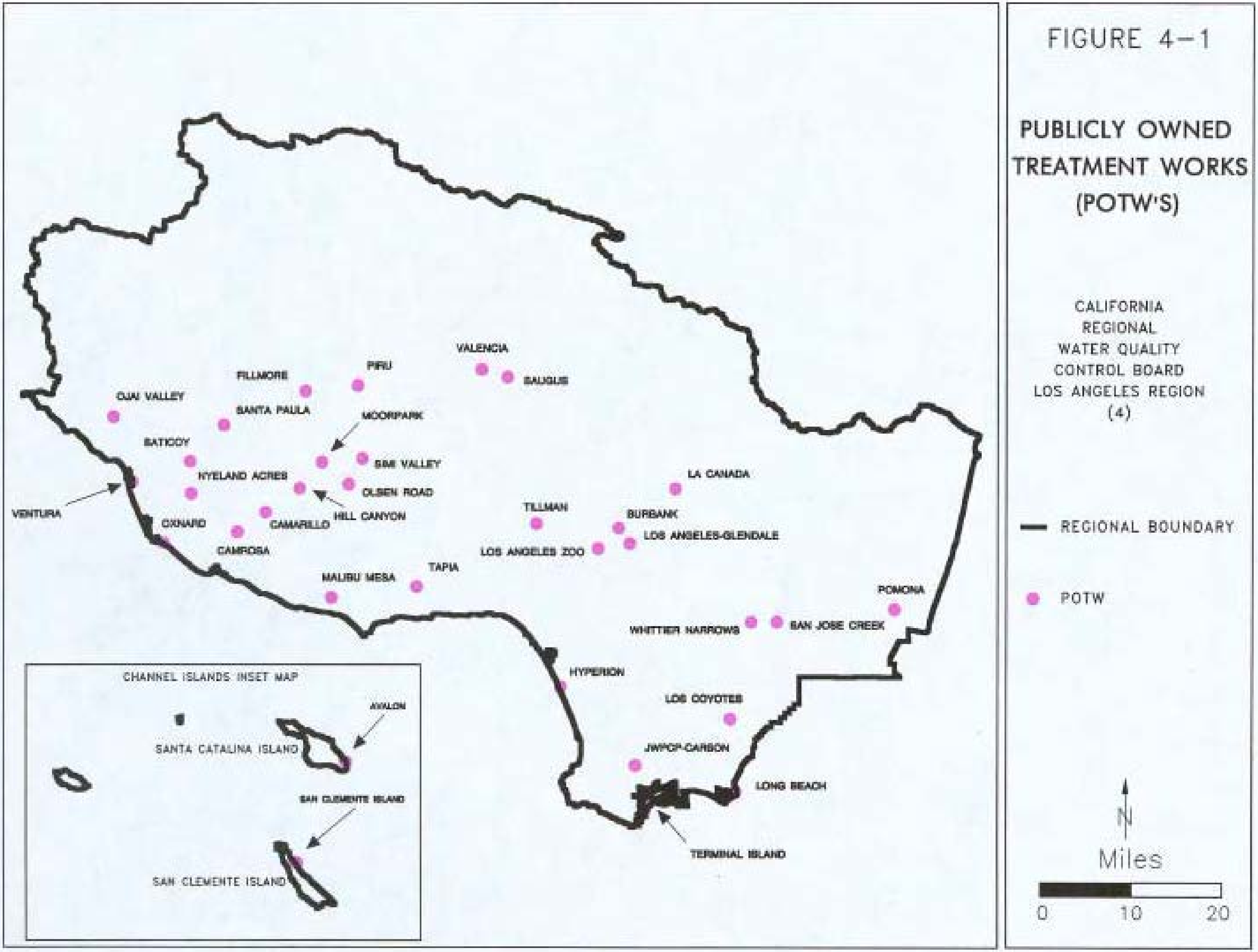


FIGURE 4-1
PUBLICLY OWNED TREATMENT WORKS (POTW'S)
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD LOS ANGELES REGION (4)
REGIONAL BOUNDARY
POTW
N
Miles
0
10
20
OJAI VALLEY
FILLMORE
PIRU
VALENCIA
SAUGUS
SANTA PAULA
MOORPARK
SATICOY
SIMI VALLEY
NYELAND ACRES
OLSEN ROAD
VENTURA
HILL CANYON
OXNARD
CAMARILLO
CAMROSA
MALIBU MESA
TAPIA
TILLMAN
LA CANADA
BURBANK
LOS ANGELES-GLENDALE
LOS ANGELES ZOO
POMONA
WHITTIER NARROWS
SAN JOSE CREEK
HYPERION
LOS COYOTES
JWPCP-CARSON
LONG BEACH
TERMINAL ISLAND
CHANNEL ISLANDS INSET MAP
AVALON
SANTA CATALINA ISLAND
SAN CLEMENTE ISLAND
SAN CLEMENTE ISLAND

Table 4-5. Major or Significant NPDES and WDR Discharge Categories, Numbers of Permits and Total Design Flow*.

Category	Number of permits (Major or Significant Dischargers)	Total design flow from facilities † (MGD approximate)
Domestic sewage	13	35.5
Domestic sewage mixed with industrial waste	26	1255.9
Solid Waste	25	1.0 *
Wash water (industrial/ manufacturing)	1	0.03
Contact & non-contact cooling waters and process waste (industrial/ manufacturing)**	16	6700.4
Storm water runoff ***	14	361
Miscellaneous ****	5	21.1

* Numbers as of February 1994.

† Total design flow numbers includes secondary discharges (other categories) from some facilities. The Requirements listed include multiple permits for some major dischargers, particularly municipal sewage treatment plants.

* All landfills are permitted for "no discharge;" not including storm runoff. The 1.0 MGD shown on table is for a sludge farm.

** Includes powerplants.

*** These numbers indicate some process or other wastes.

**** Includes refineries, shipyards, aquaculture, and others.

Landfills

There are over 700 landfills in the Los Angeles Region, of which approximately 30 are active; the remainder are inactive or closed. The Regional Board issues WDRs to landfills that accept at least one of the following types of waste (Table 4-7): hazardous waste (Class I), designated waste (Class II), non-hazardous solid waste (Class III) and inert solid waste (Unclassified). One significant issue in the regulation of solid waste disposal is the definition of designated wastes. Many wastes which are classified as non-hazardous contain constituents of water quality concern that could become soluble in a non-hazardous solid waste landfill. Because of the need for greater containment requirements for this type of designated waste, disposal in a Class III landfill can pose a threat to the beneficial uses of State waters and therefore a more secure site (Class II) is necessary.

Landfill applicants must demonstrate to the Regional Board that the proposed disposal will be in a manner and setting such that wastes will not adversely affect any waters. Criteria for evaluating waste disposal sites include:

- Geologic features of site area
- Liners
- Leachate collection and removal systems
- Subsurface barriers

WDRs for active landfills include mandatory detection and evaluation monitoring programs and prescribed corrective actions for leakages. Landfills that close must be monitored for 30 years (40 CFR Parts 257 and 258) or longer if wastes pose a threat to water quality (Title 23, California Code of Regulations, Chapter 15, §2580).

The Regional Board has regulated landfills since the 1950s. Many of the small older sites have been closed and waste is now being handled at large regional landfills (see Table 4-8 for status of all landfills with ongoing groundwater monitoring programs; Figure 4-2 for locations). The Regional Board reviews and revises WDRs for active Class III sites (there are no active Class I or Class II sites in the Region) to ensure consistency with revised State requirements (Title 23, California Code of Regulations, Chapter 15), requires upgrading of groundwater monitoring systems in order to identify water quality degradation, and reviews and oversees the development and implementation of proper closure plans. Article 5 of Chapter 15, adopted in 1991, specifies new guidelines for the siting of groundwater monitoring wells around all active landfills. In addition, USEPA promulgated regulations (40 CFR Parts 257 and 258, "Subtitle D" [Solid Waste Disposal Facility Criteria]) in 1991, that uniformly apply additional requirements to dischargers of municipal solid waste. The Regional Board adopted Order No. 93-062 (September 27, 1993) which requires that all applicable regional landfills comply with these federal regulations.

Class III landfills in the Los Angeles Region are listed in Table 4-9. Former active Class I landfills include Calabasas, BKK, Palos Verdes, and Simi Valley. There are approximately 15 active inert

Table 4-6. Cooperating Agencies for the Land Disposal Programs.

Waste Disposal Category	Cooperating Agency
Mining Waste (Article 7 of Chapter 15)	California Division of Mines and Geology
Nonhazardous solid waste landfills (also regulated by the Federal Resource Conservation and Recovery Act [RCRA], Subtitle D)	California Integrated Waste Management Board
Hazardous Wastes (also regulated by the Federal Resource Conservation and Recovery Act [RCRA], Subtitle C)	California Department of Toxic Substances Control

Table 4-7. Landfill Classifications.

Disposal Site classification	Definitions of Waste Types (California Code of Regulations,Title 23, Division 3, Chapter 15, Sections 2521 et seq.)	Examples
Class I - Hazardous Waste	a) Hazardous waste is any waste which, under Section 66300 of Title 22, is required to be managed according to Chapter 30 of Division 4 of Title 22. b) Hazardous waste shall be discharged only at Class I waste management units which comply with the applicable provisions unless wastes qualify for a variance under Section 66310 of Title 22. c) Waste which have been designated as restricted wastes by California Department of Health Services (DHS) pursuant to Section 66900, of Title 22 shall not be discharged to waste management units after the restriction dates established by Section 66905 of Title 23 unless: 1) such discharge is for retrievable storage, and 2) DHS has determined that processes to treat or recycle substantially all of the waste are not available, or 3) DHS has granted a variance from restrictions against land disposal of the waste under Section 66930 of Title 22.	Materials that contain high concentrations of pesticides, certain solvents, and PCBs are examples of hazardous wastes.
Class II - Designated Waste	a) Designated waste is defined as: 1) nonhazardous waste which consists of or contains pollutants which, under ambient environmental conditions at the waste management unit, could be released at concentrations in excess of applicable water quality objectives, or which could cause degradation of waters of the State. 2) hazardous waste which has been granted a variance from hazardous waste management requirements pursuant to Section 66310 of Title 22. b) Wastes in this category shall be discharged only at Class I waste management units or at Class II waste management units which comply with the applicable provisions of Chapter 15 and have been approved for containment of the particular kind of waste to be discharged. Decomposable wastes in this category may be discharged to Class I or II land treatment waste management units.	Materials with high concentrations of BOD, hardness, or chloride. Inorganic salts and heavy metals are "manageable" hazardous wastes.
Class III- Nonhazardous Solid Waste	a) Nonhazardous solid waste means all putrescible and nonputrescible solid, semi-solid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semi-solid wastes and other discarded solid or semi-solid waste; provided that such wastes do not contain wastes which must be managed as hazardous wastes, or wastes which contain soluble pollutants in concentrations which exceed applicable water quality objectives, or could cause degradation of waters of the State (i.e., designated waste). b) Except as provided in Subsection 2520(d) of Chapter 15, nonhazardous solid waste may be discharged at any classified landfill which is authorized to accent such waste, provided that: 1) the discharger shall demonstrate that co-disposal of nonhazardous solid waste with other waste shall not create conditions which could impair the integrity of containment features and shall not render designated waste hazardous (e.g., by mobilizing hazardous constituents); 2) a periodic load-checking program approved by DHS and regional boards shall be implemented to ensure that hazardous materials are not discharged at Class III landfills. c) Dewatered sewage or water treatment sludge may be discharged at a Class III landfill under the following conditions, unless DHS determines that the waste must be managed as hazardous waste: 1) The landfill is equipped with a leachate collection and removal system; 2) The sludge contains at least 20 percent solids by weight if primary sludge, or at least 15 percent solids if secondary sludge, mixtures of primary and secondary sludges, or water treatment sludge; and 3) A minimum solids-to-liquid ratio of 5:1 by weight shall be maintained to ensure that the co-disposal will not exceed the initial moisture-holding capacity of the nonhazardous solid waste. The actual ratio required by the regional board shall be based on site-specific conditions. d) Incinerator ash may be discharged at a Class III landfill unless DHS determines that the waste must be managed as hazardous waste.	Garbage, trash, refuse, paper, demolition and construction wastes, manure, vegetable or animal solid and semisolid wastes.
Unclassified/Inert	a) Inert waste does not contain hazardous waste or soluble pollutants at concentrations in excess of applicable water quality objectives. It does not contain significant quantities of decomposable waste. b) Inert wastes do not need to be discharged to classified management units. c) Regional boards may prescribe individual or general waste discharge requirements for discharges of inert wastes.	Concrete, rock, plaster, brick, uncontaminated soils.

Table 4-8. Status of Landfills (Active and Inactive) in Region that have Ongoing Groundwater Monitoring Programs.

Landfill	Constituents detected in monitoring wells	Current activities
Azusa Landfill (Azusa Land Reclamation Co., Inc.)	Volatile organic compounds (VOCs)	Ongoing continuous detection monitoring includes gas control.
Bailard Landfill (Ventura Regional Sanitation District)	Vinyl chloride	Increased gas extraction wells as well as groundwater extraction wells at Bailard and one well at a coastal site are reducing vinyl chloride exceedances.
BKK Landfill West Covina* (BKK Corporation)	Class I area: VOCs, heavy metals, semi-VOCs, general minerals Class III area: no detectable contaminants	The groundwater monitoring system surrounding the landfill consists of over 200 wells. Offsite well clusters are currently being installed to determine the extent of the contaminant plume from the landfill. Corrective action program ongoing.
Bradley Landfill (Valley Reclamation Co.)	VOCs	Site undergoing evaluation monitoring.
Brand Park Disposal Site (City of Glendale)	No detected contamination	Inert landfill. Site undergoing detection monitoring.
Calabasas Landfill* (Sanitation Districts of Los Angeles County)	Heavy metals, VOCs, semi-VOCs	Site undergoing evaluation monitoring.
Calmat Sun Valley (Calmat Properties Co.)	No detected contamination	Inert landfill. Site undergoing detection monitoring.
Chandler Sand and Gravel (Chandler's Sand and Gravel)	General minerals	Inert landfill. Site undergoing detection monitoring.
Chiquita Canyon Landfill (Laidlaw Waste System Chiquita)	VOCs, inorganic compounds	Corrective action program will be implemented.
Coastal Landfill (Ventura Regional Sanitation District) [closed]	VOCs	Increased gas extraction wells as well as groundwater extraction wells at Bailard and one well at coastal site are reducing VOCs exceedances.
Getty Oil Site (Texaco Producing, Inc.)	No detected contamination	Site undergoing detection monitoring.
Irwindale Dike Build-up (Livingston-Graham Inc.)	No detected contamination	Inert landfill. Site undergoing detection monitoring.
Lopez Canyon Landfill (City of Los Angeles Department of Public Works)	No detected contamination	Additional up and down gradient wells installed as part of required program. Site undergoing detection monitoring.
Manning Pit South [Former] (Los Angeles County DPW WMD)	No detected contamination	Inert landfill. Site undergoing detection monitoring.
Manning Pit North (City of Irwindale)	No detected contamination	Inert landfill. Site undergoing detection monitoring.
Montebello Land and Water (Montebello Land and Water Co.)	No detected contamination	Inert landfill. Site undergoing detection monitoring.
Nu-Way Owl Rock Landfill	No detected contamination	Inert landfill. Site undergoing detection monitoring.
Nu-Way Industries Landfill [closed]	Detectable VOCs up- and down-gradient	No statistically significant exceedences.

Table 4-8. Status of Landfills (Active and Inactive) in Region that have Ongoing Groundwater Monitoring Programs (continued).

Landfill	Constituents detected in monitoring wells	Current activities
Operating Industries Landfill*** (Operating Industries, Inc.) [closed-Superfund site]	VOCs, semi-VOCs, metals, inorganic compounds	A leachate treatment plant has been constructed for on-site treatment, with a remedial investigation ongoing.
Owl Rock Quarry Site (Nu-Way Industries, Inc.)	No detected contamination	Inert landfill. Site undergoing detection monitoring.
Palos Verdes** (Sanitation Districts of Los Angeles County) [closed]	VOCs	Department of Toxic Substances Control is lead agency. Districts have submitted remedial investigation report.
Puente Hills Landfill (Sanitation Districts of Los Angeles County)	VOCs, metals	In August 1993, the Districts installed a replacement barrier and additional gas wells to control landfill gas, the probable source of the VOC's. Site undergoing detection monitoring.
San Marino City Dump (City of San Marino)	No detected contamination	Inert landfill. Site undergoing detection monitoring.
Santa Clara Disposal Site, Oxnard (Ventura Regional Sanitation District) [closed]	VOCs	Increased gas extraction wells and groundwater extraction wells at Bailard and one well at a coastal site are reducing VOCs exceedances.
Savage Canyon Disposal Site (City of Whittier)	No detected contamination	Site undergoing detection monitoring.
Scholl Canyon Landfill (Sanitation Districts of Los Angeles County)	VOCs, chloride	Site undergoing evaluation monitoring.
Simi Valley Landfill* (Waste Management of California)	VOCs	Site undergoing evaluation monitoring.
Spadra Landfill (Sanitation Districts of Los Angeles County)	VOCs	An evaluation monitoring program will be implemented.
Stough Park Landfill (City of Burbank)	VOCs	An evaluation monitoring program will be implemented.
Strathern (LA By-Products Co.)	No detected contamination	Inert landfill. Site undergoing detection monitoring.
Sunshine Canyon Landfill - City of Los Angeles portion (Browning-Ferris Industries, Inc.) [closed]	Chloride above Water Quality Protection Standard	The operator has been asked to do additional background/site characterization to determine sources of elevated chloride levels downgradient of the landfill.
Toland Road Disposal Site (Ventura Regional Sanitation District)	No detected contamination	Additional downgradient well to be installed. Site undergoing detection monitoring.
Toyon Canyon Landfill (City of Los Angeles Department of Public Works) [closed]	Organic and inorganic constituents	A monitoring and reporting program was revised in December 1991. An evaluation monitoring program has also been submitted.

* Former Class I landfill that is now an operating Class III landfill and has an ongoing ground water monitoring program.
** Former Class I landfill that is now closed and has an ongoing ground water monitoring program.
*** Former Class II landfill that is now closed but has an ongoing ground water monitoring program.

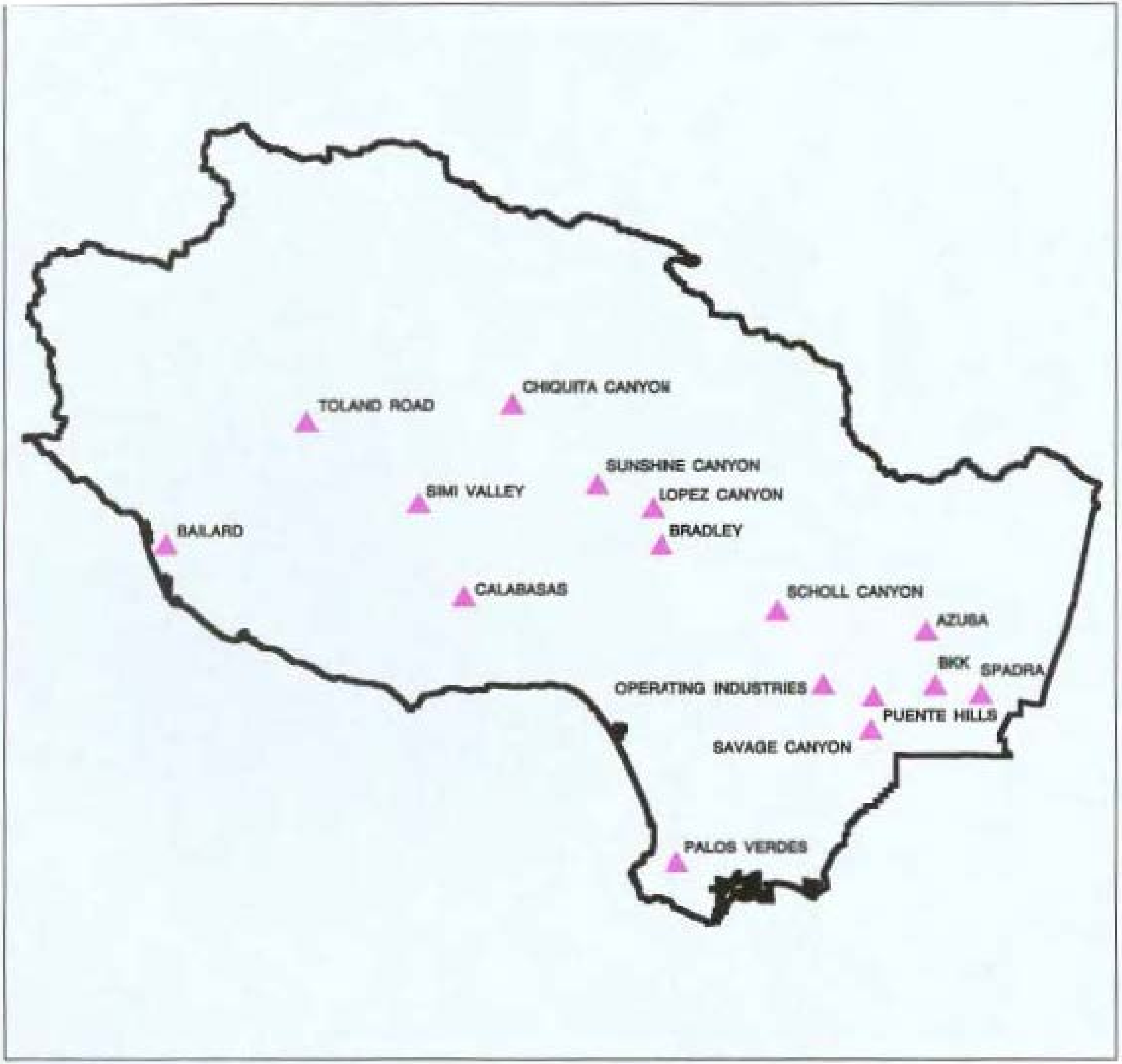


FIGURE 4-2

MAJOR LANDFILLS

CALIFORNIA
REGIONAL
WATER QUALITY
CONTROL BOARD
LOS ANGELES REGION
(4)

REGIONAL BOUNDARY

LANDFILL

N

Miles

0 10 20

Table 4-9. Active Regional Class III Landfills.

County	Agency/Owner	Landfills
Ventura County	Ventura Regional Sanitation District	Bailard Toland Road
	Waste Management Disposal Services of California, Inc.	Simi Valley
Los Angeles County	Azusa Land Reclamation/BFI *	Azusa
	BFI	Sunshine Canyon
	BKK	BKK-West Covina
	City of Burbank	Stough Park
	Laidlaw Waste System	Chiquita Canyon
	City of Los Angeles Department of Public Works	Lopez Canyon
	Sanitation Districts of Los Angeles County	Calabasas Puente Hills Scholl Canyon Spadra
	Valley Reclamation Company/Waste Management Disposal Services of California, Inc.	Bradley
	City of Whittier	Savage Canyon
	Consolidated Disposal	Pebbly Beach
	Doug Bombard Enterprises	Two Harbors

* The Azusa Landfill Reclamation site is currently accepting inert wastes. A ruling from State Board will determine whether the original 80-acre portion of the site will continue to operate as a Class III landfill pursuant to Regional Board Order WQ 86-59 and State Board Order 91-01.

landfills; see Table 4-10 for Regional Board procedures for siting inert landfills. In addition, there are several hundred inactive landfills in the Region, for which information about the nature of wastes and possible impacts to ground water are unknown at this time.

The Regional Board also administers the Solid Waste Water Quality Assessment Test (SWAT) Program in the Region, pursuant to the California Water Code (§13273). Section 13273, added in 1985, requires owners of active or inactive non-hazardous landfills to evaluate the possible migration of hazardous wastes or leachate from their landfill.

In addition to requiring site evaluations, the SWAT Program also:

- provides deadlines for implementation of water quality monitoring systems at active solid waste disposal sites;
- requires water quality monitoring systems at many closed solid waste disposal sites which previously had none; and
- requires identification of leaking solid waste disposal sites for verification monitoring and/or remedial actions to be taken under the Chapter 15 Program.

In 1986, the Regional Board began to require that landfill operator/owners prepare SWAT proposals to show how they would meet the requirements of Section 13273. Upon approval of proposals by the Regional Board, the operators must collect groundwater monitoring data during four consecutive quarters and submit the combined data in a SWAT report. To date, the Regional Board has received approximately 75 reports. Several of the landfills that detected problems underwent, or are undergoing, verification monitoring. SWAT reports submitted by owner/operators must include an analysis of the surface and ground water on, under, and within one mile of the solid waste disposal site in order to provide a reliable indication of whether there is any leakage of hazardous waste. Reports must also contain a chemical characterization of the soil-pore liquid of those areas which are likely to be affected if the solid waste disposal site is leaking and compare that area to geologically similar areas near the solid waste disposal site which have not been affected by the leakage of waste.

Table 4-10. Procedures for Siting Inert Landfills.

Regional Board procedures for siting inert landfills
A monitoring program approved by the Executive Officer must be in place and operating prior to disposal of any inert waste. This will include ground water monitoring and waste disposal reporting. In the event that possible leakage from the landfill is observed during routine detection monitoring, an evaluation monitoring, and if necessary, a corrective action program similar to those included in Chapter 15 will be implemented.
Disposal must be restricted to inert wastes. Organic material is allowed only in insignificant quantities, with the exception of a maximum of 5% by volume of organic material from debris basins. Friable asbestos, asphaltic material*, and rubber tires are specifically prohibited unless allowed by Waste Discharge Requirements from the Regional Water Quality Control Board.
A waste load checking program similar to those approved for Class III landfills must be carried out.
Installation of precipitation and drainage controls is required to accommodate runon and runoff.
Inspection of facility by Regional Board staff should be conducted at least once per year.
Submittal of a closure plan is required for review and approval by the Executive Officer. Such plan to include ground water monitoring for a minimum period of five years.

* Asphaltic material that contains less than 50% solids is not allowed (i.e., asphalt). Asphaltic concrete (as defined by the Joint Cooperative Committee of the Southern California Chapter, American Public Works Association, and Southern California Districts, and Associated General contractors: *Standard Specifications for Public Works Construction*) is allowed.

Under Public Resources Code Section 45700, the State Board is required to rank all solid waste facilities throughout the State based on the threat to water quality. Other State Board reports prepared under this section detail the extent of hazardous waste at each solid waste disposal site, the potential effects these hazardous wastes can have upon the quality of waters of the State, and recommended actions needed to protect the quality of water.

Sludge Use and Disposal

Biosolids, or sludge, are residual byproducts of sewage treatment, water treatment, and certain industrial processes. Heavy metals and volatile organic chemicals tend to concentrate in sludge. For this reason, USEPA and the Regional Board do not allow the direct discharge of sludge to the ocean or any other surface waters. Discharge to land must be carefully controlled because of potential impacts on ground and surface water quality. If sludge is disposed at a landfill, it must be non-hazardous, and meet the moisture and liquid-solid ratio requirements of the receiving landfill.

Under the NPDES program, sludge disposal is regulated (40 CFR Part 503) as a self-implementing program enforced by USEPA; the state does not have delegated authority for implementing the sludge program. Sludge reporting requirements (i.e., haulage information) for sewage treatment plants are included in their NPDES permits and WDRs.

The Regional Board encourages the use of sludge or by-products thereof. Some ways that sludge can be disposed include the following:

- dehydrated sludge as fuel in gas boilers to generate electricity (ash can be recovered for use as a fluxing agent in copper smelting or in cement production);
- sludge digester methane gas as fuel in gas boilers to generate electricity;
- chemically fixated sludge as landfill daily cover: adding chemical additives which fix heavy metals, reduce pathogens, and reduce free water to form a clay-like soil for use as daily landfill cover;
- sludge as a soil amendment: composting dewatered sludge (pathogens are killed at composting temperatures);
- sludge as a nutrient source for non-edible crops: direct application to agricultural crops not meant for direct human consumption (mixing, tilling, or injecting sludge into soil);
- sludge disposal directly in certain landfills; and
- sludge disposal in-situ.

Soil and Hazardous Waste Disposal

Contaminated soil and other material must be treated or properly disposed in order to minimize threat to the quality of surface or ground waters. Dischargers are required to submit an initial analysis of the material by a State-certified laboratory. If the material is deemed hazardous, the discharger is referred to the California Department of Toxic Substances Control. For non-hazardous materials, general WDRs can be issued on a case-by-case basis. All permitted treatment or disposal includes monitoring and reporting requirements.

General WDRs (Table 4-2) for discharge of non-hazardous contaminated soils or other wastes (good for 90 days) are issued for disposal of up to 100,000 cubic yards of contaminated material. If the material contains acceptable levels of total petroleum hydrocarbons (TPH) or other contaminants, then it can be disposed in a Class III landfill at the discretion of the site operator. For discharges over 100,000 cubic yards, individual WDRs are required.

General WDRs (Table 4-2) for in-situ treatment are issued for materials that meet guidelines for land treatment of petroleum hydrocarbon-contaminated soils. Up to 100,000 cubic yards of contaminated soil can be remediated, by land treatment, to acceptable levels usually not exceeding 1000 mg/kg total petroleum hydrocarbons, within one year. For discharges over 100,000 cubic yards, individual WDRs are necessary.

Remediation treatment includes biodegradation (by a land treatment process) for hydrocarbon contaminated soil found on site and a fixation process for metals contaminated soils. In-situ disposal (without treatment) can be allowed, on a case-by-case basis, for material that is not considered to be a threat to surface or ground water.

Dredging Requirements

The Regional Board issues WDRs for dredging projects to control potential water quality impacts associated with removal and disposal of bottom sediments. In the Los Angeles Region, most dredging activities take place within the Ports of Los Angeles and Long Beach to maintain navigation channels at the proper depth or to accommodate new development. Dredging projects periodically occur in other partially or fully enclosed water bodies (e.g., marinas and lagoons), ocean waters, and inland lakes and reservoirs. Applicants must demonstrate that dredging activities will not cause adverse water quality impacts and that disposal will be managed such that beneficial uses will not be affected. Dredging requirements usually have an expiration date.

Septic Systems

The California Water Code, Chapter 4, Article 5, sets forth criteria for regulating individual disposal systems (i.e., residential septic tanks). In the past, the Regional Board placed certain types of septic tank systems under individual WDRs. The Regional Board has delegated local health or public works departments jurisdiction to permit and regulate most single-family dwellings septic tank disposal systems. However, the Regional Board retains jurisdiction over multiple-dwelling units, some non-domestic septic tank systems, and large developments in certain problem areas, as well as in any situation where septic systems are creating or have the potential to create a water quality problem.

The Regional Board has adopted general WDRs (Table 4-2) for certain private residential subsurface sewage disposal systems in areas where ground water is an important source of drinking water. These general WDRs apply to areas greater than 1 acre and less than five acres in size and in general require either a hydrogeologic study or mitigation measures. WDRs are not issued for lots less than 1 acre in size and are not required for lot sizes greater than five acres.

Waivers from WDRs

The Regional Board can waive WDRs pursuant to the California Water Code (§13269) provided that such action is not against the public interest. Discharges eligible for such waivers (see Table 4-11 for examples) must comply with all applicable Water Quality Control Plans, and:

- have minimal adverse water quality impact;
- be adequately regulated by another State or local agency; or
- be a category of discharge covered by State or Regional Board regulations, guidelines, or Best Management Practices where the Regional Board has obtained voluntary compliance.

Table 4-11. Waiver Conditions from WDRs.

Regional Board waivers
Single family dwelling subsurface sewage disposal systems which are installed and operated in compliance with local ordinances *(as modified by General Permit Order No. 91-94).*
Single family dwelling swimming pool waste disposal installations which are constructed and operated in compliance with local ordinances (Resolution No. 53-5).
The on-site disposal of uncontaminated and unpolluted rotary mud resulting from the drilling of one oil well in such a manner that it will not be dumped or allowed to drain into any waters of the State.
State Board Waivers
Temporary construction dewatering discharge when end-of-pipe treatment is not feasible and the quality of the discharge is acceptable.
Discharges from private and public recreational impoundments caused by: a) continuous addition of domestic water and no additives are used to maintain the lake quality b) wet weather conditions and herbicides are used on a seasonal basis for maintenance of the aesthetic conditions in the impoundment c) water spilled from an impoundment through the addition of new water, wind action, or rainfall, or over a spillway.

Waivers of WDRs are conditional and can be terminated at any time by the Regional Board. NPDES permits, described below, can not be waived.

Water Reclamation Requirements (WRRs)

The State and Regional Board adopted the *Policy With Respect to Water Reclamation in California.* This policy, summarized and reprinted in Chapter 5, directs the Regional Boards to encourage reclamation of wastewaters and to promote water reclamation projects that preserve, restore, or enhance in-stream beneficial uses. The Regional Board waives fees for WRRs.

Projects that reuse treated wastewaters and thereby lessen the demand for higher quality fresh waters are subject to Water Reclamation Requirements (WRRs). Title 22, California Code of Regulations, Division 4, Chapter 3, describes the applicable reclamation criteria (Table 4-12). Requirements from the California Department of Health Services are incorporated into WRRs. Treated wastewaters subject to WRRs in the Los Angeles Region are used for landscape irrigation, recreational impoundments, and to recharge ground water. WRRs are not needed for process waters that are completely recycled during plant operations.

National Pollutant Discharge Elimination System Program (NPDES)

The CWA authorized the USEPA to regulate point source pollutants to the waters of the United States under the NPDES permitting program. The goal of this program was to eliminate all discharges of pollutants to surface waters by 1985. In 1974, California became a "delegated state" for issuing NPDES permits. As noted above, the state issues NPDES permits as WDRs in accordance with a Memorandum of Agreement (MOA) between the USEPA and the State Board, and as codified in the California Water Code, Chapter 5.

A standard NPDES permit generally includes the following components:

- Findings: *official description of the facility, processes, type and quantity of wastes, existing requirements, enforcement actions, public notice and applicable Water Quality Control Plans.*

- Effluent limitations: *narrative and numerical limits for effluent; discharge prohibitions.*

- Receiving water limitations: *narrative and numerical objectives for the receiving waters.*

- Provisions: *standard provisions required by the Regional Board and by Federal law; expiration date of permit.*

- Compliance/task schedules: *time schedules and interim reporting deadlines for compliance.*

- Pretreatment requirements: *standard pretreatment requirements for municipal facilities (see below).*

Table 4-12. Reclaimed Water: Uses and California Title 22 Health Requirements.

Permitted use of reclaimed water	Summary of Title 22 (Sections 60303 et. seq.) Health Requirements
Spray irrigation of food crops	Reclaimed water used for spray irrigation of food crops shall be at all times adequately disinfected, oxidized, coagulated, clarified, filtered wastewater. The wastewater shall be considered adequately disinfected if at some location in the treatment process, the median number of coliform organisms does not exceed 2.2 per 100 ml and the number of coliform organisms does not exceed 23 per 100 ml in more than one sample within any 30-day period. The median value shall be determined from the bacteriological results of the last 7 days for which analyses have been completed.
Surface irrigation of food crops	Reclaimed water used for surface irrigation of food crops shall be at all times an adequately disinfected, oxidized wastewater. The wastewater shall be considered adequately disinfected if at some location in the treatment process, the median number of coliform organisms does not exceed 2.2 per 100 ml as determined from the bacteriological results of the last 7 days for which analyses have been completed. Orchards and vineyards may be surface irrigated with reclaimed water that has the quality at least equivalent to that of primary effluent provided that no fruit is harvested that has come in contact with the irrigating water or the ground. Exceptions to the quality requirements for reclaimed water used for irrigation of food crops may be considered by the State Department of Health on an individual basis where the reclaimed water is to be used to irrigate a food crop which must undergo extensive commercial, physical or chemical processing sufficient to destroy pathogenic agents before it is suitable for human consumption.
Irrigation of fodder, fiber and seed crops	Reclaimed water used for the surface or spray irrigation of fodder, fiber, and seed crops shall have a level of quality no less than that of primary effluent.
Irrigation of pasture for milking animals	Reclaimed water used for the irrigation of pasture to which milking cows or goats have access shall be at all times an adequately disinfected, oxidized wastewater. The wastewater shall be considered adequately disinfected if at some location in the treatment process the median number of coliform organisms does not exceed 23 per 100 ml, as determined from the bacteriological results of the last 7 days for which analyses have been completed.
Landscape irrigation of golf courses, cemeteries, freeway landscapes and similar areas	Reclaimed water used for the irrigation of golf courses, cemeteries, freeway landscapes, and landscapes in other areas where the public has similar access or exposure shall be at all times an adequately disinfected oxidized wastewater. The wastewater shall be considered adequately disinfected if the median number of coliform organisms in the effluent does not exceed 23 per 100 ml as determined from the bacteriological results of the last 7 days for which analyses have been completed, and the number of coliform organisms does not exceed 240 per 100 ml in any two consecutive samples.

Table 4-12. Reclaimed Water: Uses and California Title 22 Health Requirements (continued).

Permitted use of reclaimed water	Summary of Title 22 (Sections 60303 et. seq.) Health Requirements
Irrigation of parks, playgrounds, schoolyards and similar areas	Reclaimed water used for the irrigation of parks, playgrounds, schoolyards, and other areas where the public has similar access or exposure shall be at all times an adequately disinfected, oxidized, coagulated, clarified, filtered wastewater or a wastewater treated by sequence of unit processes that will assure an equivalent degree of treatment and reliability. The wastewater shall be considered adequately disinfected if the medium number of coliform organisms in the effluent does not exceed 2.2 per 100 ml, as determined from the bacteriological results of the last 7 days for which analyses have been completed, and the number of coliform organisms does not exceed 23 per 100 ml in any sample.
Nonrestricted recreational impoundment (no limitations are imposed on body-contact sport activities)	Reclaimed water used as a source of supply in a nonrestricted recreational impoundment shall be at all times adequately disinfected, oxidized, coagulated, clarified, filtered wastewater. The wastewater shall be considered adequately disinfected if at some location in the treatment process, the median number of coliform organisms does not exceed 2.2 per 100 ml and the number of coliform organisms does not exceed 23 per 100 ml in more than one sample within any 30-day period. The median value shall be determined from the bacteriological results of the last 7 days for which analyses have been completed.
Restricted recreation impoundment (recreation is limited to fishing, boating, and other non-body-contact water recreation activities)	Reclaimed water used as a source of supply in a restricted recreational impoundment shall be at all times an adequately disinfected, oxidized wastewater. The wastewater shall be considered adequately disinfected if at some location in the treatment process the median number of coliform organisms does not exceed 2.2 per 100 ml, as determined from the bacteriological results of the last 7 days for which analyses have been completed.
Landscape impoundment (aesthetic enjoyment or other function but no body-contact is allowed)	Reclaimed water used as a source of supply in a landscape impoundment shall be at all times an adequately disinfected, oxidized wastewater. The wastewater shall be considered adequately disinfected if at some location in the treatment process the median number of coliform organisms does not exceed 23 per 100 ml, as determined from the bacteriological results of the last 7 days for which analyses have been completed.
Groundwater recharge of domestic water supply aquifers	Recharge water requirements are made on a case-by-case basis to ensure that the water is of such quality that fully protects public health at all times. Factors considered include treatment provided, effluent quality and quantity, spreading operations, soil characteristics, hydrogeology, residence time, receiving water quality and distance to withdrawal.
Other uses (toilet flush, industrial cooling water, process water, seawater intrusion barrier)	User must demonstrate that methods of treatment and reliability features will assure an equal degree of treatment and reliability.

- Sludge requirements: *sludge monitoring and control requirements, if necessary and not regulated under separate WDRs.*

- Monitoring program: *specific locations of monitoring stations and sampling frequency for all parameters limited in permit, including flow.*

Pretreatment

The 1972 amendments to the CWA established a separate regulatory program, called the National Pretreatment Program, that requires removal of toxic and other non-conventional pollutants at their sources before the wastewater enters publicly-owned treatment works (POTWs). The USEPA has developed pretreatment regulations for certain industries.

In addition, agencies operating one or more POTWs with a total design flow greater than five-million gallons per day are required to implement pretreatment programs. Smaller POTWs that have significant industrial influent, treatment process problems, or violations of effluent limitations, also can be required to pretreat influent. The pretreatment programs are designed to reduce pollutants that: interfere with biological treatment processes, contaminate sludge, and violate water quality objectives of receiving waters. POTWs are responsible for implementing and enforcing their own pretreatment programs, but are subject to USEPA and Regional Board approval and oversight.

Storm Water Permits

Storm water runoff is runoff from land surfaces that flows into storm drains or directly into natural waterbodies during rainfall. Storm water discharges include flow through pipes and channels or sheet flow over a surface. Storm water runoff was not regulated by the NPDES program until after the 1987 amendments to the CWA. Historically, many large manufacturers or industrial operators collected runoff (non-process wastewater) within their properties and discharged it to storm drains or sent it to a sewage treatment plant. However, most small industries and construction sites did not collect or monitor their runoff. The NPDES program now requires that this runoff be eliminated or regulated under a storm water permit. For more information about storm water, see the Urban Runoff in the Nonpoint Source section of this Chapter.

Table 4-13. Storm Water General NPDES Categories (General Permit Major Categories are Italic).

Industrial Facility Categories
i. Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards (40 CFR subchapter N)
ii. Certain manufacturing facilities
iii. Oil and Gas/Mining facilities
iv. Hazardous waste treatment, storage, or disposal facility
v. Landfills, land application sites, and open dumps that receive or have received any industrial wastes from facilities listed herein
vi. Recycling facilities, including metal scrap yards, battery reclaimers, salvage yards, and automobile junkyards
vii. Steam electric power generating facilities
viii. Transportation facilities which have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations
ix. Sewage or Wastewater treatment facilities with design flows greater than 1.0 mgd or plants required to have pretreatment program
xi. Other manufacturing facilities where materials, machinery, or products are exposed to storm water
Construction Activities of five acres or more, including clearing, grading and excavation. Construction which results in soil disturbances of less than 5 acres requires a permit if the construction activity is part of a larger common plan of development.

In November 1990, USEPA published initial permit application requirements for certain categories of storm water discharges associated with industrial activity and for discharges from separate municipal storm sewer systems located in municipalities with populations of 100,000 or more (55 FR 47990). These NPDES storm water discharge permits provide a mechanism for monitoring the discharge of pollutants to "waters of the United States" and for establishing appropriate controls to the maximum extent practicable.

In cases where there are existing NPDES permits for wastewater discharges, the Regional Board incorporates storm water discharge provisions into the same permit. Currently two types of NPDES storm water permits have been promulgated by the State and Regional Boards:

- Municipal permits for separate storm sewer systems located in urban areas with populations of 100,000 or more.

- Statewide general permits (Table 4-2):

  (i) for *industrial activities*, excluding construction. This permit covers 10 of the 11 industrial classifications described in the federal storm water regulations (Table 4-13); and

  (ii) for all *construction projects* impacting five acres or more, or smaller areas that are part of a larger common plan, including excavation, demolition, grading and clearing. (USEPA is considering making this permit applicable to all construction sites as part of Phase 2 of the storm water program).

Municipal storm water runoff is covered under municipal permits for a single city, county, or groups of cities and counties. The County of Los Angeles requested and received an "early" permit in 1990, prior to the promulgation of the USEPA storm water regulations. This permit covers the drainage basins contained within Los Angeles County with cities being brought into compliance under the program in three phases (Table 4-14; Figure 4-3). The Regional Board is currently developing a similar municipal permit that will cover most of Ventura County (Table 4-15), including the cities of Oxnard, Simi Valley and Thousand Oaks which have populations of greater than 100,000. The City of Thousand Oaks will be issued a separate storm water NPDES permit for drainage areas tributary to Santa Monica Bay. Each phase of the storm water program in Los Angeles County is being implemented over three years:

Table 4-14. Drainage Areas and Associated Co-permittees of Los Angeles County Municipal Storm Water NPDES Permit

Phase or Drainage Area 1: Santa Monica Bay Drainage Basin
Agoura Hills, Beverly Hills, Calabasas, Caltrans, Culver City, El Segundo, Hermosa Beach, Inglewood, Los Angeles (City and County), Malibu, Manhattan Beach, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, Santa Monica, Torrance, Ventura County (portions of Ventura County are included within the Los Angeles permit area), West Hollywood, Westlake Village
Phase or Drainage Area 2: Upper Los Angeles River and Upper San Gabriel River Drainage Basins
Alhambra, Arcadia, Azusa, Baldwin Park, Bradbury, Burbank, Calabasas, Caltrans, Claremont, Covina, Diamond Bar, Duarte, El Monte, Glendale, Glendora, Hidden Hills, Industry, Irwindale, La Cañada Flintridge, La Habra Heights, La Puente, La Verne, Los Angeles (City and County), Monrovia, Montebello, Monterey Park, Pasadena, Pomona, Rosemead, San Dimas, San Fernando, San Gabriel, San Marino, Sierra Madre, South El Monte, South Pasadena, Temple City, Walnut, West Covina
Phase or Drainage Area 3: Lower Los Angeles River, Lower San Gabriel River and Santa Clara River Drainage Basins
Alhambra, Artesia, Bell, Bellflower, Bell Gardens, Caltrans, Carson, Cerritos, Commerce, Compton, Cudahy, Downey, El Segundo, Gardena, Glendale, Hawaiian Gardens, Hawthorne, Huntington Park, Inglewood, La Cañada Flintridge, La Habra Heights, Lakewood, La Mirada, Lawndale, Lomita, Long Beach, Los Angeles (City and County), Lynwood, Maywood, Montebello, Norwalk, Palos Verdes Estates, Paramount, Pasadena, Pico Rivera, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, Santa Clarita, Santa Fe Springs, Signal Hill, South Gate, South Pasadena, Torrance, Vernon, Whittier

- Year I: compilation of existing data on the storm drain system and identification of existing Best Management Practices.

- Year II: implementation of early action Best Management Practices for cities, and regional

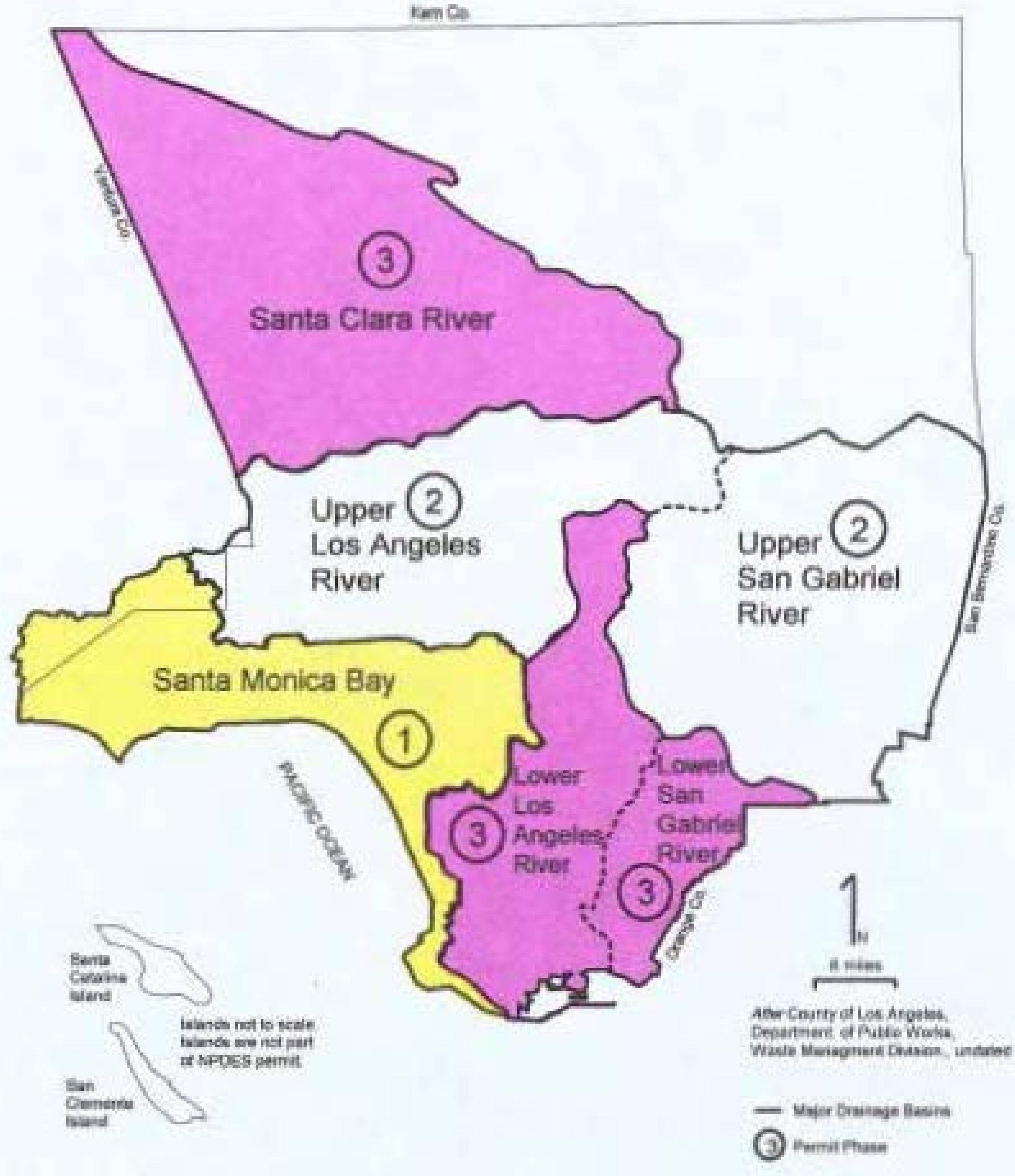


Figure 4-3. Drainage basins and phases of the Los Angeles County Municipal storm water NPDES permit.

monitoring programs for nonpoint source pollutants.

- Year III: implementation of additional Best Management Practices that are city-specific based on existing land use patterns and local concerns.

Industrial general storm water NPDES permits require that any owner/operator of a site that falls into one of the regulated categories and that discharges storm water to waters of the United States file a Notice of Intent (NOI) with the State Board. As detailed in the general permit, these dischargers are required to eliminate most non-storm water discharges, including illicit connections, to storm water drainage systems.

An industrial owner/operator must prepare a *Storm Water Pollution Prevention Plan* and a *Monitoring and Reporting Program* if storm water leaves, or has the potential to leave, an industrial site. Industries can monitor individually, or apply for a "group monitoring" program for like industries. Group monitoring is based on the assumption that similar industries have similar types of discharges. Industries under this program must sample a minimum of 20% or a minimum number of four, whichever is higher, of the facilities covered under an approved group program.

Table 4-15. Drainage Areas and Co-permittee Cities and Agencies of the Ventura County Municipal Storm Water NPDES Permit.

Drainage Area 1: Ventura River Drainage Basin
Ojai, San Buenaventura, Unincorporated Ventura County
Drainage Area 2: Santa Clara River Drainage Basin
Fillmore, Oxnard, San Buena Ventura, Santa Paula, Unincorporated Ventura County
Drainage Area 3: Calleguas Creek Drainage Basin
Camarillo, Moorpark, Simi Valley, Thousand Oaks, Unincorporated Ventura County
Drainage Area 4: Malibu Creek
Thousand Oaks, Unincorporated Ventura County
Drainage Area 5: Bays/Estuaries
Oxnard, Port Hueneme, San Buenaventura

The Regional Board's permitting strategy for industrial facilities is based on four-tiers of priorities: baseline permitting, watershed permitting, industry-specific permitting and facility-specific permitting (Table 4-16). General permits for industrial facilities will not be less stringent than individual permits. Rather, the use of general permits is intended to alleviate the administrative burden of issuing storm water permits to all industrial facilities. All permits, whether general or individual, will also require compliance with all local agency requirements. In addition, industrial facilities must eliminate all non-storm water discharges from storm drain systems unless they are authorized by an NPDES permit or determined not to be a source of pollutants and thus do not need an NPDES permit for discharge. General permits for other classes of non-storm water discharges will be considered as the need arises. Other industrial facilities not regulated at this time are expected to identify "hot areas" at their facilities where runoff can contact pollutants or activities can release pollutants to runoff. Examples of potential "hot areas" are storage areas for raw materials, sites used for the storage and maintenance of equipment, and shipping and receiving areas. In addition, industrial facilities are expected to segregate storm water discharges from these "hot areas;" and identify and implement control measures in these and other areas at the facility consistent with local agency comprehensive storm water control programs.

Dischargers are required to control pollutant discharges through use of best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT) to reduce pollutants and to use more stringent controls, if necessary, to meet water quality standards. To date, the USEPA has established technology-based numerical effluent limitations for storm water discharges from ten industrial activities (40 CFR Subchapter N, examples in Table 4-17).

For construction activities, landowners are required to develop and implement a *Storm Water Pollution Prevention Plan* and assess the effectiveness of their pollution prevention measures (control practices). The NPDES permit establishes requirements for the Notice of Intent (NOI) and the

Table 4-16. Four-tier Priority Strategy for Permitting Industrial Storm Water Dischargers.

Tier 1 - Baseline Permitting: The State Board issued a general permit in November 1991 for storm water discharges associated with industrial activities. The majority of storm water discharges associated with industrial activities in the Region will be allowed coverage under this State Board general permit. Requirements for the Notification of Intent to be covered under the general permit and the schedule for submittal and compliance are established in the permit.
Tier II - Watershed Permitting: Facilities within watersheds determined to be affected by industrial storm water discharges will be targeted for individual or watershed-specific general permits. The Regional Board will consider watershed-specific permits, on an as needed basis, for high resource or water-quality impaired watersheds in the Region.
Tier III - Industry-Specific Permitting: Specific industrial categories will be targeted for individual or industry-specific general permits. Storm water discharges from primary-metal industries, automobile salvage yards, boat yards, U.S. Department of Defense facilities in the Region may be significant sources of pollutants, and as such, the Regional Board will consider issuing general permit(s) or individual permit(s) specific to these facilities.
Tier IV - Facility-Specific Permitting: The targeting of individual facilities for facility-specific permitting will be dependent on several factors including special characteristics, complexity of operations, pollution threat, and others. Such facilities will also include those that have been found to be unsuitable for the other three tiers of permitting. In general, facility-specific permits are intended to be more restrictive than other tiers of permitting.

schedule for submittal and compliance. Discharges addressed by the permit include (i) pollutant discharges that occur during construction activities, (ii) discharges of construction waste material, and (iii) pollutant discharges in runoff after construction is completed. Permit conditions must be consistent with local agency ordinances and regulatory programs; the intent of the permit is not to supersede local programs, but rather to complement them. Under the municipal permits described above, local agencies are required to effectively address construction activities through their early planning and CEQA processes, as well as implement and develop control measures as part of their comprehensive control programs.

Criteria for WDRs, WRRs, and NPDES Permit Limit and Provisions

The Regional Board refers to several guidance documents or policies in developing effluent limits, including: USEPA's *Quality Criteria for Water* (USEPA, 1986) and a series of industry-specific USEPA Effluent Guideline Volumes (*Development Documents for Effluent Limitations Guidelines and Standards*). Site-specific effluent and receiving water limits are developed to comply with narrative and numerical objectives in the *California Ocean Plan* (1990), the *California Thermal Plan* (1975), the objectives and beneficial uses in this *Regional Water Quality Control Plan*, and other State and Regional Board plans and policies. Other nearby waste discharges, and the need to prevent nuisance, are also considered. In addition, all discharges must comply with Federal and State anti-degradation (see Chapters 3 and 5) and anti-backsliding (CWA §404) policies.

Municipal Effluent Limits (NPDES)

Effluent limitations for municipal NPDES permits require (i) at least secondary treatment, (ii) non-ocean disposal or recycling of sludge, (iii) compliance with health standards for coliform and fecal bacteria, and (iv) conformance with water contact or fish habitat standards, if necessary. Since 1977, all ocean dischargers have been required by USEPA to have secondary treatment. Some dischargers are not yet fully in compliance with this requirement; however, USEPA has denied all applications from POTWs in the Los Angeles Region for federal 301(h) waivers which would allow modified water quality criteria for ocean discharges. Those POTWs that submitted applications are now in the process of constructing secondary treatment facilities.

Specific Criteria for Site-specific Determination of Effluent Limits

The Regional Board prescribes effluent limits after assessing the nature of the waste, treatment level,

Table 4-17. Selected Point Source Categories Subject to Storm Water Effluent Limitation Guidelines (see 40 CFR 411-443).

BAT is Best Available Technology Economically Achievable.
BPT is Best Practicable Control Technology Currently Available.

Category	Legal Standard	Design storm	Parameter	Concentration (mg/L unless noted)	
				Max for any 1 day	30-day average
Cement manufacturing	BPT	10 yr. 24 hr.	TSS pH	< 50 6.0-9.0	
Feedlots (all subcategories except ducks)	BPT	10 yr. 24 hr.		No discharge of process wastewater pollutants	
	BAT	25 yr. 24 hr.		No discharge	
Feedlots (Ducks)	BPT	*	BOD5	1.66	0.91
			fecal coliform (kg/1000 ducks)	< 400/100 mpn/ml	
Fertilizer Manufacturing (Phosphate)	BPT	*	Total phosphorus Fluoride	105 75	35 25
Fertilizer Manufacturing (Ammonia)	BPT	*	Ammonia	0.1875	0.0625
			pH (kg/1000kg of product)	6.0-9.0	
Fertilizer Manufacturing (Ammonium sulfate production)	BPT	*		No discharge	
Fertilizer Manufacturing (Urea produced as a solution)	BPT	*	Ammonia Organic Nitrogen (kg/1000kg of product)	0.95 0.61	0.48 0.33
	BAT	*	Ammonia Organic Nitrogen (kg/1000kg of product)	0.53 0.45	0.27 0.24
Fertilizer Manufacturing (Urea grilled or granulated)	BPT	*	Ammonia Organic Nitrogen (kg/1000kg of product)	1.18 1.48	0.59 0.80
	BAT	*	Ammonia Organic Nitrogen (kg/1000kg of product)	0.53 0.86	0.27 0.46
Fertilizer Manufacturing (Ammonium Nitrate)	BPT	*	Ammonia Nitrate (kg/1000kg of product)	0.73 0.67	0.39 0.37
	BAT	*	Ammonia Nitrate (kg/1000kg of product)	0.08 0.12	0.04 0.07
Petroleum Refining (For discharges composed entirely of contaminated *runoff*)	BPT	*	Oil and Grease TOC	15 110	

Table 4-17. Selected Point Source Categories Subject to Storm Water Effluent Limitation Guidelines (see 40 CFR 411-443) (continued).

BAT is Best Available Technology Economically Achievable.
BPT is Best Practicable Control Technology Currently Available.

Category	Legal Standard	Design storm	Parameter	Concentration (mg/L unless noted) Max for any 1 day	30-day average
Petroleum Refining (For discharges of a] contaminated runoff that is commingled or treated with process wastewater or b] wastewater consisting solely of contaminated runoff which exceeds 15 mg/L oil and grease or 110 mg/L TOC and is not commingled or treated with any other type of wastewater) *Multiply the flow of contaminated runoff (as determined by the permit writer) by the concentrations listed.*	BPT	*	BOD5 TSS COD Oil & grease Phenolic compounds (4AAP) Total chromium Hexavalent chromium	48 33 360 15 0.35 0.73 0.062	26 21 180 8 0.17 0.43 0.028
			pH (kg/1000m^3 of flow)	6.0-9.5	
	BAT	*	Phenolic compounds (4AAP) Total chromium Hexavalent chromium COD (kg/1000m^3 of flow)	0.35 0.60 0.062 360	0.17 0.21 0.028 180
Phosphate Manufacturing (Defluorinated phosphate rock and defluorinated phosphoric acid)	BPT	*	Total phosphorus Fluoride	105 75	35 25
			pH	6.0 -9.5	
Phosphate Manufacturing (Sodium phosphates)	BPT	*	TSS Total phosphorus Fluoride	0.50 0.80 0.30	0.25 0.40 0.15
			pH (kg/1000kg of product)	6.0-9.5	
Steam Electric Power Generating (Runoff from coal piles)	BPT	10 yr. 24 hr.	TSS pH PCBs	50 (max at any time) 6.0-9.0 No discharge	
Mineral Mining (Crushed stone and construction sand and gravel)	BPT	10 yr. 24 hr.	pH	6.0-9.0***	
Mineral Mining (Industrial sand: Discharge of process-generated wastewater from facilities that recycle waste except from those employing HF flotation)	BPT	10 yr. 24 hr.	TSS	45	25
			pH	6.0-9.0***	
Mineral Mining (Industrial sand: Discharges of process generated wastewater from facilities that recycle wastewater and employ HF flotation)	BPT	10 yr. 24 hr.	TSS Total fluoride	0.046 0.006	0.023 0.003
			pH (kg/1000kg final product)	6.0-9.0***	
Mineral Mining (Industrial sand: All other discharges of process generated wastewater)	BPT	10 yr. 24 hr.		No discharge	

Table 4-17. Selected Point Source Categories Subject to Storm Water Effluent Limitation Guidelines (see 40 CFR 411-443) (continued).

BAT is Best Available Technology Economically Achievable.
BPT is Best Practicable Control Technology Currently Available.

Category	Legal Standard	Design storm	Parameter	Concentration (mg/L unless noted) Max for any 1 day	Concentration (mg/L unless noted) 30-day average
Mineral Mining (Industrial sand: Mine dewatering discharges)	BPT	10 yr. 24 hr.	TSS pH	45 6.0-9.0***	25
Mineral Mining (Gypsum, asphaltic mineral, asbestos and wollastonite, borax, potash, sodium sulfate, frasch sulfur, magnesite, diatomite, jade, novaculite, barite, fluorspar, salines from brine lakes, bentonite, and tripoli)	BPT	10 yr. 24 hr.		No discharge	
Ore mining and dressing (Iron ore: runoff from the drainage area of facility)	BPT	10 yr. 24 hr.	TSS Iron (dissolved) pH	30 2.0 6.0-9.0	20 1.0
Ore Mining and Dressing (Copper, lead, zinc, gold, silver, and molybdenum ores: runoff from the drainage area of facility)	BPT	10 yr. 24 hr.	TSS Copper Zinc Lead Mercury pH	30 0.30 1.5 0.6 0.002 6.0-9.0	20 0.15 0.75 0.3 0.001
	BAT	10 yr. 24 hr.	Copper Zinc Lead Mercury Cadmium	0.30 1.5 0.6 0.002 0.10	0.15 0.75 0.3 0.001 0.05
Ore Mining and Dressing (Gold placer mine: surface runoff which has commingled with mine drainage or waters resulting from the beneficiation process)	BPT	10 yr. 24 hr.	Settleable solids	0.2 ml/L (instantaneous max)	
Ore Mining and Dressing (Titanium ore: surface water incorporated into mine drainage)	BPT	10 yr. 24 hr.	All mine drainages: TSS Iron pH	 30 2.0 6.0-9.0	 20 1.0
			Discharges from Mills: TSS Zinc Nickel pH	 30 1.0 0.2 6.0-9.0	 20 0.5 0.1

Table 4-17. Selected Point Source Categories Subject to Storm Water Effluent Limitation Guidelines (see 40 CFR 411-443) (continued).

BAT is Best Available Technology Economically Achievable.
BPT is Best Practicable Control Technology Currently Available.

Category	Legal Standard	Design storm	Parameter	Concentration (mg/L unless noted)	
				Max for any 1 day	30-day average
Ore Mining and Dressing (Tungsten, Nickel and Vanadium ores: surface runoff incorporated into mine drainage)	BPT	10 yr. 24 hr.	Mines producing $\geq$5000 metric tons:		
			TSS	30	20
			Cadmium	0.10	0.05
			Copper	0.3	0.15
			Zinc	1.0	0.5
			Lead	0.6	0.3
			Arsenic	1.0	0.5
			pH	6.0-9.0	
			Mills producing $\geq$5000 metric tons:		
			TSS	30	20
			Cadmium	0.10	0.05
			Copper	0.3	0.15
			Zinc	1.0	0.5
			Arsenic	1.0	0.5
			pH	6.0-9.0	
			Mines and Mills producing < 5000 metric tons:		
			TSS	50	30
			pH	6.0-9.0	
Paving and Roofing Materials (Asphalt emulsion)	BPT	*	Oil and grease	0.020	0.015
			pH	6.0-9.0	
			(kg/m^3 of runoff)		
	BAT	*	TSS	0.023	0.015
			oil and grease	0.015	0.010
			pH	6.0-9.0	
			(kg/m^3 of runoff)		
Paving and Roofing Materials** (Asphalt concrete)	BPT	*		No discharge	
Paving and Roofing Materials** (Asphalt roofing)	BPT	*	TSS	0.056	0.038
			pH	6.0-9.0	
			(kg/1000kg of product)		
	BAT	*	TSS	0.028	0.019
			pH	6.0-9.0	
			(kg/1000kg of product)		

Table 4-17. Selected Point Source Categories Subject to Storm Water Effluent Limitation Guidelines (see 40 CFR 411-443) (continued).

BAT is Best Available Technology Economically Achievable.
BPT is Best Practicable Control Technology Currently Available.

Category	Legal Standard	Design storm	Parameter	Concentration (mg/L unless noted)	
				Max for any 1 day	30-day average
Paving and Roofing Materials ** (Linoleum and printed asphalt felt)	BPT	*	TSS	0.038	0.02 5
			pH (kg/1000kg of product)	6.0-9.0	
	BAT	*	TSS	0.019	0.013
			pH (kg/1000kg of product)	6.0-9.0	

* not specified

** Any water which comes into direct contact with any raw material, intermediate product, by product, or product used in or resulting from production.

*** or lower but not less than 5.0 if water quality standards authorize lower pH; and if discharge, unaltered by human activity, would have a pH lower than 6.0.

dilution or mixing zone, other discharges in the area, beneficial uses and objectives for the receiving waters, and relevant State and Federal guidelines and regulations.

On a case-by-case basis, the Regional Board can allow a mixing zone for compliance with receiving water objectives. In rivers and streams an approved mixing zone can not extend more than 250 feet from the point of discharge or be located less than 500 feet from an adjacent mixing zone. Since many of the streams in the Region have minimal upstream flows, mixing zones are usually not appropriate. In lakes or reservoirs, it may not extend 25 feet in any direction from the discharge point, and the sum of mixing zones may not be more than 5% of the volume of the waterbody. As detailed in the States' *Ocean Plan*, ocean dilution zones are determined using standard models.

Water quality-based effluent limitations for discharges to inland surface waters (SWRCB, 1991a and SWRCB, 1991b) are developed in a number of ways including:

- assignment of a portion of the loading capacity of the receiving water to each of the sources of waste, point and nonpoint;
- determination of limitations based on a formula that considers the water quality objective and ambient background concentrations of each substance and allowed dilution ratio;
- determination of limitations using statistically-based calculations and information about the effluent and receiving water, where sufficient information exists to adequately characterize effluent and receiving water;
- using discharge prohibitions to implement water quality objectives for a particular area; or
- for power plant discharges, determination of limitations based on a formula that incorporates cooling water flow and combined in-plant waste streams.

Effluent limits for ocean discharges are based on objectives in the *Ocean Plan.*

Standard Provisions in WDRs and NPDES Permits

Standard provisions are included in most Non-Chapter 15 WDRs and in all NPDES permits and outline specific restrictions and requirements imposed by the Regional Board. Selected provisions which relate to prohibited discharges are listed below. A full copy of the standard provisions for either WDRs or NPDES permits can be obtained at the Regional Board office. NPDES standard provisions are different from WDRs standard provisions.

Selected Standard Provisions Applicable to Non-Chapter 15 Waste Discharge Requirements

General Prohibition: Neither the treatment nor the discharge of waste shall create pollution, contamination, or nuisance, as defined by Section 13050 of the California Water Code.

Hazardous Releases: Except for a discharge which is in compliance with waste discharge requirements, any person who, without regard to intent or negligence, causes or permits any hazardous substance or sewage to be discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, shall, as soon as (i) that person has knowledge of the discharge, (ii) notification is possible, and (iii) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State Toxic Disaster Contingency Plan adopted pursuant to Article 3.7 of Chapter 7 of Division 1 of Title 2 of the Government Code, and immediately notify the State Board or the appropriate Regional Board of the discharge. This provision does not require reporting of any discharge of less than a reportable quantity as provided for under Subdivisions (f) and (g) of Section 13271 of the Water Code unless the discharger is in violation of a prohibition in the applicable Water Quality Control Plan.

Petroleum Releases: Except for a discharge which is in compliance with waste discharge requirements, any person who without regard to intent or negligence, causes or permits any oil or petroleum product to be discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, shall, as soon as (i) such person has knowledge of the discharge, (ii) notification is possible, and (iii) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State Oil Spill Contingency Plan adopted pursuant to Article 3.5 (commencing with Section 8574.1) of Chapter 7 of Division 1 of Title 2 of the Government Code. This provision does not require reporting of any discharge of less than 42 gallons unless the discharge is also required to be reported pursuant to Section 311 of the Clean Water Act or the discharge is in violation of a prohibition in the applicable Water Quality Control Plan.

Selected General Requirements and Standard Provisions Applicable for NPDES Permits

- Neither the disposal nor any handling of wastes shall cause pollution or nuisance.
- Wastes discharged shall not contain any substances in concentrations toxic to human, animal, plant or aquatic life.
- Wastes discharged shall not contain visible oil or grease, and shall not cause the appearance of grease, oil or oily slick, or persistent foam in the receiving waters or on channel banks, wall, inverts or other structures.
- Wastes discharged shall not increase the natural turbidity of the receiving waters at the time of discharge.
- Wastes discharged shall not damage flood control structures or facilities.
- The temperature of wastes discharged shall not exceed 100 °F.
- The discharge of any radiological, chemical, or biological warfare agent or high level radiological waste is prohibited.
- Bypass (the intentional diversion of waste streams from any portion of a treatment facility) is prohibited (with certain exceptions).

Self Monitoring, Compliance Monitoring and Inspections

Permits and requirements issued by the Regional Board are generally self-monitored by each individual discharger, with oversight by the Regional Board. The Regional Board conducts periodic inspections and compliance monitoring and, as necessary, will take enforcement actions to ensure compliance.

Self Monitoring Program: Dischargers are required to regularly collect samples of their waste stream(s) and, in some cases, receiving waters and submit results to the Regional Board. If the discharger discovers that they are not in compliance with their Requirements, they are required to take measures, including change of operations, in order to come into compliance. The monitoring and reporting schedule is determined for each discharger on a case-by-case basis.

Compliance Monitoring and Inspections: Regional Board staff conduct unannounced inspections (including collection of samples) to determine the status of compliance with Requirements. All major dischargers are inspected at least once a year.

Enforcement

Regional Boards are authorized to implement a variety of enforcement actions to obtain compliance with Requirements. Enforcement procedures can be informal, such as a letter informing the discharger of non-compliance and requesting the discharger to comply with terms of its Requirements, or they can be more formal, such as an order prescribing needed changes and a time schedule. Generally, instances of noncompliance are first addressed by discussions at the site, via telephone, or by letter with a request to correct the problem within a given period of time.

The California Water Code (§13267) authorizes the Regional Board to require any discharger to submit technical or monitoring reports. Failure to supply the required reports is a misdemeanor. Section 13268 permits the Regional Board to levy administrative civil liabilities (e.g., fine) not exceeding five thousand dollars ($5,000) for each day that the discharger fails to comply with the Section 13267 request. Civil liability may also be imposed by the superior court in an amount that shall not exceed twenty-five thousand dollars ($25,000) for each day in which the violation occurs. If warranted, the Executive Officer will issue a *Notice of Violation* that is sent to the discharger for failure to comply with a predetermined compliance action/schedule.

Under the California Water Code, the Regional Board has several enforcement options available to compel compliance with a Board order. The following is a brief overview of the enforcement actions available to the Regional Board (statutory references are to the California Water Code).

Time Schedule Orders *(§13300):* Dischargers operating under Regional Board orders who are not able to meet requirements, or whose actions threaten to violate requirements prescribed by the Regional Board, can be administratively issued (by the Executive Officer) an order specifying a time schedule for the discharger to take specific actions which will correct or prevent the violation. The time schedule order may also include interim limits with which the discharger must comply during the time schedule until full compliance is achieved.

Cease and Desist Orders *(§13301):* The Regional Board may issue a Cease and Desist Order when a discharger:

- fails to comply with requirements or discharge prohibitions contained in an NPDES permit or in WDRs/WRRs;
- fails to comply with a time schedule set by the Board in a time schedule order; or
- fails to take preventive or remedial action in the event of a threatened violation of a Board order.

The order requires the discharger to comply with established requirements or prohibitions, to comply with a time schedule, or, if the violation is threatening, to take appropriate remedial or preventative action. The order may also restrict or prohibit the discharge of new sources of waste to a community sewer system.

Cleanup and Abatement Orders *(§13304):* The Regional Board may issue a cleanup and abatement order to any discharger who has discharged wastes without a valid Board order or who has caused, or threatens to cause, a condition of pollution. The order requires the discharger to clean up waste or abate its effects or, in the case of a threatened pollution or discharge, take other necessary remedial or preventive actions. If the discharger fails to take action, the State Attorney General, at the request of the Board, may file a petition for issuance of an injunction requiring compliance. Alternatively, the Executive Officer is authorized to issue a Cleanup and Abatement Order administratively.

Administrative Civil Liability: A Civil Liability (e.g., fine) may be administratively imposed by the Regional Board against dischargers who violate §13350 or §13385 or any other Regional Board order.

Assessments imposed for §13350 violations shall not exceed five thousand dollars ($5,000), but shall not be less than five hundred dollars ($500), for each day the discharger is deemed to be in violation. Section 13350 violations include:

- failure to comply with a Cleanup and Abatement Order or a Cease and Desist Order;
- violation of any Requirements which creates a nuisance or causes pollution; and
- deposition of oil or petroleum residue in or on any State waters.

The Regional Board can impose sanctions up to ten thousand dollars ($10,000) for each day in which the discharger violates §13385. Section 13385 violations include:

- failure to furnish a report, filing a false report of waste discharge or a false technical report, or failure to pay a fee when so requested;
- discharging warfare (radiological, chemical or biological) agents into State waters;
- violating dredge and fill material permits; and
- refusing to provide technical or monitoring reports as requested by the Regional Board.

The Executive Officer is authorized to impose an Administrative Civil Liability administratively. If the discharger so requests, a hearing will be held by the Regional Board on the violation and the amount of the civil liability. Funds collected from civil penalties go directly to the State Water Pollution Cleanup and Abatement Account which is administered by the State Board. In lieu of a civil liability payment, the Regional Board may require that the violator fund a cleanup or enhancement activity within the area of the discharge violation or for other environmentally beneficial projects in the Region.

Judicial Civil Liability: The State Attorney General, upon a request from the Regional Board, may petition the superior court to seek penalties in excess of the fines that the Regional Board is authorized to impose. For §13350 violations (see criteria listed in Administrative Civil Liabilities section above), the court may impose civil liabilities up to fifteen thousand dollars ($15,000) for each day. For §13385 violations, the court-imposed fines cannot exceed twenty-five thousand dollars ($25,000) for each day of violation.

Injunctive Relief: The State Attorney General or the appropriate county or District Attorney or City Attorney may, at the request of the Regional Board, petition the Superior Court for injunctive relief for any person not complying with submittal of required reports and fees (§13360) or discharging wastes in violation of the California Water Code (§13386), or where there is evidence of irreparable damage (§13361).

Control of Nonpoint Source Pollutants

Introduction

Despite California's significant achievements in controlling point source discharges from municipal sewage treatment plants and industrial facilities, pollutants from nonpoint sources continue to degrade many of our water resources. Approximately two-thirds of California's waterbodies assessed in the State's *Water Quality Assessment Report* (1992) are threatened or impaired by nonpoint sources of pollution.

Nonpoint source (NPS) pollution, as opposed to "point source" pollution (a discharge at a specific location or pipe with the exception of irrigation return flows), generally consists of diffuse runoff of pollutant-laden water from adjacent land. These pollutants are transported to waters by precipitation, irrigation, and atmospheric deposition. Nonpoint sources have been grouped by the USEPA into categories that include agriculture, urban runoff, construction, hydromodification, resource extraction, silviculture, and land disposal. These categories, however, are not exclusive. For example, agricultural operations contain both point (concentrated animals) and nonpoint source (irrigation return flow) categories.

Nonpoint source pollution has been studied for several decades. Many of the earlier nonpoint source planning efforts generated excellent studies and reports; unfortunately, many of the recommendations have yet to be implemented. Due to new requirements mandated as a result of the 1987 amendments to the CWA, a more focused, results-oriented approach is being implemented nationwide.

Early Nonpoint Source Pollution Planning Efforts

The CWA (§208) required State and local agencies to identify water quality problems from both point and nonpoint sources as part of their water quality planning efforts. From 1974 to 1981, federal grants under this program provided funds to states and local agencies for identification of nonpoint source problems and development of control strategies. Although many of these plans were never implemented, this early work helped establish the framework for existing state nonpoint source programs currently being implemented under the CWA (§319).

Recognizing the need to assess the water quality effects of storm water runoff, the USEPA initiated the Nationwide Urban Runoff Program (NURP) in 1978. This five-year program collected data on the quality of urban runoff and its impact on receiving waters. Objectives of NURP included the development of a national database and analytical methodologies to examine the quality characteristics of urban runoff, a determination of the extent to which urban runoff contributes to water quality problems, and an evaluation of best management practices to control pollutants from urban runoff. Data from 28 projects around the country confirmed that significant levels of pollutants such as nutrients, heavy metals, and bacteria result from urban runoff. These studies also showed that the most significant effects of urban storm water runoff on aquatic life were due to hydrologic changes related to urbanization and construction activities.

Development of the State Nonpoint Source Program

The CWA (§101(a)(7)) states:

"it is the national policy that programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner so as to enable the goals of this Act to be met through the control of both point and nonpoint sources of pollution."

With the addition of specific nonpoint source language in the 1987 amendments to the CWA (particularly §319), new direction focusing on implementation of state nonpoint source management programs have been authorized.

Section 319 requires that states complete two documents by August 4, 1988, in order to be eligible for federal nonpoint source funding: an Assessment Report describing the state's nonpoint source water quality problems and a Management Plan describing plans to address the state's nonpoint source problems.

The State Board is responsible for implementing the requirements of §319 and reporting to the USEPA. In addition to authority under the CWA, the State Board has independent authority to implement requirements of §319 by means of Division 7 of the California Water Code, commencing with §13000.

The State Water Resources Control Board completed its *Nonpoint Source Assessment Report* and *Nonpoint Source Management Plan* in 1988. The *Assessment Report* summarizes water quality impairments due to nonpoint source and describes regional, State, and Federal programs in California that addressed nonpoint source pollution. The *Management Plan* outlines the legal and institutional framework, objectives, and implementation plan for the State's program.

The State's *Nonpoint Source Management Plan* describes a three-tiered management approach to address nonpoint source problems. Each Regional Board will decide which management option(s) will be required for individual situations. Generally, the least stringent option (in terms of regulation) that will protect or restore water quality will be employed, followed by more formal regulatory measures if timely improvements in water quality are not achieved. Regional Boards usually will not impose effluent limits on nonpoint source dischargers who are implementing Best Management Practices in accordance with a State or Regional Board formal action. The three tiers (in order of increasing regulatory control) are outlined below:

(i) Voluntary implementation of Best Management Practices
    Land managers or property owners voluntarily or cooperatively implement Best Management Practices.

(ii) Regulatory-based enforcement of Best Management Practices
    The Regional Board can encourage the use of Best Management Practices by waiving WDRs on the condition that the dischargers implement effective Best Management Practices .
    The Regional Board can enforce Best Management Practices indirectly by entering into Management Agency Agreements (MAAs) with other agencies that have the authority to enforce Best Management Practices .

(iii) Effluent limitations
    The Regional Board can adopt and enforce WDRs on any proposed or existing waste discharge, including discharges from nonpoint sources.

Following the adoption of the *Nonpoint Source Management Plan*, the State and Regional Boards have focused on the following objectives in developing the program elements:

- Initiate and institutionalize activities for the control of nonpoint source pollution from urban runoff, agriculture, silviculture, mining, construction, hydromodification, grazing, and septic tanks.

- Encourage, develop, and manage contracts for projects funded under CWA (§319) funding.

- Develop a program to implement the requirements of the 1990 re-authorization of the Coastal Zone Management Act (CZMA) which requires the State Board and the Coastal Commission to develop and implement an enforceable nonpoint source program in the coastal zone.

- Initiate pilot watershed programs across the State.

- Implement a public outreach and educational program.

During the preparation of the California *Nonpoint Source Management Plan,* the State Board formed an Interagency Advisory Committee (IAC). IAC meetings are held quarterly and serve as a forum for discussion of Nonpoint Source Program development and direction, funding, and the exchange of new ideas in nonpoint source related activities implemented by the various agencies.

The IAC consists of State and Regional Board staff, other State agencies, the California Association of Resource Conservation Districts, federal agencies, and other interested parties. Active member agencies of the IAC are listed below:

State Agencies:
- Coastal Commission
- Department of Conservation
- Department of Fish and Game
- Department of Food and Agriculture
- Department of Pesticide Regulation
- Department of Transportation
- Department of Water Resources
- Association of Resource Conservation Districts
- Water Resources Control Board
- Regional Water Quality Control Boards

Federal Agencies:
- Agricultural Stabilization and Conservation Service
- Army Corps of Engineers
- Bureau of Land Management
- Bureau of Reclamation
- Environmental Protection Agency
- Forest Service
- Fish and Wildlife Service
- Soil Conservation Service

The State Board has entered into agreements with other agencies (Table 4-18) which have the authority to implement, or require the implementation of, Best Management Practices under the State's Nonpoint Source Program. These agreements capitalize on the expertise and authorities of other agencies with responsibilities related directly or indirectly to water quality. Memorandums of Understanding (MOUs) and Management Agency Agreements (MAAs) are the two types of agreements used for this purpose. The format and end-result of both agreements are

Table 4-18. Nonpoint Source-related Memorandums of Understanding (MOUs) and Management Agency Agreements (MAAs) between the State Water Resources Control Board and Other Agencies.

Effective Date	Title of Agreement
May 26, 1981	Management Agency Agreement between the State Water Resources Control Board and the Forest Service, United States Department of Agriculture.
February 3, 1988	Management Agency Agreement between the State Water Resources Control Board, the State Board of Forestry, and the State Department of Forestry and Fire Protection.
July 30, 1990	Memorandum of Understanding between the State Water Resources Control Board, the Soil Conservation Service, and U.S. Department of Agriculture for Planning and Technical Assistance Related to Water Quality Policies and Activities.
December 23, 1991	Memorandum of Understanding between the State Water Resources Control Board and the California Department of Pesticide Regulation for the Protection of Water Quality (Surface and Ground Water) from Potentially Adverse Effects of Pesticides.
February 3, 1993	Memorandum of Understanding between the California State Water Resources Control Board, the Bureau of Land Management, and U.S. Department of the Interior for Planning and Coordination of Nonpoint Source Water Quality Policies and Activities.

basically the same. These agreements outline the responsibilities of one agency, then the other, followed by the joint responsibilities of both agencies.

Nonpoint Source Funding

Because the Nonpoint Source Program is different from most other water quality programs, innovative ways of financing and implementing nonpoint source projects have been developed. Prior to the CWA 1987 amendments, states used §106 and §205(j) monies (as described below) to fund limited nonpoint source activities. The primary federal funding for current nonpoint source program development and implementation includes §205(j)(5), §319(h), §201(g)(1)(b), §603(c)(2), and §604(b) monies as described below.

Section 205(j)(5): Section 205(j)(5) established a set-aside of construction grant funds for the purposes of carrying out activities under Section 319, including program development and the preparation of state Assessment Reports and Management Plans. These funds were used for assessment and development activities for California's program through fiscal year 1989.

Section 319(h): Grant funds authorized by Section 319(h) can be used for the implementation of nonpoint source management programs but cannot be used for assessment activities. States must have a USEPA-approved Assessment and Management Plan before qualifying for these monies. This grant program funds both State and Regional Board programs and provides competitive grants for other agencies to use in implementing nonpoint source measures around the State. These grants include a "non-federal" match of 40%, illustrating the intent of Congress and USEPA to encourage states to make a substantial financial commitment to implement nonpoint source programs.

Section 201(g)(1)(b): The CWA 1987 amendments added subsection 210(g)(1)(b) that expanded the use of 201 funds to "...any purpose for which a grant can be made under Section 319(h) and (i)." These funds can be used for either nonpoint source development or implementation projects. The Regional Board has recently received funding under this program to provide resources to coordinate a multi-agency study in the Malibu Creek Watershed (see description in the Future Direction section for more detail).

Section 603(c)(2): The CWA 1987 amendments added Title VI establishing a State Water Pollution Control Revolving Fund Program (SRF). This program provides funding in the form of loans, refinancing, and bond insurance which can be used for (i) construction of publicly owned treatment works, (ii) the implementation of state nonpoint source management programs, and (iii) the development and implementation of state estuary conservation and management plans. The State and Regional Boards encourage local agencies to apply for these low-interest loans to implement nonpoint source demonstration projects and programs in the Region.

Section 604(b): States must set aside one percent of their Title VI allotments or $100,000, whichever is greater, to carry out planning programs under 205(j) and 303(e) of the CWA. These funds can be used under 205(j) planning for nonpoint source related activities. This can become an important source of funding for nonpoint source planning and assessment tasks since these types of activities cannot be carried out under Section 319.

Nonpoint Source Categories

The following sections describe the major sources of nonpoint pollution, the extent of the problem in the Region, and the main regulatory and non-regulatory approaches available to control runoff from these nonpoint sources of pollution.

Agriculture

Agriculture is a major industry in California and will continue to be important to the State's economy. Agricultural activities, however, can generate pollutants such as sediment, pesticides, nutrients, and oxygen-demanding organic matter. Upon discharge to a receiving water, these pollutants can degrade water quality and impair beneficial uses, as explained below.

Sediment: Eroded soil materials, along with other chemicals (nutrients, pesticides, and other organic chemicals) that adsorb to the sediment particles, are transported from land surfaces into adjacent waterbodies. Excess sediment can interfere with photosynthesis by reducing light penetration, smother benthic organisms, destroy important spawning habitats, and fill in waterways hindering navigation or groundwater percolation and increasing flooding.

Pesticides: Nationwide, pesticide use has changed in recent years. Although there is now a greater number of pesticides available for use, the current trend seems to be toward a decreased use of chemicals. There is also a dramatic decrease in the use of persistent (long-lived) pesticides, many of which were banned in the late 1970s. Many currently-used chemicals, however short-lived, can be highly toxic to fish and other aquatic life (especially at critical life stages), so that even very low levels of these pesticides in runoff can be a significant environmental concern.

Nutrients: In general, runoff from agricultural lands has significantly higher nutrient concentrations than drainage waters from forested or other "covered" lands. These increased nutrient levels result from fertilizer application and animal waste. Eutrophication of lakes, streams, and coastal waters, as well as groundwater degradation, are often attributed to runoff from agricultural lands. Nutrients are necessary for plant growth in a waterbody, but excess nutrients can lead to excessive algal growth, an imbalance in natural nutrient cycles, changes in water quality (such as demand for dissolved oxygen), and a decline in the number of fish species.

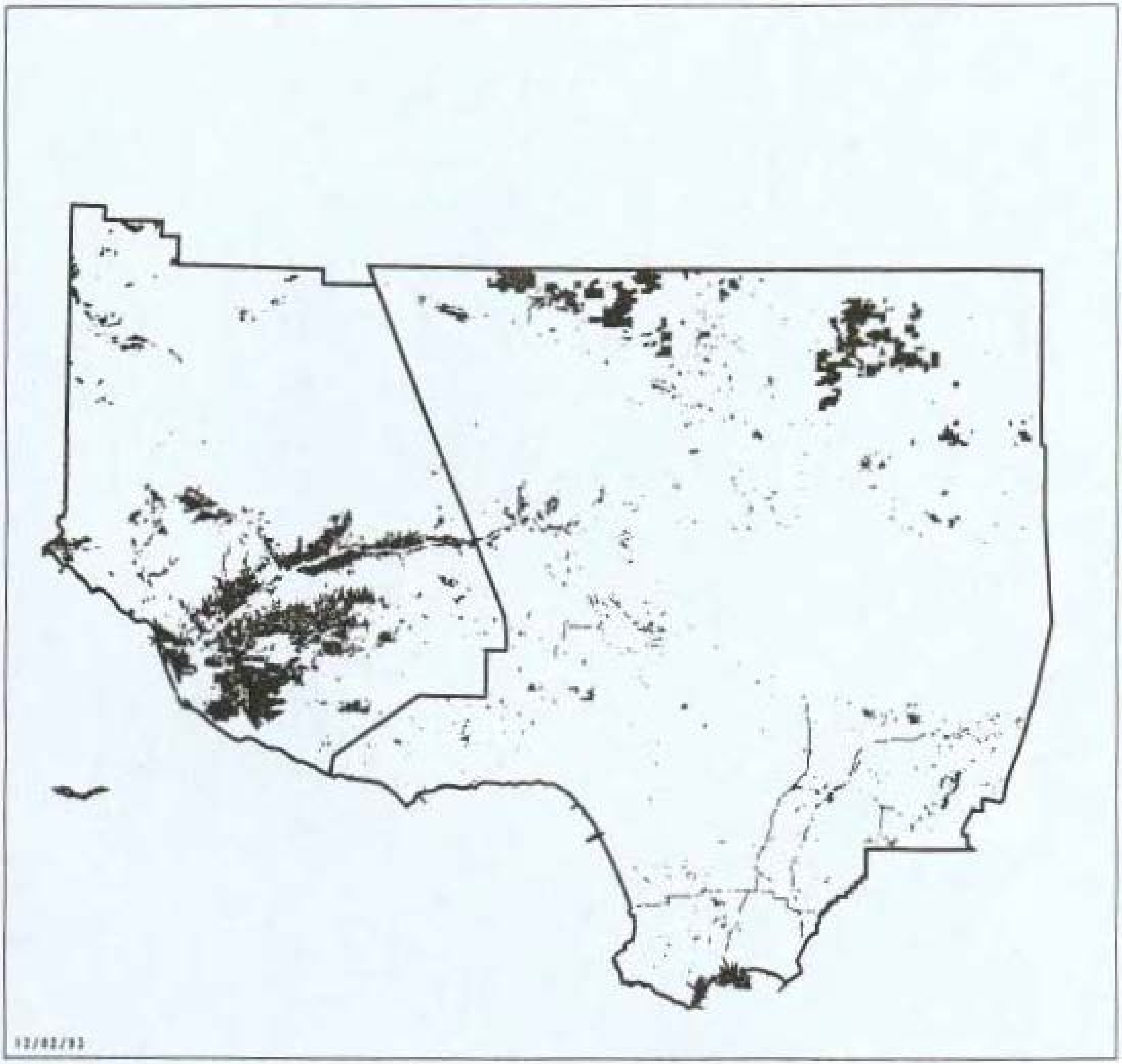
Organic Material: Crop debris and animal wastes are major sources of organic matter which can be transported into streams from agricultural lands. As these materials decompose, they tend to deplete dissolved oxygen in receiving waters. Fish and other aquatic life cannot survive in waters with low levels of oxygen.

Agriculture in the Los Angeles Region is concentrated in Ventura County, which has over 95,000 acres under cultivation (Figure 4-4). Agriculture is Ventura County's largest industry and accounts for 11% of total employment in the county. Approximately 70% of the farms are between 40 and 50 acres in size, and only about 5% of the farms are greater than 500 acres. Major crops in Ventura County include fruit, nuts, vegetables, nursery stock, Christmas trees, and sod (Ventura County, 1990).

While rich soils and a mild climate have contributed to the success of Ventura County's agricultural industry, water supplies are limited. The agricultural community pumps over 270,000 acre-feet of ground water per year. This accounts for 86% of water consumption in the County (Ventura County, 1993). With groundwater pumping rates far exceeding recharge rates, some groundwater basins have been, and continue to be, overdrafted. These overdraft conditions accelerate the existing seawater intrusion problem, as discussed in the Seawater Intrusion Section below.

FIGURE 4-4

Los Angeles County
Ventura County
1990 Land Use
Agriculture



The State and Regional Boards have the authority to regulate any discharge, including agriculture. Such a regulatory program could supplement the Department of Pesticide Regulation's pesticide regulatory program. To date, however, the State and Regional Boards have not chosen to control pollutants from agricultural sources through regulations such as WDRs. Rather, the Boards expect that significant improvement to water quality can be achieved through voluntary implementation of management measures (i.e., Best Management Practices) that reduce or eliminate pollutants from agricultural sources. The U.S. Department of Agriculture, Soil Conservation Service and the Resource Conservation Districts provide information on, and assistance in, implementing these types of management measures.

In addition to encouraging the implementation of Best Management Practices identified in the USEPA's *Guidance Specifying Management Measures For Sources of Nonpoint Pollution in Coastal Waters* (known as the *(g) guidance*), the Regional Board and USEPA have undertaken outreach programs. One such example is a 319(h) grant made to the Ventura County Resource Conservation District (RCD) in 1992 to fund a project that will demonstrate improved irrigation techniques to growers on the Oxnard Plain. These irrigation techniques will reduce runoff and deep percolation of pesticides, sediment, and nutrients, thereby improving water quality. Through the RCD's efforts, the Regional Board and USEPA hope to encourage other growers on the Oxnard Plain to switch to irrigation technologies and practices that will both improve water quality and conserve water.

The Regional Board is also an active participant on the Mugu Lagoon Task Force, which is comprised of local, regional, and State agencies, as well as U.S. Navy (which occupies land surrounding Mugu Lagoon). The objective of this Task Force is to foster cooperation between agencies in developing a comprehensive plan that will improve water quality in Calleguas Creek, Revolon Slough, and Mugu Lagoon, which is one of the Region's few remaining wetlands. The Task Force is focusing, in particular, on ways in which to reduce sources of sediment and pesticides.

Confined Animal Operations

Confined animals are those that are raised or sheltered in high densities. Examples of confined animal operations include kennels, horse stables, poultry ranches, dairies, stockyards, and feedlots. Wastes from such facilities can contain significant amounts of pathogens, oxygen-depleting organic matter, nitrogen compounds, and other suspended and dissolved solids. As a result, runoff of storm or wash waters from confined animal areas can degrade receiving surface waters. Furthermore, percolation of storm or wash waters into ground water can degrade the water quality. The risk of degradation increases during the rainy season when animal waste containment and treatment ponds are often overloaded.

Minimum design and management standards for the protection of water quality from confined animals are promulgated in the Title 23, California Code of Regulations, Chapter 15, Article 6. These regulations prohibit the discharge of facility wash water, animal wastes, and storm water runoff from animal confinement areas, into the waters of the State, and specify minimum design and waste management standards such as: the collection of all wastewaters; the retention of wastewaters and storm waters in manured areas during a 25-year, 24-hour storm; the use of paving or impermeable soils at manure storage areas; and the application of manures and wastewaters on land at reasonable rates for minimal percolation. The Regional Board has the authority to enforce these regulations through WDRs, described in the section of this chapter entitled Control of Point Source Contamination. In addition to the State's Title 23 regulations, many local agencies have enacted ordinances and zoning restrictions that require additional waste management practices.

While large confined animal facilities (e.g., dairies and poultry farms) sometimes threaten water quality in other Regions of the State, large confined animal facilities do not constitute a widespread threat to water quality in the Los Angeles Region, since there are only a few of such facilities in the Region. However, localized threats can result from smaller facilities, such as horse stables where runoff from manured areas can degrade the quality of receiving waterbodies. In such cases, the Regional Board has the authority to protect water quality through WDRs.

Urban Runoff

Urbanization disturbs natural land cover, alters natural drainage patterns, and increases impervious areas (e.g., rooftops, streets, parking lots) where water can not infiltrate into the ground. While concerns about urban runoff were focussed primarily on flood control in the past, urban runoff has now been proven to be a significant source of pollutants that degrade regional waters. Pollutants in urban runoff include urban debris, suspended solids, bacteria, viruses, heavy metals, pesticides, petroleum hydrocarbons, and other organic compounds. These pollutants threaten the quality of receiving waters in numerous and varied ways. Suspended solids (such as soil particles) can, upon settling, destroy spawning grounds and other habitats. Urban debris is unsightly and can present health risks such as cuts, punctures, and disease. High levels of bacteria occasionally necessitate beach closures. Heavy metals and organic compounds contaminate sediment near harbors and other recreational areas and can bioaccumulate in aquatic organisms.

More than 1,000 miles of storm drains beneath the streets of Los Angeles collect runoff from city streets, eventually dumping this flow into streams and coastal waters. High concentrations of pollutants that have accumulated on streets and other impervious surfaces during southern California's long dry summers are flushed into the storm drains and into surface waters during major storms that typically occur in winter.

The Southern California Coastal Water Research Project (SCCWRP), the Santa Monica Bay Restoration Project (SMBRP), and the University of Southern California (USC) Institute for Ocean and Coastal Studies have evaluated the characteristics of urban runoff, including pollutant loads, impacts, and toxicity, to coastal waters. The pollutant load and toxicity of urban runoff in the Region were found to be comparable to that of sewage effluent. The USEPA performed a nationwide evaluation of the environmental hazards posed by priority pollutants in urban runoff and found that cadmium, copper, lead, and zinc exceeded freshwater acute aquatic criteria in up to 50% of the samples analyzed (USEPA, 1983). In addition, these pollutants, along with cyanide, mercury, and silver, exceeded freshwater chronic criteria in at least 10% of the samples.

The Regional Board's urban runoff management program (through both the Storm Water and nonpoint source programs) continues to assess specific urban runoff problems and control strategies to remediate those problems. Program elements include:

- Supporting research by SCCWRP, SMBRP, USC, USEPA, and others to better define regional impacts of urban runoff discharges.

- Developing cooperative investigation and control strategies utilizing the expertise and resources of point source dischargers in receiving water segments.

- Organizing local ad hoc task forces for hydrologic watersheds/sub-watersheds with representation from point source discharges, local industries, local agencies, public interest groups, the Regional Board, and the USEPA to facilitate investigations and the development of control strategies.

- Participation on the State Board Coordinating Committee and Technical Advisory Committees formed to address urban runoff management measures developed under mandates of the Coastal Zone Management Act Re-authorization Amendments (CZARA) of 1990.

- Participating on the State Board Storm Water Quality Task Force in the development and implementation of statewide urban storm water management guidance and strategies.

- Working with other agencies such as the South Coast Air Quality Management District, Southern California Association of Governments, and the Metropolitan Transit Authority to ensure that transportation related strategies and plans will reduce the impact on receiving waters from transportation system runoff discharges.

Progress to date in this program includes a survey of basic information from flood control districts, Caltrans and local agencies which own or have maintenance responsibility for storm drain systems. The survey indicated that, with few exceptions, agencies have little information on the storm drain systems that they own or manage. Flow and water quality data describing discharges from storm drain systems are very limited. Few programs existed to control urban runoff from a water quality perspective. Existing maintenance programs include cleaning storm drainage inlets, catch basins, and storm drainage lines on an annual, or as-needed basis for flood control purposes only, not for water quality improvement.

The USEPA promulgated regulations (40 CFR Parts 122, 123, and 124) for storm water discharges in

November 1990. The regulations list the types of storm water discharges for which NPDES permits are required. These include discharges from separate municipal storm drain systems serving populations of 100,000 or more, discharges associated with industrial activities, discharges from construction activities, and discharges that contribute to violations of water quality standards or are significant contributors of pollutants to the receiving waters. The regulations authorize the issuance of system-wide or jurisdiction-wide permits and effectively prohibit non-storm water discharges to storm drains. They also require designated municipalities to implement control measures to reduce pollutants to the maximum extent practicable. Industrial storm water discharges are subject to standards based on best available technology (BAT) which is economically achievable. The Regional Board can, where necessary, require storm water discharge permits for dischargers not specifically cited in the regulations but who are a significant contributor of pollutants to waters of the Region (See Point Source section above for more details about the Storm Water Regulatory Program).

Local municipalities and the County of Los Angeles are working together to implement an Urban Runoff and Storm Water Management Program. The Regional Board issued a municipal storm water NPDES permit to Los Angeles County and co-permittees (cities and agencies) in June 1990. The permit implements a program which includes the development, assignment, and implementation of control strategies to reduce pollutants in urban runoff discharges in Los Angeles County. Table 4-19 lists the minimum required Best Management Practices (BMPs) to be implemented county-wide. The County of Ventura and local municipalities in Ventura County have joined together to develop and implement a Ventura County Storm Water Management Program, and the Regional Board is considering issuance of an NPDES storm water permit to Ventura County and associated cities. The County will then be required to implement a storm water management program that will include the development and implementation of urban runoff control strategies and county-wide storm water monitoring. The program will include the cities of Oxnard, Simi Valley and Thousand Oaks which have populations greater than 100,000 and are federally mandated to implement strategies to control pollutants in urban runoff. The city of Thousand Oaks, for areas that drain into Los Angeles County, will be regulated under a separate storm water NPDES permit.

The Regional Board conducts surveillance activities and provides overall direction to oversee, verify, and ensure implementation of urban runoff control programs. Technical guidance for prevention activities, as well as the identification, assignment, and implementation of control measures, and monitoring will be developed. Numerical limitations for selected pollutants, or pollutant indicator parameters, for urban runoff discharges in high resource watersheds, or impaired stream segments, will be developed in consultation with the USEPA and the State Board.

The Regional Board's continuing strategy for urban runoff management will include: (i) a comprehensive control program, (ii) a highway runoff control program, (iii) an industrial activity control program, and (iv) a construction activity control program. These programs are described below.

Comprehensive Control Program

All cities and counties in the Region are required to develop and implement comprehensive urban runoff control programs which focus on the prevention of future water quality problems and remediation of existing problems. The requirements of the municipal control program are intended to be consistent with NPDES regulations for municipal storm water discharges. In addition to baseline elements such as implementation of Best Management Practices (Table 4-19) and monitoring of runoff, these programs will include pilot projects or other investigations which will:

- implement measures to reduce pollutants in runoff to the maximum extent practicable from commercial, residential, industrial, and roadway areas;
- implement measures to identify and eliminate illicit connections and illegal dumping into storm drain systems;
- implement measures for operating and maintaining public highways to reduce pollutants in runoff; and
- implement measures to reduce pollutants in discharges associated with the application of pesticides, herbicides, and fertilizer. These will include, as appropriate, controls such as educational activities and other measures for commercial applicators and distributors, and

Table 4-19. Los Angeles County Municipal Storm Water Permit: Minimum Required Best Management Practices (BMPs) to be Implemented County-wide.

Establish or improve an area-wide catch basin stenciling program with a universal stencil to discourage dumping, discarding, and/or discharge of pollutants, carriers, and/or debris into storm drainage systems county-wide.
Develop programs to promote, publicize and facilitate public reporting of illegal discharges and/or dumping.
Adopt a runoff control ordinance requiring the use of BMPs during and after construction and at selected commercial and industrial establishments.
Augment public education and outreach programs with regard to catch basins and storm drainage systems and their intended purpose.
Provide regular catch basin cleaning when and where needed.
Increase cleaning frequency of and number of roadside trash receptacles in areas where needed.
Increase street sweeping in areas where needed.
Discourage the improper disposal of litter, lawn/garden clippings, and pet feces into the street or area where runoff may carry these pollutants to the storm drainage system.
Implement facility inspections of auto repair shops, auto body shops, auto parts and accessory shops, gasoline stations, and restaurants as the accumulation of pollutants, garbage, and /or debris tends to concentrate in these areas.
Encourage owners and persons in control of homes or businesses to remove dirt, rubbish, and debris from their sidewalks and alleys which may contribute pollutants to urban runoff.
Encourage recycling of oil, glass, plastic, and other materials to prevent their improper disposal into the storm drainage system.
Encourage the proper disposal of Household Hazardous Wastes to prevent the improper disposal of such materials to the storm drainage system.
Encourage the proper use and conservation of water.

controls for application in public right-of-ways and at municipal facilities.

On an annual basis, each city or county is required to conduct an evaluation of the effectiveness of its Comprehensive Control Program.

Highway Runoff Control Program

An essential component of a municipal comprehensive control program is the implementation of practices for maintaining public highways that reduce impacts on receiving waters from highway runoff. However, cities and counties (permittees) do not have jurisdiction over public highways controlled by the California Department of Transportation (Caltrans). In order to ensure the effectiveness of the comprehensive control programs, Caltrans must either actively participate as an entity in the County Storm Water Program, or will be required to obtain a separate NPDES permit for storm water discharges for highways under its jurisdiction. Such a program for Caltrans shall include a *Storm Water Management Plan* which addresses the design, construction, and maintenance of highway facilities relative to reducing pollutants in highway discharges to the maximum extent practicable. The Plan shall include:

- a characterization of Caltrans highway systems, including pollutants, highway layout, and drainage control system in the area;
- a description of existing highway runoff control measures;
- a description of additional highway runoff control measures to enhance pollutant removal; and

- a plan for monitoring the effectiveness of control measures and highway runoff water quality and pollutant loads.

The Highway Runoff Management Plan shall specifically address litter control, proper pesticide/herbicide management, reduction of direct discharges, reduction of runoff velocity, landscape over-watering, use of grassed channels, curb elimination, catch basin maintenance, appropriate street cleaning, establishing and maintaining vegetation, infiltration practices, and detention/retention practices. Caltrans shall coordinate its urban runoff program with local agencies and existing programs related to the reduction of pollutants in highway runoff.

Industrial Activity Control Program

The Regional Board will require, pursuant to NPDES storm water regulations, an NPDES permit for the discharge of storm water from specified facilities associated with industrial activities. The industrial activity control program applies to any discharge from specified conveyance or engineered surface which is used for concentrating, collecting, and conveying storm water and which is directly related to manufacturing, processing, or raw material storage areas at an industrial facility. The program applies to all facilities identified by 40 CFR Part 122.26(b)(14) and include both privately and publicly (federal, state, and municipal) owned facilities (see Tables 4-13, 4-16 and 4-17).

The Regional Board considers storm water discharges from automotive operations, including gas stations, auto repair shops, auto body shops, dealerships, battery shops, wrecking yards, radiator shops and mobile car washing businesses, significant sources of pollutants in the Region. It is intended that these discharges and similar discharges from commercial establishments be addressed initially at the local level through ordinances and industrial waste inspections as part of the municipal comprehensive control program. The Regional Board will assess the success of these local programs before including such discharges in the NPDES permit program.

Construction Activity Control Program

Major construction activities include the development, or redevelopment, of residential, commercial, and industrial areas, as well as transportation facilities. The major pollutant associated with construction activities is sediment. Additional pollutants include fuel, oil, paints, glues, pesticides, fertilizers, metals, and sanitary and solid wastes. The impact of these pollutants is dependant on the activities on site, as well as the duration of construction, rainfall, topography, soil characteristics, distance to the receiving waterbody, and Best Management Practices used on the site.

The Regional Board requires, pursuant to NPDES storm water regulations, an NPDES permit for the discharge of storm water from all construction activities, including demolition, clearing and excavation, and grading. The State Board issued a general permit (Table 4-2) in August 1992, for construction activity discharges. The majority of construction activity discharges in the Los Angeles Region will be covered under the State Board general permit. This program regulates construction sites that are five acres or more; USEPA, however, is considering making this program applicable to <u>all</u> construction sites as part of phase two of the Storm Water Program.

Hydrologic Modification

In light of the extensive development that has occurred on many of the floodplains throughout the Region, flood control in the Los Angeles Region is accomplished primarily through hydrologic modification.

Hydrologic modifications are activities that are designed to control natural streamflow. These include bank stabilization, channelization, in-stream construction, dredging, dams, levees, spillways, drop structures, weirs, and impoundments. Activities such as straightening, widening, deepening, or relocating existing stream channels, and clearing or snagging operations also fall into this category. Some specific examples of hydrologic modifications are described below.

Channelization: Channelization usually involves the straightening of channels and hardening of banks (e.g, concrete and rip-rap) along waterways undertaken for the purpose of flood control, navigation, and/or drainage improvement. These hydrologic modifications can disturb vegetative cover, increase scour as a result of increased velocities, and increase water temperatures when overhanging or streamside vegetation is removed. Channel modification activities can also deprive wetlands and estuarine shorelines of enriching sediments, change the ability of natural systems to both absorb hydraulic energy and filter pollutants from surface waters, and cause interruptions of critical life stages of aquatic organisms. Hardening of banks along waterways results in permanent elimination of habitat, decreased quantities of organic matter entering aquatic systems and increased movement of nonpoint source pollutants from the upper reaches of watersheds into coastal waters. Channel modification projects undertaken in streams or rivers usually require regularly-scheduled maintenance activities to preserve and maintain completed projects. These frequently result in a continual disturbance of in-stream and riparian habitats.

Dredging: Dredging is the removal of sediment buildup from stream channels or other waterbodies. Dredging is often needed to remove excess silt and coarse sediments which diminish some recreational and other beneficial uses. This can result in improved circulation and long-term improvements; however, many short-term impacts occur during and after dredging occurs. Dredging destroys aquatic habitats and associated organisms. Dredging can also introduce pollutant loadings to the waterbody by disturbing sediments that have accumulated contaminants over an extended period of time. This disturbance often re-suspends and redissolves pollutants back into the aquatic environment.

Impoundments and Reservoirs: Impoundments range from small dams constructed for soil and water conservation purposes to large drinking water reservoirs with volumes in excess of several hundred thousand acre feet. Impoundments cause problems during and after the construction phase. Some of the impacts during construction include high erosion rates, washings from the preparation of the dam structure, and clearing operations of the area to be inundated. Long-term problems due to the impoundment itself can affect habitats in the reservoir and impact downstream river quality by diverting waters needed in downstream areas to support the localized aquatic life. Periodic maintenance of sediment buildup in reservoirs (which involves draining, dredging, or sluicing), termed "cleanout," has the potential to degrade downstream water quality and limits groundwater recharge capabilities. Sediment removal in reservoirs must be carefully managed so as not to transport sediment loads downstream which can impair beneficial uses (i.e., sealing spreading grounds and smothering aquatic habitat and organisms). The Regional Board strongly opposes sluicing of sediment from reservoirs for maintenance purposes when this activity has the potential to impair downstream uses. Cleanout is currently a controversial issue with respect to the reservoirs in the Upper San Gabriel River watershed.

The Los Angeles County Department of Public Works maintains a series of debris basins in canyon mouths and upstream stabilization structures in selected watersheds to trap debris flows from canyons. There are currently 114 debris basins in the watershed of the Los Angeles and San Gabriel River systems. In addition, the County maintains 225 stabilization structures in 47 major watersheds, which serve as erosion control structures.

The Los Angeles County Department of Public Works also operates 14 dams as part of their Flood Control Program (refer to Figure 1-3 for the locations of major lakes and reservoirs). Table 4-20 lists the major reservoirs in the Region, their function and capacity, and the agencies that operate and maintain them.

401 Certification Program

The most effective tool the State has for regulating hydrologic modification projects is the 401 Certification Program.

The CWA (§401(a)(1)) gives states the authority to issue, deny, or waive water quality 401 certifications to applicants applying for federal permits or licenses for activities that can result in discharge to any water of the United States. The issuance of a 401 certification ensures that the project will comply with the State's Water Quality Standards as designated in the Basin Plan. The 401 certification process is commonly used by the Regional Board when reviewing projects from applicants who are requesting a Section 404 permit from the U.S. Army Corps of Engineers. The State Board can provide 401 certification upon the recommendation of the Regional Board and Executive Officer.

The CWA (§404) establishes a permit program, administered by the Secretary of the Army, acting through the Corps of Engineers, to regulate the discharge of fill or dredged material into the watersof the United States. Section 404(c) gives the Administrator of the USEPA further authority to restrict or prohibit the discharge of any dredged or fill material that can cause an unacceptable adverse effect on municipal water supplies, shellfish beds, fisheries, wildlife, or recreational areas.

Table 4-20. Selected Reservoirs in the Region: Ownership, Capacity and Function.

Name of Dam/Reservoir	Function	Capacity (acre-feet)	Ownership & Maintenance
Bard	CONS	10,500†	CAMWD
Big Dalton	FC, CONS	938*	LACDPW
Big Tujunga	FC, CONS	5,319*	LACDPW
Bouquet	CONS	36,505†	CITY of LA
Castaic	CONS, REC	323,702†	DWR
Casitas	CONS, REC	254,000†	USBR/CASITAS MWD
Chatsworth	CONS	9,886†	CITY OF LA
Cogswell	FC, CONS, REC	8,871*	LACDPW
Devil's Gate	FC, CONS	2,817*	LACDPW
Eagle Rock	CONS	254†	CITY OF LA
Eaton Wash	DS, CONS	852*	LACDPW
Hollywood/Mulhulland Dam	CONS	4,036†	CITY OF LA
Los Angeles	CONS	10,000†	CITY OF LA
Live Oak	FC, CONS	2,500†	MWD
Live Oak	FC, CONS	230†	LACDPW
Matilija	CONS	1800†	VCFCD
Morris	FC, CONS	21,343*	MWD/LACDPW
Pacoima	FC, CONS	3,383*	LACDPW
Piru/Santa Felicia Dam	CONS, REC	88,300†	UWCD
Puddingstone	FC, REC	16,342*	LACDPW
Puddingstone Diversion	FC, DIV, CONS	205*	LACDPW
Pyramid	CONS, REC	171,200†	DWR
San Dimas	FC, CONS	1,056*	LACDPW
San Gabriel	FC, CONS	45,883*	LACDPW
Santa Anita	FC, CONS	905*	LACDPW
Santa Fe	FC, CONS	32,109†	COE/LACFCD
Sawpit	FC, CONS	406*	LACDPW
Silver Lake	CONS	2,020†	CITY OF LA
Stone Canyon	CONS	10,372†	CITY OF LA
Thompson Creek	FC, CONS	533*	LACDPW
Whittier Narrows	FC, CONS	67,060†	COE/LACDPW

CONS Conservation (domestic water supply)
DIV Diversion
DS Debris Storage
FC Flood Control
REC Recreation

CAMWD Calleguas Municipal Water District
COE United States Army Corps. of Engineers
DWR Department of Water Resources (State of California)
LACDPW Los Angeles County Department of Public Works
MWD Metropolitan Water District of Southern California
USBR United States Bureau of Reclamation
UWCD United Water Conservation District
VCFCD Ventura County Flood Control District

† 1994 Capacity
* 1993 Capacity

Streambed Alteration Agreements

In addition to the CWA (§401 and §404), Sections 1601-1605 of the Fish and Game Code (Chapter 6, Fish and Wildlife Protection and Conservation) apply to any governmental agency, state or local, or any public utility that proposes to divert, obstruct or change the natural flow or bed, channel or bank of any river, stream, or lake. It is unlawful for any person to engage in such a project or activity without first notifying the California Department of Fish and Game of such activity, and one can not commence such operations until the Department has found such operations will not substantially adversely affect existing fish or wildlife resources. Agencies must submit proposed plans to the Department of Fish and Game. The Department will then review the proposal, conduct field investigations, if warranted, and notify the Agency of any potentially adverse impacts to the existing fish and wildlife resource due to the proposed activity. The Department of Fish and Game can propose mitigation measures necessary to protect the fish and wildlife.

Recreational Impacts

Water contact and non-contact recreational activities range from swimming, surfing, and sunbathing at coastal beaches to hiking along some of the pristine stretches of streams in the canyons of the Transverse Mountain Ranges. With the intense residential, commercial, and industrial development throughout much of the Region, however, relatively few natural environments remain for the enjoyment of urban residents. Many of those environments that do remain are threatened by overuse as well as disregard for the sensitivity of natural ecosystems. Many of the streams and banks in the parks and campgrounds of the Region are littered with trash and debris.

Water quality impacts from recreational use are not restricted to litter. Other ways in which water quality is affected include discharges from overloaded sewage containment and septic systems and erosion of dunes and stream banks from trampling and off-road vehicles. In addition to degrading riparian, estuarine, and coastal habitats, these impacts leave sites in unsightly and unhealthy conditions, limiting future recreational opportunities. Golf courses are kept green by applications of pesticides and fertilizers. Over watering allows these chemicals to runoff into surface waters. In some cases, the extra irrigation water itself causes a disruption of the hydrologic balance of surface waters.

The Regional Board encourages mitigation of recreational impacts through planning efforts at a local level. Planning efforts should address maintenance of parks, campgrounds, beaches, and other open spaces. Public outreach and education measures, while long term, are nonetheless considered to be the most effective way of controlling this type of pollution and maintaining these resources.

Septic Systems

Many areas in the Region rely on septic systems for disposal of domestic household waste. Septic systems "treat" household wastes by first removing organic solids through settling and decomposition in the tank portion of the system. Further treatment of organic chemicals, nutrients, and bacteria occurs as the effluent released from the tank percolates through the soil. Proper construction of septic systems is imperative. Poorly designed and constructed systems will not function properly and can result in pollution of surface and/or ground waters (Figure 4-5). Septic systems used in undersized lots or unsuitable soils are also subject to malfunction and can lead to untreated or poorly treated sewage seeping into yards, roadside ditches, streams, lagoons, or into ground water -- creating a public nuisance and health hazard. Even well-functioning septic systems can pollute ground water under adverse conditions (e.g., unsuitable sites.)

Nitrogen compounds, which are typically present in effluent from septic systems, are highly soluble and stable in aqueous environments. When not denitrified by bacteria or assimilated into organic growth (plants) in the unsaturated zone, these nitrogen compounds are easily transported to ground water. Examples of this problem occur in developed areas along the coast and in rural areas undergoing rapid urbanization (such as Ventura County or northern Los Angeles County).

Although there is controversy about the possible health effects of nitrate on adults, it has been shown that high levels of nitrate cause methemoglobinemia (blue-baby syndrome) in infants. The federal drinking water standard of 10 mg/L nitrate plus nitrite (expressed as nitrogen) is based on this relationship. Furthermore, high levels of nitrates have economic impacts on supplies of potable water, requiring well closure and relocation, well deepening, wellhead treatment, or blending. In addition, new developments may be restricted due to the presence of water supply with nitrogen concentrations that exceed drinking water standards.

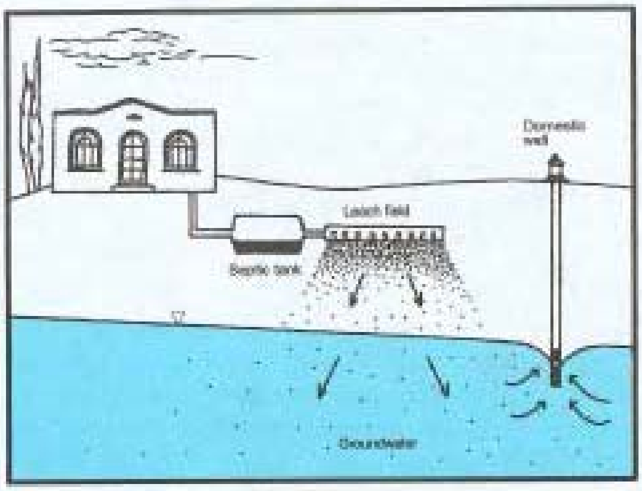


Figure 4-5. Septic System. In a properly designed septic system, pollutants in the septic tank effluent are naturally degraded in the leach field before reaching the water table. This diagram, however, illustrates how pollution of ground water can result from a septic system that is not properly located or maintained.

The Regional Board discourages the prolonged use of septic systems, except in isolated areas where connection to a wastewater collection system is not feasible and there is no threat to groundwater quality. Septic systems are not acceptable in areas where there are unsuitable soils, inadequate lot sizes, or other factors that can lead to contamination of either surface or ground water. In assessing areas of concern, high priority is given to rapidly developing areas where local ground water is the sole or primary source of drinking water. One such area is the Aqua Dulce area of the Sierra Pelona Valley in northern Los Angeles County. Ground water is the primary source of drinking water for residents in this unsewered area. High concentrations of nitrate, however, have been found in some of the wells in the area. In response, the Regional Board has contracted with the University of California at Riverside to use isotope techniques to trace the source (or sources) of nitrogen in ground water in the area.

In addition, in response to other concerns that ground water was not sufficiently protected from the effects of new developments that rely on septic systems, the Regional Board developed an Interim Policy for septic systems in areas that rely on ground water for domestic purposes. Under this Interim Policy, the Regional Board adopted *General Waste Discharge Requirements for Residential Subsurface Sewage Disposal Systems in Areas Where Ground Water is Used For Domestic Purposes* (Order No. 91-94, adopted July 22, 1991). These requirements are intended to simplify and expedite the application process and processing of requests for use of septic systems in residential areas while assuring the protection of water quality. As part of the requirements, the Regional Board requires either a hydrogeologic study or certain mitigation measures.

Recommendations for future steps for control of problems from septic systems include:

- evaluate the adequacy of existing local regulations for installation and maintenance of septic systems;
- continue to discourage or limit the use of septic systems in new developments;
- encourage alternative waste treatment systems; and
- encourage and support funding for wastewater treatment plants in outlying areas where water quality problems and/or population density require wastewater collection and treatment.

Seawater Intrusion

Ground water supplied most of the water in the Region until the 1940s. By World War II, however, increasing demands for ground water escalated to such an extent that groundwater pumping far exceeded freshwater recharge (i.e., replenishment) in many aquifers (Fossette, 1986). As a result, degradation of ground water occurred as seawater seeped inland to replace ground water in freshwater aquifers that had been overpumped. Referred to as seawater intrusion, this condition is accelerated when coastal aquifers are overdrafted (i.e., when groundwater pumping exceeds recharge).

Seawater intrusion can be controlled through pumping restrictions and artificial recharge of aquifers. Artificial recharge is especially important in urban areas where paved surfaces and buildings have eliminated natural recharge areas and drastically reduced recharge rates. Figure 4-6 illustrates two forms of artificial recharge used to combat seawater intrusion: spreading basins and injection wells. Spreading basins are constructed in permeable zones where water can seep into the subsurface. Spreading basins in the Los Angeles Region typically were created by modifying existing terrain with dikes or low head dams within, or adjacent to, stream channels. Such devices divert excess supplies of surface waters into spreading basins, thus recharging aquifers and creating a seaward gradient that will help prevent seawater intrusion. Injection wells along coastal areas create a freshwater barrier that can halt seawater intrusion, recharge aquifers, and allow groundwater pumping from elevations below sea level. In addition, artificial recharge is often supplemented through in-lieu recharge programs, wherein excess supplies of surface water (when available) are discounted and sold to groundwater pumpers. In exchange for this discounted surface water, groundwater pumpers agree that they will not exercise pumping rights on an equivalent amount of ground water.

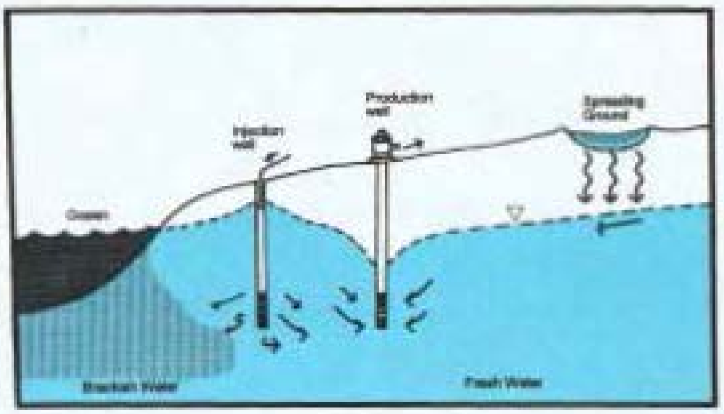


Figure 4-6. Artificial recharge through spreading grounds and injection wells. Use of artificial recharge in this coastal aquifer helps to (i) maintain groundwater levels through use of spreading grounds and (ii) prevent saltwater intrusion using injection wells. Arrows in figure indicate direction of groundwater flow. (Hatched lines indicate the water table.)

On the Los Angeles Coastal Plain, three rows of injection wells (the Alamitos Barrier along the Central Basin, and the Dominguez Gap and West Coast Barriers along the West Coast Basin) protect aquifers from seawater intrusion. In addition, spreading grounds along the San Gabriel and Rio Hondo Rivers in the northern part of the Central Basin provide further recharge of the coastal aquifers under the Los Angeles Coastal Plain. These artificial recharge projects are supplemented by an aggressive in-lieu recharge program. Finally, enforcement of adjudicated groundwater rights in these basins ensures that groundwater production will not exceed recharge.

While groundwater overdraft and seawater intrusion are under control on the Los Angeles Coastal Plain, they continue to be serious problems within the Oxnard Plain portion of the Ventura Central Groundwater Basin. Aquifers underlying the Oxnard Plain are the primary source of agricultural supply water. Although spreading grounds along the lower Santa Clara River and an in-lieu recharge program have somewhat lessened overdraft conditions, groundwater pumping continues to greatly exceed freshwater recharge.

Ground water in the San Gabriel and San Fernando Valley Basins is also artificially recharged through spreading basins. While these inland basins are not intruded by seawater, they have been overdrafted in the past. Recharge through spreading basins, coupled with court enforcement of adjudicated water rights, protects these inland basins from overdraft.

The Regional Board supports artificial recharge projects through regulatory and financial assistance programs. Water Reclamation Requirements (WRRs) – in lieu of WDRs – regulate groundwater recharge with treated wastewaters.

Resource Extraction

Resource extraction includes mining, drilling, and pumping for mineral petroleum products. Impacts to water quality can be significant, even for small operations. Surface mining operations alter the natural landscape, resulting in accelerated erosion and sedimentation. In addition, high concentrations of chemicals that are leached from exposed soils, ores, and waste rocks can pollute ground or surface waters. Oil production activities also disturb surrounding lands; brines and drilling fluids from drilling operations have a potential for degrading the environment if spilled. Water quality impacts from resource extraction are not limited to operating mines and petroleum wells (Ventura County, 1990). Water quality can be threatened by abandoned mining operations (and associated tailings) and petroleum drilling sites if not properly reclaimed.

Mines

Most active mines in the Los Angeles Region are sand and gravel operations located along the San Gabriel and Santa Clara Rivers. Gypsum, borax, and titanium (and associated heavy minerals) mines operate in the area along with small-scale gold prospecting. In 1988-89, the number of mines in Los Angeles and Ventura Counties totaled 53, as shown below and as shown on Figure 4-7 (DMG, 1990):

Sand and gravel	41
Clay	3
Stone (including dimension, decorative)	8
Tungsten	1

There are three types of sand and gravel operations: in-stream, wet, and dry. Discharges of washwaters from all types of sand and gravel operations contain suspended sediments that can degrade downstream waters. In-stream operations divert the sand and gravel load of a stream, thereby altering natural rates of sedimentation in downstream areas. Modification of stream channels during in-stream operations results in excessive scouring and increased sedimentation during floods, possible loss of riparian vegetation due to lowering of the water table and potential loss of aquifer storage capacity. In addition, oil, grease, and turbidity from in-stream operations degrade the quality of surface waters; off channel diversion helps to minimize these problems. Wet operations, which occur below the seasonal high water table, can directly pollute ground water and otherwise degrade water quality by evaporative loss, and silting. Approximately 10% of the operations in the Region are wet. Dry sand and gravel operations, on the other hand, are conducted entirely above the water table and result in less severe impacts to water quality. Suspended sediments in runoff from dry operations, however, can degrade water quality, especially during wet weather (Division of Oil, Gas & Geothermal Resources, 1989).

Ore mining operations often generate acidic runoff (i.e., water with a pH below 6) and dissolved metals that are toxic to aquatic life in downstream surface waters. In addition, this contaminated runoff can seep into ground water. Contaminated runoff often can be neutralized with chemicals, or reduced to acceptable levels with Best Management Practices (BMPs).

Surface mining and subsequent reclamation are governed by California's Surface Mining and Reclamation Act (SMARA) of 1975 and the federal Surface Mining Control and Reclamation Act (SMCRA) of 1977 which require operations to minimize erosion and sedimentation (some operations are specifically exempted). In addition, any chemicals used in the operations must meet current discharge requirements from both their operations and stock piles. Federal mining law controls mining on Department of Defense lands, Native-American lands, Bureau of Land Management lands and Forest Service lands.

The Regional Board issues WDRs for mining operations on a case-by-case basis. Under the California Water Code (§13263.1) the Regional Board must "determine that the proposed mining waste is consistent with a waste management strategy that prevents the pollution or contamination of the waters of the State, particularly after closure of any waste management unit for mining waste." California Code of Regulations, Title 23, Chapter 15, Article 7 also applies to mining wastes. In addition, industrial storm water runoff (NPDES) permits are required for each site.

Ventura and Los Angeles Counties impose restrictions on mining operations that are consistent with Regional, State, and Federal laws. In Ventura County, stringent conditions are placed on mining operations in order to protect water quality and associated resources, preserve wildlife habitat, and enhance reclamation and aesthetics (Ventura County General Plan, 1990). In Los Angeles County, surface mining operators (including oil and gas production) are required to control slope excavations, erosion and sedimentation, runoff and flooding, etc.

Oil and Gas Extraction

Southern California has a large number of oil and gas fields (Figure 4-8). District 1 of the California Division of Oil, Gas & Geothermal Resources (DOG&G) includes Los Angeles, San Bernardino, Orange, Riverside, San Diego, and Imperial Counties; District 2 covers Ventura County. In 1991, oil production in District 1 and District 2 included 46.6 (48 active fields) and 15.8 (52 active fields) million barrels respectively. Gas production was 15.8 and 18.4 billion cubic feet, respectively. The primary method of enhanced oil recovery is waterflooding in which water is injected into oil reservoirs through injection wells. In both Districts, 102 wells had active water disposal programs totalling 20.3 million barrels of produced water (DOG&G, 1991).

While many of the discharges associated with oil and gas production (such as disposal of produced

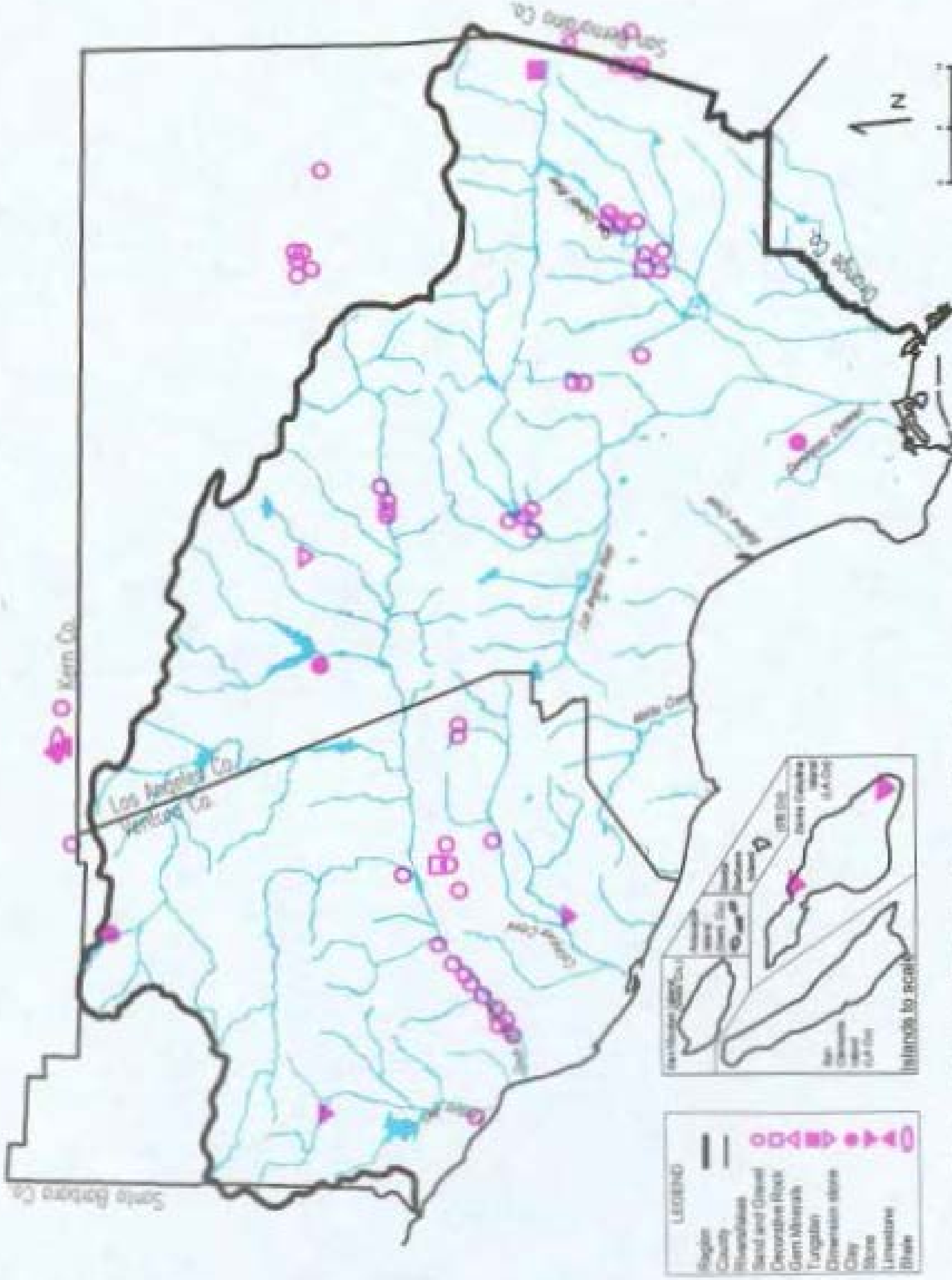


Figure 4-7. Regional Mines and Sand and Gravel Operations.

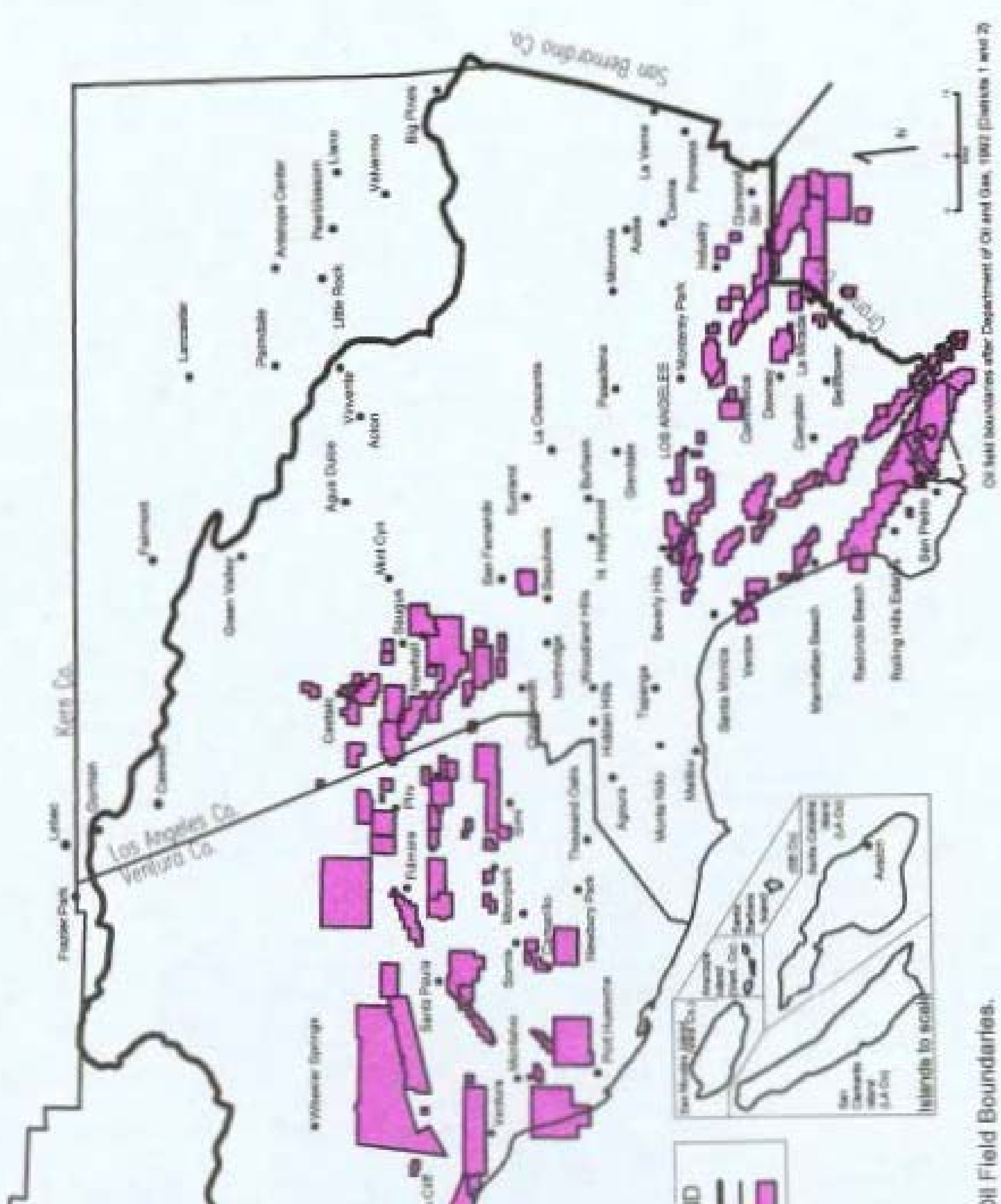


Figure 4-8. Oil Field Boundaries.

water and cuttings) are considered point sources, pollutants from nonpoint sources are also significant threats to water quality. Such nonpoint sources can include seeping and overflowing reserve pits containing drilling fluids and production pits containing hydrocarbons and radium, polluted storm water runoff from drilling and production sites, and spills during transportation. Water associated with oil, gas, or geothermal resource extraction frequently contains high levels of sodium, calcium, chloride, sulfate, carbonate, boron, and iodine, as well as trace metals and hydrocarbons. There also are significant sources of pollutants from natural oil seeps in the Region, which often surface on the ocean floor, along streams such as Santa Paula, Tapo, and Sisar Creeks in Ventura County, and in the vicinity of the La Brea Tarpits in Los Angeles County.

Oil production on federal lands, including National Forest lands, is regulated by the U.S. Bureau of Land Management. Offshore production within three miles of the coast is under state jurisdiction, while that beyond three miles is under federal jurisdiction. The California Division of Oil, Gas & Geothermal Resources conducts environmental inspections of active and inactive off shore and on shore wells, including injection wells for re-injection of produced water associated with oil wells. The Department of Toxic Substances Control regulates hazardous wastes stored, used, or generated on-site. As a result of a Memorandum of Understanding between the State Board and the Division of Oil, Gas & Geothermal Resources, the Regional Board no longer issues WDRs for brine injection wells but does issue WDRs for land disposal at oil and gas sites, including landfills and spreading operations. The USEPA issues permits for injection wells (40 CFR Chapter 1, Subchapter D); DOG&G regulates Class II brine injection wells.

The Regional Board requires NPDES storm water permits for oil production facilities.

Silviculture

Silviculture is the process of managing trees in a forest and includes activities such as site preparation, cultivation, timber harvest, and transport. Such activities are significant sources of nonpoint pollutants unless properly managed. The major type of pollution associated with silvicultural operations is increased sedimentation from the erosion of harvest sites, log landings, logging and skid trails. Other pollutants include pesticides, fertilizers, fire-retardant chemicals, organic matter, woody debris, and increased water temperature along streams where trees have been removed. Logging roads on forest lands, which normally provide access for timber management, recreation, fire protection and other activities, can impact wildlife habitat by increasing erosion and sedimentation in streams and thus destroying aquatic habitats.

In 1897, the federal Organic Administration Act first addressed the management of National Forests. In 1905, Congress transferred all forest reserves to the U.S. Department of Agriculture from the U.S. Department of Interior. This established the U.S. Forest Service as the land management agency in charge of National Forests. The National Environmental Policy Act (NEPA) of 1969 required evaluation of potential impacts on the environment before activities such as timber harvesting could occur on federal lands.

In 1973, mounting concern over forest management and its impacts led to the Z'berg-Nejedley Forest Practice Act. This Act regulates forest practices on state, county, and private lands. It encourages timber production but requires consideration of fish, wildlife and other forest resources. Similar concerns for other federally-owned lands led to the National Forest Management Act of 1976, which outlines even more precise management guidelines requiring long-range planning process and encouraging public participation.

Best Management Practices in Forest Management: The U.S. Forest Service water quality maintenance and improvement measures, or Best Management Practices (BMPs), were developed in compliance with CWA (§208). Practices developed by the Forest Service were certified by the State Water Resources Control Board and approved by the USEPA in 1979. The signing of the 1981 Management Agency Agreement (MAA) between the U.S. Forest Service and the State Board resulted in the formal designation of the Forest Service as a water quality management agency. BMPs are the measures both the State and Federal water quality regulatory agencies expect the Forest Service to implement in order to meet water quality objectives and to maintain and improve water quality. There are currently 98 certified practices being implemented. These 98 practices have been identified under 8 different resource categories (Table 4-21). Twenty-seven of the 98 practices are specifically related to

Table 4-21. Best Management Practices in Forest Management – Angeles and Los Padres National Forests.

Resource Category	Practice *
Timber	Protection of Unstable Areas
	Streamcourse Protection
	Erosion Control on Skid Trails
Road and Building Site Construction	Road Slope Stabilization
	Controlling In-channel excavation
	Water Source Development Consistent with Water Quality Protection
Mining	Administering U.S. Mining Laws
Recreation	Documentation of Water Quality Data
	Protection of Water Quality within Developed and Dispersed Recreation Areas
Vegetative Manipulation	Pesticide Application Monitoring and Evaluation
	Untreated Buffer Strips for Riparian Area and Streamside Management
Fire Suppression & Fuels Management	Protecting of Water Quality from Prescribed Burning Effects
	Repair or Stabilization of fire Suppression Related Watershed Damage
Watershed Management	Watershed Restoration
	Water Quality Monitoring
Grazing	Controlling Livestock Numbers and Season of Use
	Rangeland Improvements

* This list is not complete, but illustrates examples for each of the 8 Resource Categories.

Source: United States Department of Agriculture, 1987 and 1991

silvicultural activities. The most current reference for BMPs is a Soil and Water Conservation Handbook titled *Water Quality Management for National Forest System Lands in California* (USFS, 1986). In addition to the 98 certified practices, two additional practices are currently being reviewed prior to state and federal certification (USFS, 1987).

Within the Region, water quality management is administered in both the Angeles National Forest and the Los Padres National Forest through the continued implementation of the BMPs and through the guidance of the 1981 Management Agency Agreement between the State Board and the U.S. Forest Service. In both the Angeles and the Los Padres National Forests, management activities are limited to a broad-based "selection management," where selective cutting leads to, or maintains, a small even-aged groups of trees similar to those that occur under natural conditions.

Within the forest, wildfire poses one of the greatest threats to water quality. This is especially true of the Los Padres National Forest. Between 1912 and 1985, wildfires burned 1,844,150 acres of the forest, making it one of the most fire-prone in the National Forest System. Wildfires in the Angeles National Forest burn an average of 18,500 acres annually. In addition to the ash and debris resulting from wildfires, destruction of vegetation results in elevated levels of erosion and sedimentation in streams and increased levels of nutrients in the aquatic systems. Removal of streamside cover results in increased water temperature and reduced dissolved oxygen levels. In addition, flooding results in stream bank erosion and loss of riparian habitat.

Current vegetative management practices focus on fire prevention, suppression, and a program of fuel management. The U.S. Forest Service thins overstocked chaparral stands each year. This thinning is accomplished by hand or mechanical methods, use of silvicides, or by low-intensity prescribed burning. This greatly reduces the potential for wildfire by limiting exposure of residual stands to potential wildfires.

In the Angeles National forest, there are approximately 240 miles of perennial rivers and streams, numerous miles of intermittent streams, five natural lakes, and 14 reservoirs. The net yield in this forest is approximately 226,000 acre-feet of water. The Los Padres National Forest has 37 reservoirs and provides about 715,000 acre-feet net yield of water (USFS, 1987).

The major water quality problem in the forest lands is sedimentation and its effect on aquatic habitat and reservoir storage life. As an example, about six million tons of sediment are estimated to be produced on the Los Padres Forest each year; roughly 50% of this sedimentation results from erosion and flooding after wildfires (USFS,1987).

Coastal Nonpoint Source Pollution Program

The Coastal Zone Act Re-authorization Amendments (CZARA) of 1990 include Section 6217, "Protecting Coastal Waters," and requires states with approved coastal zone management programs to develop a Coastal Nonpoint Pollution Control Program (CNPCP). This program will be implemented through existing State coastal zone management programs (California Coastal Commission) and nonpoint source management programs (State Water Resources Control Board). At the federal level, the USEPA and the National Oceanic and Atmospheric Administration (NOAA) will jointly administer the new requirements.

The *Program Development and Approval Guidance* was released by USEPA and NOAA in January, 1993. States have 30 months (by July, 1995) to submit their Coastal Nonpoint Pollution Control Program for approval. Once the plan is approved, states have three years (until January, 1999) to implement the technology-based management measures. USEPA and NOAA will then have a two-year monitoring period (until January, 2001) to assess the effectiveness of the measures. States will then have an additional three years (until January, 2004) to implement any additional measure necessary to attain water quality standards.

Future nonpoint source funding allocations are contingent upon the completion of an approvable program. If the state does not submit an approvable program, financial penalties will be assessed in the form of progressively decreasing Section 319 grants to the state.

The *Guidance Specifying Management Measures For Sources of Nonpoint Pollution in Coastal Waters* (commonly called the *(g) guidance*) was released by the USEPA in January, 1993. This *(g) Guidance* contains management measures for five major categories of nonpoint source pollution: agriculture, forestry, urban (including septic tanks), marinas and recreational boating, and hydromodification (Table 4-22). States will be expected to implement all of the measures specified in the *(g) Guidance* with some limited exceptions. These exceptions include (i) sources that are not present, nor reasonably anticipated in an area; or (ii) sources that do not individually or cumulatively present significant adverse effects to living resources or human health. States will also have some flexibility in adopting the exact measures specified in the *(g) Guidance* or alternative measures which are demonstrated to be as effective as USEPA measures in controlling nonpoint source pollution.

The State Board and Coastal Commission have assembled a Coordinating Committee and several Technical Advisory Committees to review the *(g) Guidance* management measures and develop strategies to implement them in California. A key feature of this program is that the State must develop *enforceable* management measures. This differs from most of the State's existing nonpoint source efforts which for the most part are voluntary. There are also some components of the program that the Regional and State Boards do not usually regulate, such as issues relating to land use. Therefore, it will be critical to coordinate State and Regional Boards programs with those of the Coastal Commission and appropriate local agencies in order to develop a successful coastal nonpoint source program. This program will be closely integrated with the Regional Board's storm water permitting program and others, such as the Santa Monica Bay Restoration Project.

Future Direction: Watershed-Based Water Quality Control

The concept of comprehensive watershed level management of water resources is currently being incorporated into various elements of the State's Nonpoint Source Management Program. The watershed protection approach is an integrated strategy for more effectively protecting and restoring beneficial uses of State waters. By looking at an entire watershed, one can more clearly identify critical areas and practices which need to be targeted for pollution prevention and corrective actions. This approach not only addresses the waterbody itself, but the geographic area which drains to the watercourse. This strategy also

Table 4-22. Management Measures in the *Guidance Specifying Management Measures For Sources of Nonpoint Pollution in Coastal Waters* ["(g) Guidance"].

Categories	Subcategories
Agriculture	Erosion and sediment control Confined animal facility control Nutrient management Pesticide management Livestock grazing Irrigation water management
Forestry	Pre-harvest planning Streamside management areas Road construction/reconstruction Road management Timber harvesting Site preparation and forest regeneration Fire managment Revegetation of disturbed areas Forest chemical managment Wetlands forest managment
Urban	New development management Watershed protection/site development Construction erosion and sediment control Construction site chemical control Existing development managment New and operating onsite disposal systems (septic tanks) managment
Marinas	Siting and design Marina flushing managment Water quality assessment Habitat assessment Shoreline stabilization management Storm water runoff management Fueling station design management Sewage facility managment Marina and boat Operation and Maintenance Solid waste management Fish waste managment Liquid material managment Petroleum control managment Boat cleaning management Public education managment Maintenance of sewage facilities management Boat operation management
Hydromodification	Channelization and channel modification Physical and chemical characteristics of surface waters Instream and riparian habitat restoration management Dams Erosion and sediment control Chemical and pollutant control Protection of surface water quality and instream and riparian habitat Stream bank and shoreline erosion management
Wetlands	Protection of wetlands and riparian areas Restoration of wetlands and riparian areas Vegetated treatment systems

integrates both surface and ground waters, inland and coastal waters, and point and nonpoint sources of pollution. Point sources have received most of the regulatory attention in the past, however, significant improvements in point sources, coupled with continued water quality impairments, have necessitated the water resources community to look at a more integrated approach which considers impacts from both point and nonpoint sources of pollutants.

The Watershed Protection Approach is built on three main principles. *First,* targeted watersheds should be those where pollution poses the greatest risk to human health, ecological resources, other beneficial uses of the water, or combinations of these. *Second,* all parties with a stake in the specific local situation should participate in the analysis of the problems and the creation of solutions. *Third,* the actions undertaken should draw on the full range of methods and tools available, integrating them into a coordinated, multi-organizational effort to solve the identified problems.

Many agencies and organizations concerned with water resources have come to recognize that this type of approach can be very effective in realistically assessing cumulative impacts and formulating workable mitigation strategies. The Coastal Zone Management Act Re-authorization Amendments, USEPA guidance, and various legislative proposals clearly state the need to consider the implications of land use on water quality. The USEPA and State Board encourage the Watershed Protection Approach at all levels of government. USEPA program managers are re-thinking their approach to the allocation of resources (especially within the Nonpoint Source Program) and will be primarily funding studies that are part of a watershed planning and implementation effort. Recently, the State Board has formed a work group to investigate options for watershed management in California. The Water Quality Task Force, created by the Los Angeles Regional Water Quality Control Board in December, 1992, included a watershed management issue in the list of recommended actions to be implemented at the regional level.

The traditional approach to managing pollutant discharges into streams, lakes, and the ocean has evolved over time – often with separate programs to address various aspects of an overall water quality problem. Some of these programs can have different, overlapping, or conflicting priorities. A transition to watershed-based management can require some programs to be reoriented and integrated. Other programs can not be amenable to the watershed approach. However, this new perspective, even with a limited application, could produce more benefits than a strict program-based approach and provide improved communication and

Malibu Creek Watershed Nonpoint Source Pilot Project

The Malibu Creek watershed, a drainage area of approximately 105 square miles, has changed rapidly in recent years from a predominantly rural area to a steadily developing area. Impacts from human activities are degrading beneficial uses and potentially contributing to long-term environmental problems. The Malibu Lagoon is listed as an impaired waterbody, and sections of the Malibu Creek are listed as threatened waterbodies (WQA, 1992). For these reasons, the Malibu Creek watershed has been chosen by the Regional Board for a pilot watershed nonpoint source project which is funded by USEPA Title II grant monies. This project is being undertaken in cooperation with the United States Soil Conservation Service, the California Coastal Conservancy, the California Department of Fish and Game, the California Department of Parks and Recreation, and others.

Watershed stakeholders, including local activists, politicians, agency representatives, local residents and members of the regulated community, participated in a series of discussion and consensus building groups, dating back to 1991, that resulted in the identification of several areas of environmental concern. Pollutants of concern, many of which are contributed by nonpoint sources, include excess nutrients, sediment, and disease-causing organisms. Increased flows, due to imported water to support the growing population base, as well as channelization and urbanization, have caused an imbalance in the natural regime of dry weather low-flows in the summer.

A comprehensive management plan is being developed to restore biological and recreational resources and to prevent further environmental degradation. The Regional Board has taken the lead in coordinating a comprehensive approach to controlling the nonpoint source pollution aspects of the effort. The Regional Board provides technical assistance including:

- coordination of and participation in watershed-wide water quality monitoring efforts;
- development of a model to determine waste loads into the creek and lagoon system to determine where reductions are needed;
- development of a plan to minimize water quality impacts on Malibu Lagoon from surface discharge of current and future groundwater pollution abatement programs;
- assistance in the implementation of Best Management Practices for the Municipal Storm water NPDES permit; and
- initiation of a nonpoint source public education campaign.

coordination among all levels of government, private organizations, and citizens.

The Region has been divided into six watershed management areas (see Figure 1-5) for planning purposes.

Projects in the Los Angeles Region which are already successfully utilizing the watershed approach include the Malibu Creek Watershed Study (see description on previous page) and the Santa Monica Bay Restoration Project. Regional Board staff are also participating on the Santa Clara River Project Steering Committee and the Los Angeles River Master Plan Environmental Quality Subcommittee, both of which are developing flood plain or watershed plans for these rivers.

The Regional Board plans to implement more watershed-based projects in the future. These will increase the coordination of planning, monitoring, assessment, permitting, and enforcement elements of the various surface and groundwater programs with activities/jurisdiction in each watershed.

Remediation of Pollution

The Regional Board allocates substantial resources to the investigation of polluted waters and enforcement of corrective actions needed to restore water quality. Specific remediation programs include:

- Underground Storage Tanks
- Well Investigations
- Spills, Leaks, Investigations and Cleanups (SLIC)
- Aboveground Petroleum Storage Tanks
- U.S. Department of Defense (DOD) and Department of Energy (DOE) Sites
- Resource Conservation and Recovery Act (RCRA)
- Toxic Pits Cleanup Act
- Bay Protection and Toxic Cleanup

The relatively recent discovery of pollutants in ground water has jeopardized an important source of water for municipal, agricultural, industrial process, and industrial supply uses in the Los Angeles Region. As a result, reliance on imported supplies of water to this semiarid region has increased.

The Regional Board sets cleanup goals based on the State's *Antidegradation Policy* as set forth in State Board Resolution No. 68-16. Under the *Antidegradation Policy*, whenever the existing quality of water is better than that needed to protect present and potential beneficial uses, such existing quality will be maintained (see Chapter 5, Plans and Policies). Accordingly, the Regional Board prescribes cleanup goals that are based upon background concentrations. For those cases wherein dischargers have demonstrated that cleanup goals based on background concentrations cannot be attained due to technological and economic limitations, State Board Resolution No. 92-49 sets forth policy for cleanup and abatement based on the protection of beneficial uses. Under this policy, the Regional Board can – on a case-by-case basis – set cleanup levels as close to background as technologically and economically feasible. Such levels must, at a minimum, consider all beneficial uses of the waters. Furthermore, cleanup levels must be established in a manner consistent with California Code of Regulations, Title 23, Chapter 15, Article 5; cannot result in water quality less than that prescribed in the Basin Plans and policies adopted by the State and Regional Board; and must be consistent with maximum benefit to the people of the State.

The amended State Board Resolution No. 92-49 has been adopted by the State Board. Upon approval from the Office of Administrative Law (OAL), the amended policy will become effective.

Underground Storage Tanks

Approximately 18,000 underground storage tanks have been identified in the Region, accounting for 15% of the 120,000 underground storage tanks that have been identified throughout the State. Most of these tanks contain, or contained, gasoline and diesel fuel products. Over 4,500 sites in the Los Angeles Region are known to have leaking tanks. These leaks can result in pollution of soil, ground water, surface water, and air, and can also constitute fire or explosion hazards (Figure 4-9).

To protect ground and surface waters from petroleum hydrocarbons from leaking underground storage tanks, the State of California enacted legislation in 1983 (Health and Safety Code, Division 20, Chapter 6.7). Underground tank regulations promulgated under this legislation are designed to (i) ensure the integrity of all underground storage tanks, and (ii) detect any leaks. These regulations can be found in Title 23, California Code of Regulations, Division 3, Chapter 16.

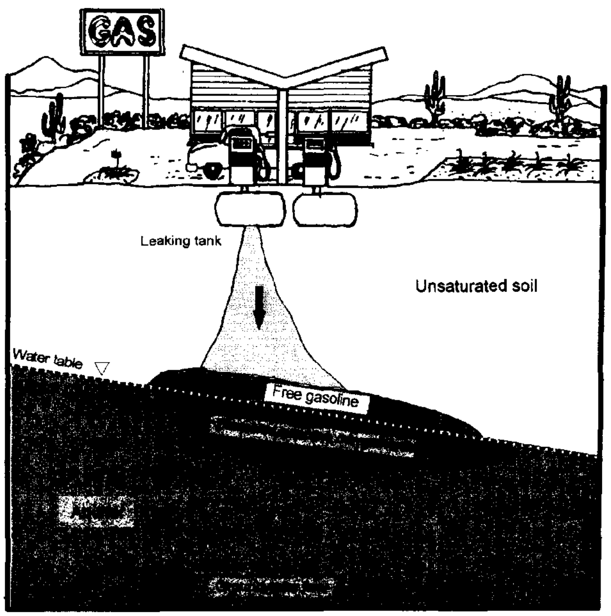


Figure 4-9. Leaking underground storage tank. This diagram illustrates how contamination of the vadose zone and pollution of ground water can result from leaks of gasoline from an underground storage tank (Adapted from Fetter, 1988).

To ensure the integrity of all underground storage tanks, the State's regulations require all counties in California to implement an underground tank permitting program. The counties have the flexibility to shift responsibility to local governments (known as Local Implementing Agencies), provided that the Local Implementing Agencies (LIAs) adopted appropriate ordinances before July, 1990 for implementing underground tank permitting programs that are at least as stringent as the Chapter 16 regulations. Under the permitting programs, a tank owner or operator must obtain an operating permit from the county or LIA in which the tank is located. Permit conditions include tank construction standards, monitoring requirements, unauthorized release reporting, initial abatement procedures, and closure requirements. Furthermore, permitting procedures undertaken by LIAs include initial assessments of sites where pollution can have occurred. LIAs within the Los Angeles Region include: the Counties of Ventura and Los Angeles, and the Cities of Burbank, Glendale, Long Beach, Los Angeles (including the City of San Fernando), Pasadena, Santa Monica, San Buenaventura, Torrance, and Vernon.

Responsibility for overseeing investigations of groundwater pollution and corrective actions rests with the Regional Board. However, given the magnitude of the problems from leaking underground storage tanks in the Los Angeles Region, the Counties of Los Angeles and Ventura joined the State Board's Local Oversight Program (LOP), through which they share regulatory responsibility with the State. (Note that, in addition to their role in the LOP program, the Counties of Los Angeles and Ventura are also LIAs.) In order to provide practical guidance to regulatory agencies overseeing site investigations and corrective actions, the State Board has issued the *Leaking Underground Fuel Tank (LUFT) Field Manual.* This manual is not a policy or regulation; rather, it establishes procedures for verifying the occurrence of a leak from an underground fuel storage tank and for assessing the impact to soil and ground water.

To expedite the permitting process for sites requiring groundwater remediation, the Regional Board has adopted a general permit for the discharge of treated ground water, *Discharge of Ground Water from Investigation and/or Cleanup of Petroleum Fuel Pollution to Surface Waters* (Table 4-2). This general permit regulates the discharge of treated ground water, from petroleum fuel contamination sites, to surface waters, provided that the discharge meets the limitations and conditions of the general permit and does not exceed water quality objectives or impair beneficial uses of the receiving waters.

Leaks from underground storage tanks are not limited to petroleum fuels. Other hazardous substances, such as solvents, also leak and pollute ground and surface waters. Although remediation of such pollution is a high priority, limited funding is available for the investigation and cleanup of such sites. Accordingly, the current scope of the Underground Storage Tank Program is somewhat restricted to pollution from petroleum fuels.

To protect ground and surface waters from petroleum hydrocarbons from leaking underground storage tanks, the State of California enacted legislation in 1983 (Health and Safety Code, Division 20, Chapter 6.7). Underground tank regulations promulgated under this legislation are designed to (i) ensure the integrity of all underground storage tanks, and (ii) detect any leaks. These regulations can be found in Title 23, California Code of Regulations, Division 3, Chapter 16.

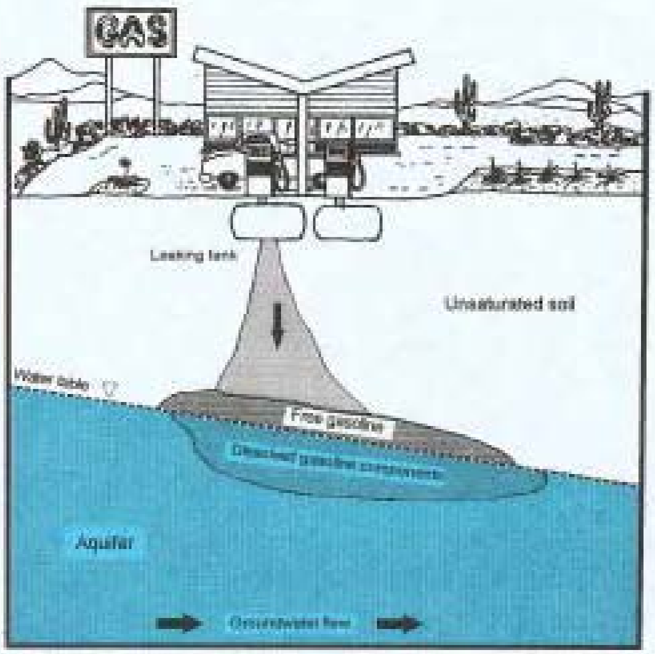


Figure 4-9. Leaking underground storage tank. This diagram illustrates how contamination of the vadose zone and pollution of ground water can result from leaks of gasoline from an underground storage tank (Adapted from Fetter, 1988).

To ensure the integrity of all underground storage tanks, the State's regulations require all counties in California to implement an underground tank permitting program. The counties have the flexibility to shift responsibility to local governments (known as Local Implementing Agencies), provided that the Local Implementing Agencies (LIAs) adopted appropriate ordinances before July, 1990 for implementing underground tank permitting programs that are at least as stringent as the Chapter 16 regulations. Under the permitting programs, a tank owner or operator must obtain an operating permit from the county or LIA in which the tank is located. Permit conditions include tank construction standards, monitoring requirements, unauthorized release reporting, initial abatement procedures, and closure requirements. Furthermore, permitting procedures undertaken by LIAs include initial assessments of sites where pollution can have occurred. LIAs within the Los Angeles Region include: the Counties of Ventura and Los Angeles, and the Cities of Burbank, Glendale, Long Beach, Los Angeles (including the City of San Fernando), Pasadena, Santa Monica, San Buenaventura, Torrance, and Vernon.

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Well Investigations

By 1980, volatile organic compounds (VOCs) had been discovered in a number of public water supply wells in the San Gabriel Valley and San Fernando Valley Groundwater Basins. These discoveries, along with the discovery of dibromochloropropane (DBCP) in several hundred wells in the San Joaquin Valley and in the Riverside-San Bernardino area, prompted passage of legislation (Assembly Bill 1803) in 1983 which mandated statewide sampling for contamination in public water systems. This legislation is codified in the California Health and Safety Code, Section 4026.3.

The California Department of Health Services and county Health Departments completed sampling of public wells in 1985. Organic pollution was detected in over 640 public water supply wells in the Los Angeles Region. The Regional Board, under authority of the California Water Code (§13304) locates and abates the sources of pollutants affecting these wells and oversees the remediation of the pollution. These investigations, conducted through the Well Investigation Program (WIP), are designed to:

- identify and eliminate sources of pollutants in public water supply wells;
- identify dischargers, by establishing a cause-and-effect relationship between the discharge of a pollutant and a polluted well. When necessary, take enforcement action against dischargers in order to force them to undertake site investigations and corrective actions; and
- oversee remediation of soils and ground waters.

All WIP activities are directed to pollution of ground water in the San Gabriel Valley and San Fernando Valley Groundwater Basins. These valleys are synclinal basins at the base of the San Gabriel Mountains. The two basins, which are separated by the San Raphael Hills, are largely filled with alluvial sediments eroded from the surrounding mountains and hills. Large volumes of groundwater flow through these alluvial sediments, and both basins are important sources of water for more than one million people. In addition to meeting a large part of the demand for potable water, the San Gabriel and San Fernando Valley Groundwater Basins store large volumes of ground water that can be pumped during droughts and recharged during years of surplus surface water supplies. The discovery of significant pollution in these basins, however, has significantly reduced groundwater production as well as the potential for conjunctive use, thereby increasing dependence on imported supplies of water.

Groundwater pollution can often be traced to historic and current land uses. Primary organic pollutants in public water supply wells in the San Gabriel and San Fernando Valley Basins include tetrachloroethylene (PCE) and trichloroethylene (TCE). These compounds, both of which are volatile organic compounds (VOCs), have been widely used as solvents in manufacturing and dry cleaning processes. Soil pollution and subsequent groundwater pollution can result from inadequate handling, storage, and disposal practices of such substances at industrial facilities. In addition to volatile organic compounds, high concentrations of nitrates in the upper 160 feet of the San Fernando Valley Basin have polluted many wells. Nitrates often originate in agricultural areas where fertilizers have been excessively applied to crops, in stockyards and feedlots where nitrates from manure leaches into ground water, and in unsewered areas where nitrates from septic tank systems leach into ground water. With few continuous confining layers of less permeable sediments, groundwater recharge – and the infiltration of pollutants – can occur throughout much of the San Gabriel and San Fernando Valleys.

The Regional Board identifies sources of pollutants by inspecting facilities to check their chemical handling, storage, and disposal practices. Information from these inspections assists in identifying those responsible for releases of pollutants. Under the direction of the Regional Board, parties thus identified are required to conduct subsurface investigations of soil and ground water to confirm the presence or absence of pollutants, quantify the extent of pollution, and plan corrective actions. The Regional Board is committed to working closely with those responsible for releases of pollutants to find cost effective ways in which to investigate and remediate pollution in a timely manner. Whenever appropriate, the Regional Board promotes innovative remediation options and encourages phased, cooperative remediation plans involving multiple sites.

Additionally, in order to minimize the spread of pollution caused by groundwater pumping and recharge activities, the Regional Board oversees a comprehensive groundwater quantity and quality management program in the San Gabriel Valley. This management program, implemented by the Main San Gabriel Basin Watermaster and about 45 private and municipal water purveyors, has the following objectives:

- Prevent public exposure to contamination.
- Maintain adequate water supply.
- Protect natural resources.
- Control the migration of pollutants.
- Remove polluted ground water.

Oversight of this management program is authorized by Regional Board Resolution No. 91-6, entitled *Amendment to the Water Quality Control Plan for the Los Angeles River Basin and Implementation Plan Concerning the Extraction of Ground Water Within the San Gabriel Valley Basin.* In the San Fernando Valley Groundwater Basin, the Watermaster for the Upper Los Angeles River Area (i.e., the San Fernando Valley Groundwater Basin) cooperates with the Regional Board to achieve similar objectives (Upper Los Angeles River Area Watermaster, 1993c).

In light of the extent of pollution in the San Gabriel Valley and San Fernando Valley Groundwater Basins (Figures 4-10 and 4-11) and the dependence on this important source of ground water, the State of California designated large areas of these basins as high priority Hazardous Substances Cleanup sites. The USEPA also designated these same areas as sites eligible for funding under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) legislation (i.e., as Superfund sites). The USEPA, as lead agency for enforcement in these areas, is responsible for strategy, case development, determination of responsible parties, and settlement negotiations. The Regional Board, on behalf of the USEPA, identifies dischargers as described above.

Spills, Leaks, Investigation and Cleanup (SLIC)

With a skilled work force, well-developed infrastructure and large-scale production capacity, the Los Angeles Region is an important industrial and manufacturing center. With 20 major refineries and hundreds of smaller facilities, the Region has the greatest concentration of petroleum production and storage facilities along the West Coast. Although these activities are an important part of the Region's economic base, they have often severely degraded the environment.

Reports of unauthorized discharges, such as spills and leaks from above-ground storage tanks, are investigated through the Regional Board's Spills, Leaks, Investigation and Cleanup (SLIC) Program. This program is not restricted to particular pollutants or environments; rather, the program covers all types of pollutants (such as solvents, petroleum fuels, and heavy metals) and all environments (including surface and water, ground water, and the vadose zone). Upon confirming that an unauthorized discharge is polluting or threatens to pollute regional waterbodies, the Regional Board oversees site investigation and corrective action. Statutory authority for the program is derived from the California Water Code, Division 7, Section 13304. Guidelines for site investigation and remediation are promulgated in State Board Resolution No. 92-49 entitled *Policies and Procedures For Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*, described at the beginning this Chapter, in section entitled Remediation of Pollution. Pollutants in the SLIC Program are typically petroleum fuel products which, in addition to existing in liquid form as pure compounds (i.e., "free product"), can dissolve in water, adsorb to soils, and vaporize. Site investigations to delineate the extent of pollution caused by such substances are therefore very complex. Cases range from small leaks of fuel products stored in metal drums to large spills at tank farms and refineries, where tens of millions of gallons of free product are floating on the surface of ground waters in important aquifers. Over 350 cases of pollution have been investigated since 1986. Approximately 50 of these sites have been remediated and closed. State of the art remediation techniques, such as bioremediation of soils, have successfully been employed to remediate pollution. Approximately 100 cases are presently undergoing investigation or corrective action. New cases of pollution are reported at a rate of about 2 to 3 per month.

Department of Defense and Department of Energy

Decades of defense and energy activities have degraded water quality on and around federally-owned facilities. Working with other agencies, the Regional Board is involved with remedial investigation and clean up action on over 16 U.S.

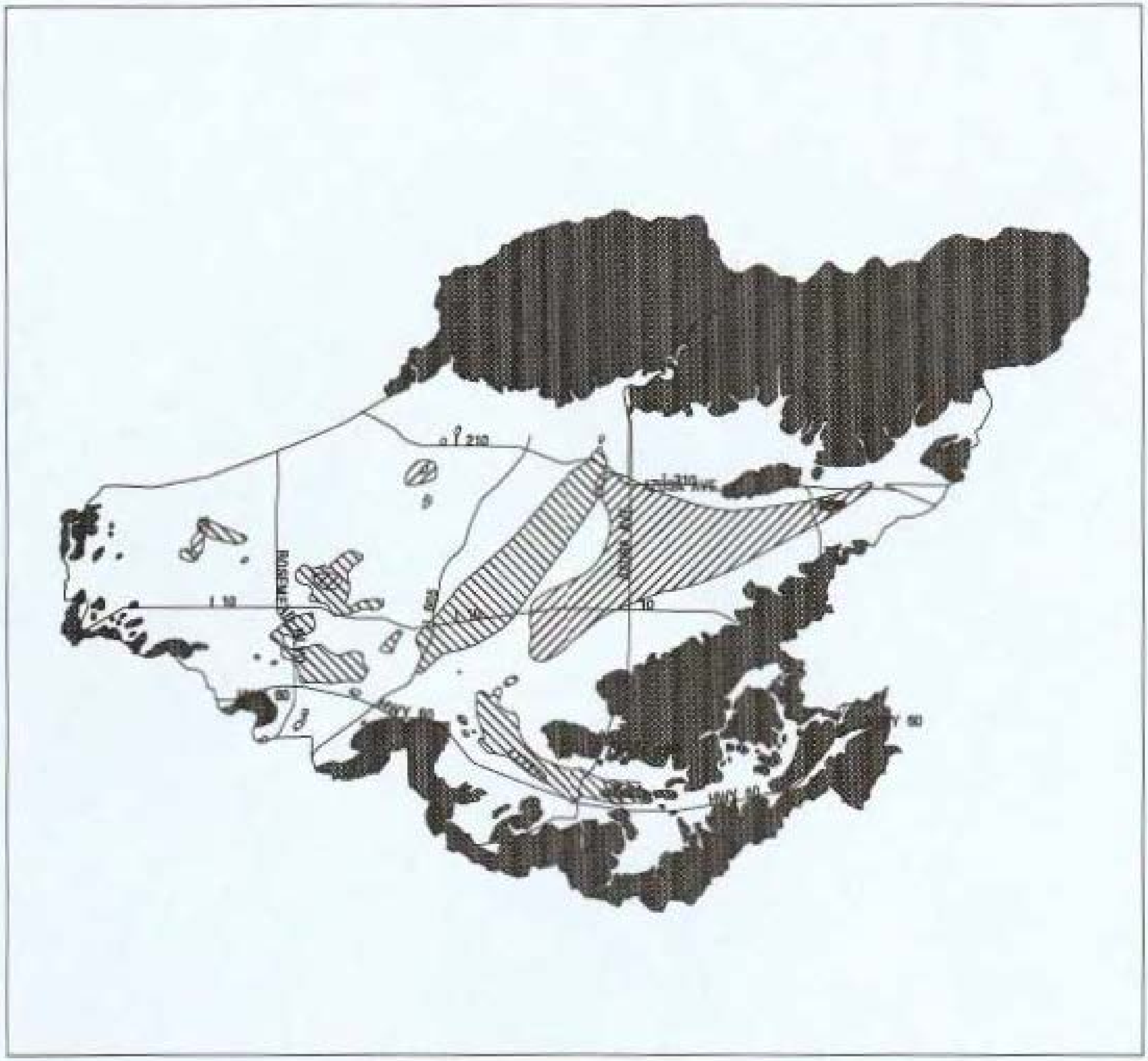


FIGURE 4-10

SAN GABRIEL VALLEY

GROUNDWATER BASIN

CONTAMINATION PLUMES

CALIFORNIA REGIONAL
WATER QUALITY
CONTROL BOARD
LOS ANGELES REGION
(4)

VOC'S ABOVE MCL

NITRATES ABOVE MCL

BEDROCK OUTCROP

N

MILES

0 1 2 3 4

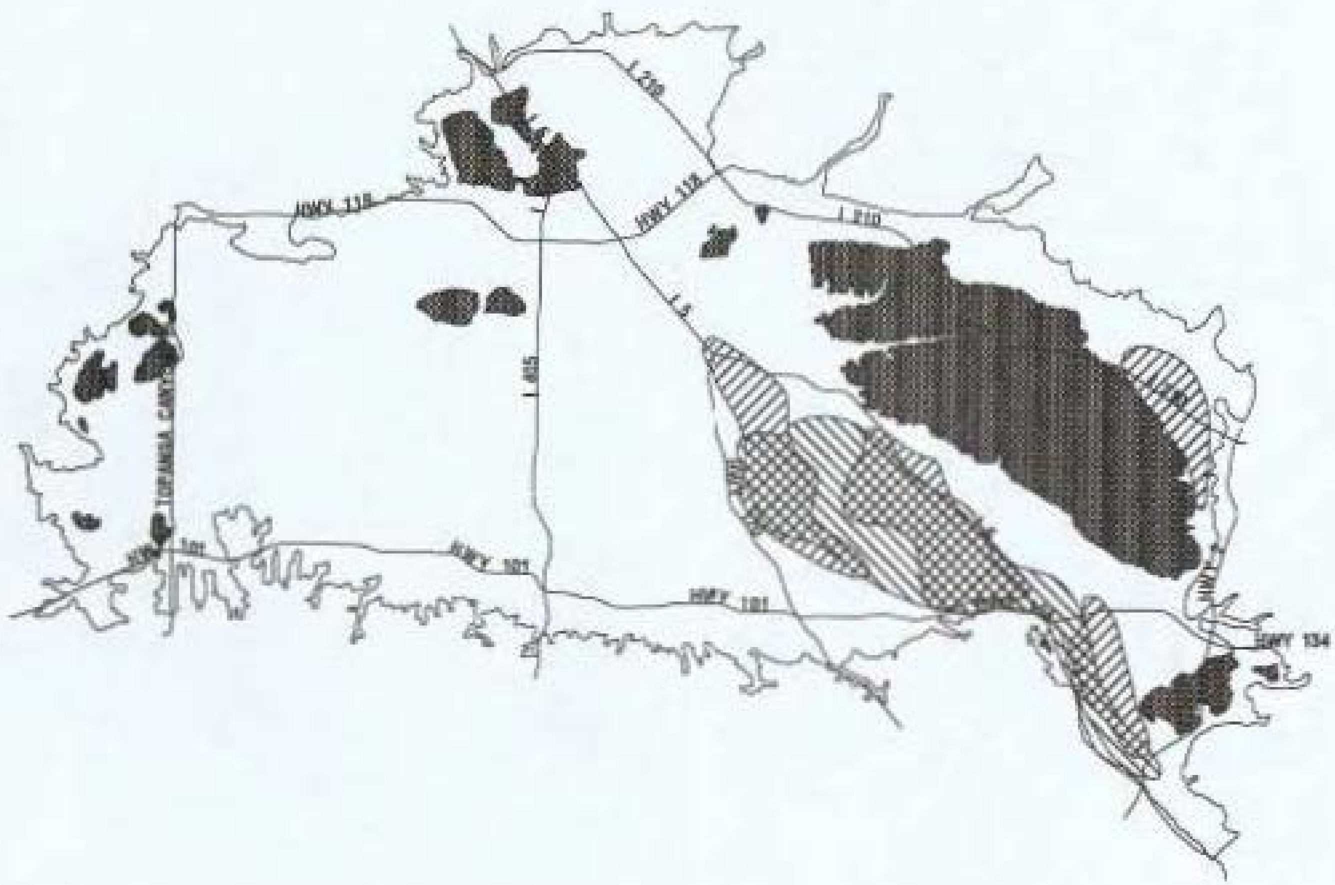
FIGURE 4-11

SAN FERNANDO VALLEY

GROUNDWATER BASIN

CONTAMINATION PLUMES

CALIFORNIA REGIONAL
WATER QUALITY
CONTROL BOARD
LOS ANGELES REGION
(4)



VOC'S ABOVE MCL

NITRATES ABOVE MCL

BEDROCK OUTCROP

MILES

0 1 2 3 4

Department of Defense (DOD) sites and one U.S. Department of Energy (DOE) site. Agreements with the DOD and DOE provide for accelerated cleanups at military bases and other Defense sites that are scheduled for closing. Site investigation and clean up procedures are consistent with State laws and regulations as well as applicable provisions of CERCLA.

Aboveground Petroleum Storage Tanks

In order to prevent unauthorized discharges from aboveground petroleum storage tanks, the State of California has enacted legislation designed to lower the risk of spills and leaks. The California Health & Safety Code (§25270 et seq.) requires owners or operators of above-ground petroleum storage tanks to file a storage statement with the State Board and implement spill prevention measures. Examples of such measures include daily visual inspections of any storage crude oil or its fractions, the installation of secondary containment for all tanks with sufficient capacity to hold the content of the largest tank at the facility plus sufficient volume for rainfall to avoid overflow, and development of a *Spill Prevention Control and Countermeasure Plan*. In the event of an unauthorized release, the owner or operator must notify State officials and undertake appropriate monitoring and corrective action. In addition, annual fees are levied on tank owners. The Regional Board uses these fees to fund aboveground petroleum tank inspections and enforcement. There are over 10,000 aboveground petroleum storage tanks in the Los Angeles Region.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) is federal legislation (42 U.S.C.A. 6901 et seq.) designed to ensure that hazardous substances are managed in an environmentally-sound manner. Regulations promulgated under this legislation are in 40 CFR 264 and Title 22 of the California Code of Regulations and include comprehensive requirements for hazardous waste generators, transporters, and facilities that treat, store and dispose of hazardous wastes.

The State of California Department of Toxic Substances Control (DTSC) administers the RCRA Program in California. When requested, the Regional Board reviews on water-quality issues related to RCRA sites.

Toxic Pits Cleanup Act

The State's Toxic Pits Cleanup Act of 1984 (TPCA) regulates impoundments containing liquid hazardous wastes. Regulations promulgated under the TPCA legislation are in the Health & Safety Code, Division 20, Chapter 6.5, Article 9, and are administered by the State and Regional Boards. Major provisions in these regulations include:

- Requirements that all impoundments containing liquid hazardous wastes be retrofitted with liners and laced collection systems, and performance standards for these systems.

- Groundwater monitoring in accordance with the federal Resource Conservation and Recovery Act.

- A prohibition on the discharge of liquid hazardous wastes within 1/2 mile upgradient of a drinking water well.

- A Hydrogeologic Assessment Report.

Seventeen known impoundments containing liquid hazardous waste were operating in the Los Angeles Region when TPCA legislation was enacted. The Regional Board has overseen closure of all of these impoundments.

Bay Protection and Toxic Cleanup Program

In 1989, State legislation added Sections 13390 through 13396 to the California Water Code which established the Bay Protection and Toxic Cleanup Program (BPTCP). The program has four main goals: (i) to provide protection of existing and future beneficial uses of bays and estuarine waters, (ii) to identify and characterize toxic hot spots, (iii) to plan for the cleanup or other remedial or mitigating actions, and (iv) to contribute to the development of effective strategies to control toxic pollutants and prevent creation of new hot spots or the perpetuation of existing hot spots.

The Water Code requires that each Regional Board complete a toxic hot spot cleanup plan and that the State Board prepare a consolidated cleanup plan for submittal to the Legislature. Each cleanup plan must include a description of each toxic hot spot with its priority listing, an assessment of the most likely source(s) of pollutants, an estimate of the total costs to implement the cleanup plan, an estimate of costs which can be recoverable from responsible parties, a preliminary assessment of the actions required to remedy or restore a toxic hot spot, and a two-year expenditure schedule identifying State funds needed to implement the plan. It is required that a State-wide consolidated cleanup plan will be completed by June 30, 1999.

The Santa Monica Bay Restoration Project

Introduction

In recognition of the need to protect the Bay and associated watersheds, in May 1988, the State of California and the U.S. Environmental Protection Agency nominated and included Santa Monica Bay in the National Estuary Program (NEP). Established under the Water Quality Act of 1987 and managed by the U.S. EPA, the NEP currently includes 21 significant estuaries and coastal water bodies nationwide. The NEP was created to pioneer a broader focus for coastal protection, and to demonstrate practical, innovative approaches for protecting coastal areas and their living resources.

As an NEP, the Santa Monica Bay Restoration Project (SMBRP) is charged with assessing the Bay's pollution and degradation problems and producing a Bay Restoration Plan (BRP) to serve as a blueprint for the Bay's recovery. To fulfill its responsibility, the SMBRP convened a Management Conference. Organized into three groups (the Management, Technical Advisory, and Public Advisory Committees), the Management Conference is a unique and diverse coalition of government, environmentalists, scientists, industry, and the public committed to restoring the Bay. Over the last five years, this coalition has been successfully breaking many interagency barriers, and building consensus to solve problems.

For the purposes of the NEP, the borders of Santa Monica Bay are defined as reaching from the Ventura County line to Point Fermin on the south end of the Palos Verdes Peninsula.

Assessment of Problems in Santa Monica Bay

Santa Monica Bay is an important natural resource which provides significant environmental, recreational and economic benefits for Southern California. However, the Bay's living resources, water quality, and natural beauty have been affected by years of development and other human uses.

The creation of the SMBRP in 1988 has brought about much progress in understanding the problems facing the Bay. Above all, the SMBRP Management Conference has focused on assessing problems associated with four fundamental issues: swimming safety, seafood safety, fisheries and living resources protection, and ecosystem health.

Environmental Issues

Public concern about the safety of *swimming* in, and consuming *seafood* from Santa Monica Bay has been high for the past decade. Studies have shown that some local seafood species contain elevated concentrations of potentially toxic chemicals, primarily DDT and PCBs. As a result, responsible State agencies have published advisories to anglers regarding consumption of these species. With regard to the safety of swimming in Bay waters, some Santa Monica Bay beaches are occasionally closed due to storm water contaminated with minimally-treated sewage overflows. Studies have also found evidence of human fecal waste in dry-weather urban runoff. As a result, warning signs have been posted near outlets of flowing storm drains on beaches to discourage swimming near storm drains.

Despite the relative abundance of aquatic and terrestrial life in and around Santa Monica Bay (including several endangered species), the Bay's *habitats* have been significantly altered and degraded. For example, only about 5% of the area's historical wetlands acreage still exists. Pollution of coastal waters has led to a decline in species and a commercial fishing ban on white croaker in certain areas. In addition, although the use of DDT was banned in 1971, residues of this pesticide still bio-accumulate in the tissues of invertebrates, fish, birds, and marine mammals.

Pollutant loading has been identified as the most important contributor to the problems associated with beneficial use impairment in the Bay. The

SMBRP identified 19 pollutants of concern based on the serious impacts they have had or may have on the Bay. These 19 pollutants of concerns are: DDT, PCBs, PAHs, chlordane, TBT, cadmium, chromium, copper, lead, nickel, silver, zinc, pathogenic bacteria and viruses, total suspended solids, nutrients, trash and debris, chlorine, oxygen demands, and oil and grease.

Pollutants of concern reach Santa Monica Bay through a number of routes. Major pathways include wastewater carried by the region's sewage system and released into the Bay after treatment; urban runoff/storm water carried into the Bay through the region's storm drain system; treated wastewater directly discharged into the Bay from industrial facilities; oil and hazardous waste spilled directly into the Bay or into the storm drain system, and resuspension of contaminated sediments. Overall, sewer systems are the largest source of pollutant loading to the Bay. However, as the quality of sewage discharges from treatment plants has improved, the relative contribution of storm water and urban runoff to the total pollutant load to the Bay has increased.

The condition of the Bay and its watershed, with an emphasis on the effects of pollution on human health and the marine environment is documented in detail in the Santa Monica Bay Characterization Report published by the SMBRP in April 1993.

Management Issues

The Santa Monica Bay "watershed" is bordered on the north by the Santa Monica Mountains divide, on the east by Griffith Park, on the south by Point Fermin, and on the west by the eastern portion of Ventura County. Hydrologically, the Bay watershed is divided into 28 drainage basins, each of which has unique topographical and land use characteristics. The northern portion of the Bay watershed has steep topography and contains large undeveloped areas. The central and southern portions have a mixture of residential and industrial/commercial land use. The Palos Verdes Peninsula segment of the watershed contains residential development along with open space and a rocky shoreline.

Management of water pollution and habitat protection in Santa Monica Bay is currently based on jurisdictional rather than hydrologic or watershed boundaries. There are more than 50 Federal, State, and local agencies or jurisdictions whose management decisions directly or indirectly affect water quality, natural resources, and recreational activities in the Santa Monica Bay watershed and the near-coastal area. To make planning, forecasting, and implementation of actions more cost effective and successful, they should be coordinated on a watershed basis.

Historically, water quality management in the Santa Monica Bay area targeted the most visible pollution problems such as individual municipal and industrial "point" sources of pollution. This approach has solved the worst pollution problems, but it may have neglected the less obvious, but potentially more damaging impact of "nonpoint" pollution such as storm water/urban runoff and atmospheric deposition. There is an urgent need to address all these pathways/sources in a coordinated rather than a fragmented manner.

Currently, most of these pollutants are primarily managed by applying concentration-based water quality standards. However, such an approach may not always be appropriate to protect against impacts that result from long-term accumulation of these pollutants in marine environments. A new mass emissions approach is being considered. Under this approach, an allowable "no impact" cumulative loading of a pollutant would be determined on a watershed basis, coupled with a set of useful "end points" by which to measure the adequacy of management actions.

Recommended Actions

Supported by extensive problem research and assessment, the Bay Restoration Plan sets forth actions that need to be taken to achieve a clean and healthy Bay. The BRP not only identifies actions, but also implementors, timelines, and potential funding sources.

Described below are some of the high priority actions presented in the Draft BRP which the Los Angeles Regional Water Quality Control Board has been designated to serve as either the lead, regulatory lead, or as an important participant in their implementation.

- Improve management framework for water quality regulation and enforcement

  Specific actions to be led by the Regional Board include revising and incorporating new program elements into the NPDES permits, especially storm water NPDES permits, as needed; ensuring adequate staffing, resources, and legal support at the Regional Board for storm water NPDES permits, other NPDES permits, and pretreatment permit compliance and enforcement; and developing new, effective enforcement tools, if necessary.

Led by EPA and the post-SMBRP organization, and with the involvement of the Regional Board, specific actions are also recommended to investigate the necessity for and feasibility of developing numeric effluent limits for storm water runoff.

- Coordinate Bay water pollution management on a watershed basis

  A key action under the leadership of the Regional Board is to develop tools for coordinating all components of the NPDES program (urban, municipal, industrial and cooling water discharges) with other permitting and regulatory functions on a watershed/sub-watershed basis. One recommended mechanism for management on a watershed basis is the adoption of a mass emissions approach, with the Regional Board serving as the lead in overseeing its development and implementation.

  In order to carry out the watershed management approach, the BRP prescribes a Malibu Creek Pilot Watershed Management Plan. It is recommended that the post-SMBRP organization, with participation of the Regional Board, use applicable elements of the Malibu Creek Pilot Plan to develop management plans for other priority watersheds.

- Implement control measures for pollutants associated with storm water/urban runoff

  Specific actions include ensuring adequate staff and training in local municipalities and agencies for storm water/urban runoff management; evaluating and developing effective processes to address small discharges of non-storm or contaminated storm runoff; developing and implementing land use tools for storm water/urban runoff management; developing and enforcing land use ordinances; developing and implementing a five-year urban runoff education strategy; implementing a set of mandatory short-term Best Management Practices (BMPs); conducting pilot projects for medium and long term BMP implementation; and promoting implementation of general good housekeeping practices by commercial and industrial facilities and construction activities.

  It is recommended that most actions in this category be implemented by co-permittees of the municipal storm water NPDES permit, led by the Los Angeles County Department of Public Works, and that the Regional Board act as regulatory lead.

- Upgrade all direct municipal discharges to Santa Monica bay to secondary treatment levels

  Two specific actions are included: (i) the City of Los Angeles should complete construction of full secondary facilities at the Hyperion treatment plant and remedy storm-related sewage overflow problems; (ii) the County of Los Angeles should install full secondary treatment facilities at the Joint Water Pollution Control Plant. It is recommended that Regional Board act as regulatory lead for implementation of these actions.

- Control pathogens in surfzone to ensure the safety of swimmers

  Specific actions include developing and conducting a sanitary survey; conducting on-site inspections and repairing malfunctioning septic tanks; developing inspection systems; conducting focused inspection of illegal and illicit sewage connections to storm drains; inspecting and correcting leaks from sewer lines and sewage treatment plants; treating and/or diverting dry-weather urban runoff if feasible

  Implementation of these actions will be carried out by various agencies/organizations including Los Angeles County Department of Public Works, Los Angeles County Department of Health Services, POTWs, and local cities, as well as the SMBRP. The Regional Board is recommended to serve as regulatory lead for implementation of these actions.

- Assess health risks associated with swimming and revise water quality standards

  The key action is to conduct an epidemiological study to assess the possible health risks of recreational exposure to storm drain runoff in

Santa Monica Bay. It is recommended that this action be led by the State Water Resources Control Board with the participation of the Regional Board and other State and local health service agencies.

- Develop and implement comprehensive monitoring program

  It is recommended that NPDES permittees as well as the Regional Board participate in a "retooled" Santa Monica Bay and watershed monitoring program focusing on compliance monitoring aspects. As part of the monitoring program, a user-friendly SMB data management system would be designed and maintained by the post-SMBRP organization with the participation of the Regional Board.

  The Santa Monica Bay Restoration Plan was presented to the public in April 28, 1994. Its implementation is slated to begin in January, 1995.

Chapter 5:
Plans and Policies

Table of Contents

Introduction

In addition to the Basin Plan for the Los Angeles Region, many other plans, policies, resolutions, and TMDLs direct the actions of the Regional Water Board or guide the Regional Water Board's intent. The State Water Board has adopted three statewide water quality control plans. Additionally, both the State and Regional Water Boards adopt policies, resolutions, and TMDLs that provide direction on the implementation of water quality standards and Water Board programs. In the event that inconsistencies exist among various plans and policies, the more stringent provisions apply unless a statewide plan or policy specifically states that it supersedes regional plans or policies.

Below are summaries of significant statewide and regional plans, policies, resolutions, Basin Plan amendments, and TMDLs. These plans, policies, resolutions, Basin Plan amendments, and TMDLs may be periodically revised. Should any of these plans, policies, resolutions, Basin Plan amendments, and TMDLs be amended by the State or Regional Water Board, the Regional Water Board will implement the amended version. More information about each can be found on the State Water Board's (http://www.waterboards.ca.gov/plans_policies/) and Regional Water Board's (http://www.waterboards.ca.gov/losangeles/) websites.

Statewide Water Quality Control Plans

The State Water Board has adopted three statewide water quality control plans that are applicable to the Region.

Water Quality Control Plan - Ocean Waters of California

The *Water Quality Control Plan for Ocean Waters of California* (California Ocean Plan) is the State's water quality control plan for ocean waters. It identifies beneficial uses of California's ocean waters; establishes water quality objectives necessary to protect those beneficial uses; and identifies areas where waste discharges are prohibited. Additionally, the plan sets forth a program of implementation including waste discharge limitations, monitoring, and enforcement to ensure that water quality objectives are attained. The State Water Board adopted the Ocean

Plan in 1974 (State Water Board Resolution No. 74-57) and has since periodically revised the plan. The most recent revision was adopted on October 16, 2012 (State Water Board Resolution No. 2012-0056) and became effective on August 19, 2013.

The Ocean Plan designates Areas of Special Biological Significance (ASBS) (pursuant to amendments adopted by the State Water Board through Resolution No. 74-28) and prohibits most waste discharges to these areas in order to protect natural water quality conditions. The following areas have been designated as ASBS in the Region (Figures 5-1 and 5-2):

- *ASBS No. 21: San Nicolas Island and Begg Rock*: waters surrounding San Nicolas Island and Begg Rock to a distance of one nautical mile offshore or to the 300-foot isobath, whichever is greater.

- *ASBS No. 22: Santa Barbara Island and Anacapa Island*: waters surrounding Santa Barbara Island and Anacapa Islands to a distance of one nautical mile offshore or to the 300-foot isobath, whichever is greater.

- *ASBS No. 23:* San Clemente Island: waters surrounding San Clemente Island to a distance of one nautical mile offshore or to the 300-foot isobath, whichever is greater.

- *ASBS No. 24: Mugu Lagoon to Latigo Point*: ocean water within a line originating from Laguna Point at 34° 5' 40" north, 119° 6' 30" west, thence southeasterly following the mean high tide line to a point at Latigo Point defined by the intersection of the mean high tide line and a line extending due south of Bench Mark 24; thence due south to a distance of 1000 feet offshore or to the 100-foot isobath, whichever distance is greater; thence northwesterly following the 100-foot isobath or maintaining a 1,000-foot distance from shore, whichever maintains the greater distance from shore, to a point lying due south of Laguna Point, thence due north to Laguna Point.

- *ASBS No. 25: Santa Catalina Island, Subarea One, Isthmus Cove to Catalina Head:* from Point 1 determined by the intersection of the mean high tide line and a line extending due west from USGS Triangulation Station "Channel" on Blue Cavern Point; thence due north to the 300-foot isobath or to one nautical mile offshore, whichever distance is greater; thence northerly and westerly, following the 300-foot isobath or maintaining a distance of one nautical mile offshore, whichever is the greater distance, around the northwestern tip of the island and then southerly and easterly, maintaining the distance offshore described above, to a point due south of USGS Triangulation Station "Cone" on Catalina Head; thence due north to the intersection of the mean high tide line and a line extending due south from USGS Triangulation Station "Cone", thence returning around the northwestern tip of the Island following the mean high tide line to Point 1.

- *ASBS No. 26: Santa Catalina Island, Subarea Two, North End of Little Harbor to Ben Weston Point*: from Point 1 determined by the intersection of the mean high tide line extending due south from USGS Triangulation Station "White Bluff"; thence due west to the 300-foot isobath or to one nautical mile offshore, whichever distance is greater; thence southerly on a meander line following the 300-foot isobath or maintaining a distance of one nautical mile offshore, whichever distance offshore is greater, to a point due west of USGS Triangulation on Station "Slip" on Ben Weston Point; thence due east to the intersection of the mean high tide line and a line extending due west from USGS Triangulation Station "Slip"; thence northerly following the mean high tide line to Point 1.

- *ASBS No. 27: Santa Catalina Island, Subarea Three, Farnsworth Bank Ecological Reserve*: waters within the Farnsworth Bank Ecological Reserve, which are located 1.6 nautical miles southwest of Ben Weston Point, Catalina Island, on a bearing of 240° true. The Bank is composed of sheer rocky pinnacles rising from the sandy ocean floor 250 feet deep to within 50 feet of the surface. The Bank occupies an area approximately 575 yards long by 200 yards wide.

- *ASBS No. 28: Santa Catalina Island, Subarea Four, Binnacle Rock to Jewfish Point*: from Point 1 determined by the intersection of the mean high tide line and a line extending due north from the highest point of Binnacle Rock; thence due south to a point one nautical mile offshore or to the 300-foot isobath, whichever distance is greater; thence easterly and northerly, maintaining a distance of one nautical mile or to the 300-foot isobath, whichever distance is greater, to a point due east of the eastern-most extension of the mean high tide line at Jewfish Point; thence due west to the eastern-most extension of the mean high tide line at Jewfish Point; thence southerly and westerly following the mean high tide line to Point 1.

Exceptions to the prohibition of waste discharges to ASBS may only be granted in situations where the State Water Board finds that there would be no adverse impact to beneficial uses. Such exception was granted in 2006 to the USC Wrigley Marine Institute, which discharges storm water and ocean water that has been used in aquariums at its research facility to the ASBS No. 25 Northwest of Santa Catalina Island (State Water Board Resolution No. 2006-0013). In addition, in 2012 the State Water Board granted a General Exception for Stormwater and Nonpoint Sources for 27 dischargers throughout the state, including the County of Los Angeles, the Los Angeles County Flood Control District, and the City of Malibu, for their discharges into ASBS No. 24 (State Water Board Resolution Nos. 2012-0012 and 2012-0031).

The State Water Board periodically revises the Ocean Plan to update or add water quality objectives that are necessary to protect beneficial uses of ocean waters based on the most current science, analytical methods, and technologies.

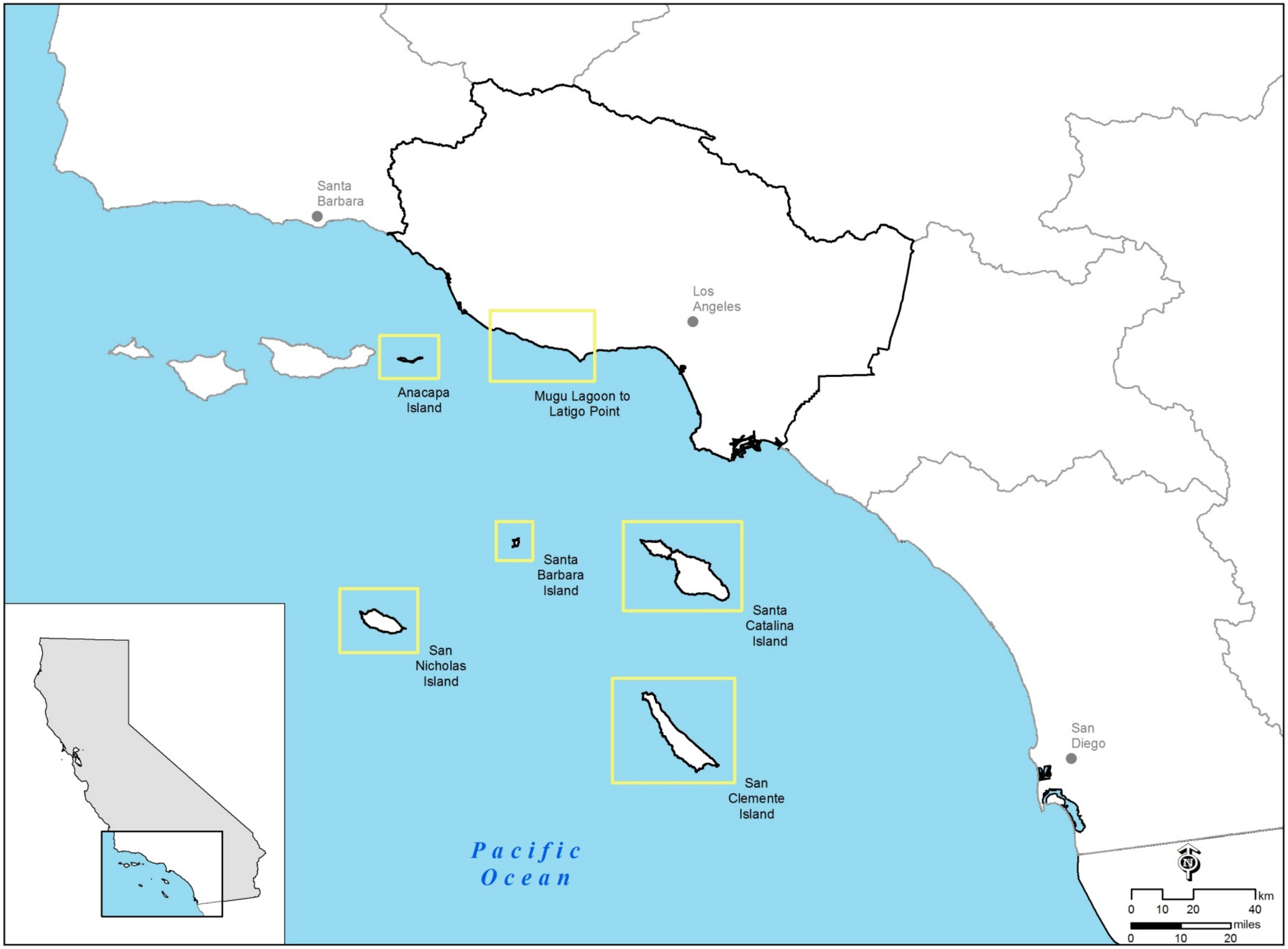


Figure 5-1. General Locations of Areas of Special Biological Significance in Los Angeles Region.

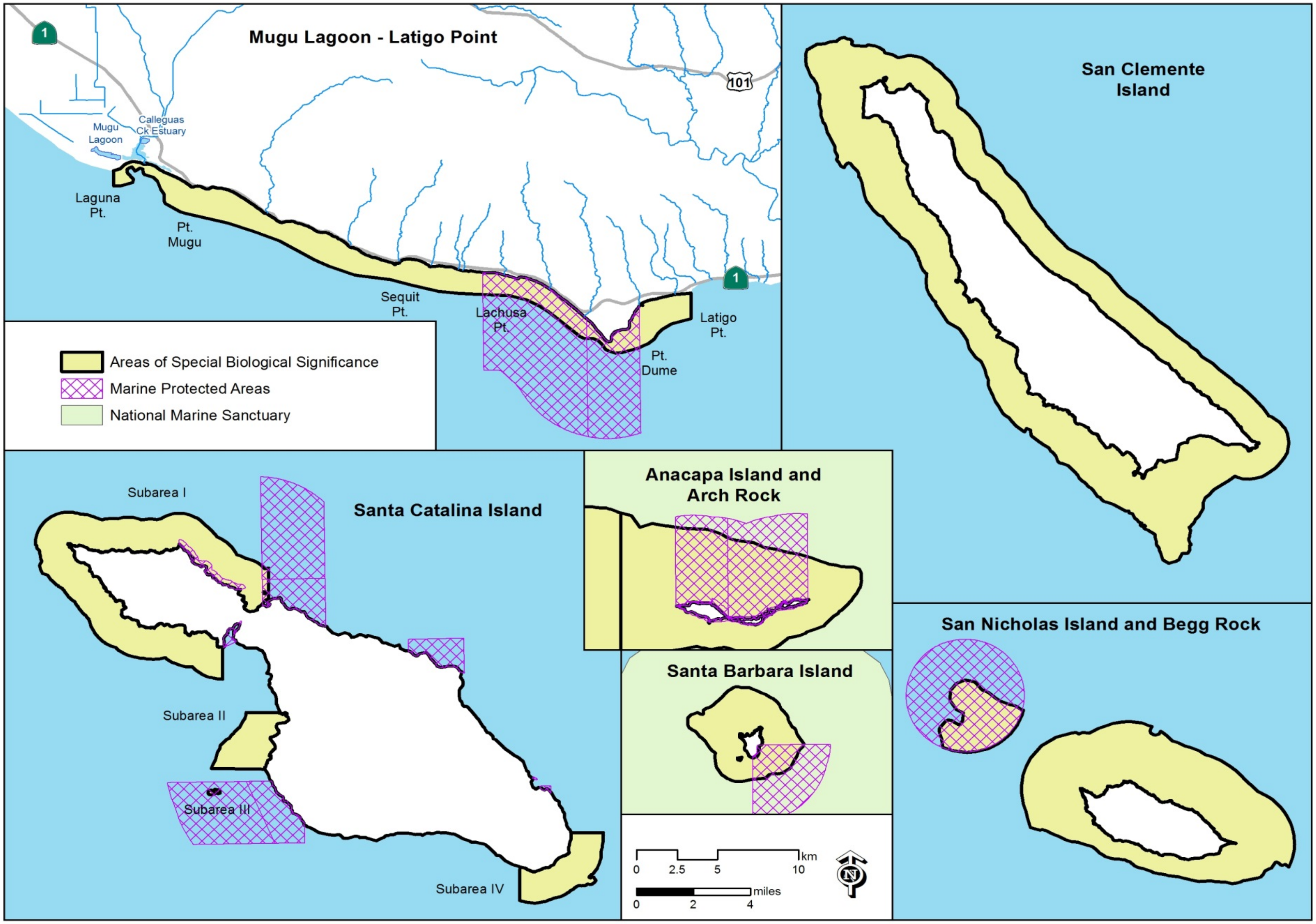


Figure 5-2. Detailed Locations of Areas of Special Biological Significance in Los Angeles Region.

Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and *Enclosed Bays* and *Estuaries of California*

The State Water Board adopted the *Water Quality Control Plan for the Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries in California* (Thermal Plan) in May 1972 and amended this plan (State Water Board Resolution No. 75-89) in September 1975. This plan was developed in order to minimize the adverse effects of wastes on the temperature of receiving waters. The plan specifies temperature related water quality objectives designed to protect beneficial uses. The Regional Water Boards implement this plan by establishing waste discharge requirements for discharges of waste characterized by an elevated temperature. Additionally, as necessary, the implementation of this plan directs dischargers to conduct special studies and expanded monitoring programs to evaluate the impacts of waste discharges with elevated temperatures on receiving waters.

Water Quality Control Plan for Enclosed Bays and *Estuaries - Part 1 Sediment Quality*

The *Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1 Sediment Quality* (EB&E Plan Part 1), which became effective on August 25, 2009, complies with the legislative directive in Water Code section 13393 that requires the State Water Board to develop sediment quality objectives (SQOs) for toxic pollutants for California's enclosed bays and estuaries. The EB&E Plan Part 1 integrates chemical, toxicological, and biological measures to determine if the sediment dependent biota are protected or degraded as a result of exposure to toxic pollutants in sediment and to protect human health. Part 1 Sediment Quality (State Water Board Resolution No. 2008-0070) represents the first phase of SQO development and focuses on the protection of benthic communities in enclosed bays and estuaries from impacts associated with contaminated sediment.

Part 1 Sediment Quality includes narrative sediment quality objectives for the protection of aquatic life and human health; establishes a multiple lines of evidence (MLOE) approach to implementing the narrative objective for the protection of aquatic life; and outlines an implementation program.

Statewide Policies and Significant Resolutions

The State Water Board has also adopted several statewide policies and significant resolutions.

General Policies Applying to All Waters of the State

Statement of Policy with Respect to Maintaining High Quality of Waters in California

The State Water Board adopted the *Statement of Policy with Respect to Maintaining High Quality of Waters in California* (State Water Board Resolution No. 68-16) in October 1968. This policy, which is commonly referred to as "California's Antidegradation Policy," ensures that water quality is adequate to protect all beneficial uses and provides a framework to protect surface water and groundwater from degradation. Most importantly, this policy protects waterbodies where existing quality is higher than necessary for the protection of beneficial uses.

Under California's Antidegradation Policy, any actions that can adversely affect water quality in all surface waters and groundwater must be consistent with the maximum benefit to the people of the state, must not unreasonably affect present and anticipated beneficial use of such water, and must not result in water quality less than that prescribed in water quality plans and policies. Furthermore, any actions that can adversely affect surface waters are also subject to the federal Antidegradation Policy (40 C.F.R. § 131.12) developed under the CWA. California's Antidegradation Policy is deemed to incorporate the federal Antidegradation Policy where the federal policy applies under federal law. The USEPA, Region IX, has also issued detailed guidance for the implementation of federal antidegradation regulations for surface waters within its jurisdiction (USEPA, 1987).

This policy has been reprinted in Chapter 3.

The State Policy for Water Quality Control

The State Water Board adopted the *State Policy for Water Quality Control* on July 6, 1972. This policy, which serves as a basis for subsequent water quality policies, sets forth general principles (outlined below) that are necessary for implementation of programs that protect the quality of the waters throughout the State.

- Water rights and water quality control decisions must ensure protection of available fresh water and marine resources for maximum beneficial use.

- Municipal, agricultural, and industrial wastewaters must be considered as a potential integral part of the total fresh water resource.

- Coordinated management of water supplies and wastewaters on a regional basis must be promoted to achieve efficient utilization of water.

- Efficient wastewater management is dependent upon a balanced program of source control of environmentally hazardous substances, treatment of wastewaters, reuse of reclaimed water, and proper disposal of effluent and residuals.

- Substances not amenable to removal by treatment systems presently available or planned for the immediate future must be prevented from entering sewer systems in quantities that would be harmful to the aquatic environment, adversely affect beneficial uses of water, or affect treatment plant operation. Persons responsible for the management of waste collection, treatment, and disposal systems must actively pursue the implementation of their objective of source control for environmentally hazardous substances. Such substances must be disposed of such that environmental damage does not result.

- Wastewater treatment systems must provide sufficient removal of environmentally hazardous substances that cannot be controlled at the source to ensure against adverse effects on beneficial uses and aquatic communities.

- Wastewater collection and treatment facilities must be consolidated in all cases where feasible and desirable to implement sound water quality management programs based on long-range economic and water quality benefits to an entire basin.

- Institutional and financial programs for implementation of consolidated wastewater management systems must be tailored to serve each particular area in an equitable manner.

- Wastewater reclamation and reuse systems that ensure maximum benefit from available fresh water resources shall be encouraged. Reclamation systems must be an appropriate integral part of the long-range solution to the water resources needs of an area and incorporate provisions for salinity control and disposal of non-reclaimable residues.

- Wastewater management systems must be designed and operated to achieve maximum long-term benefit from the funds expended.

- Water quality control must be based upon the latest scientific findings. Criteria must be continually refined as additional knowledge becomes available.

- Monitoring programs must be provided to determine the effects of discharges on all beneficial water uses including effects on aquatic life and its diversity and seasonal fluctuations.

Sources of Drinking Water Policy

The State Water Board adopted the *Sources of Drinking Water Policy* (State Water Board Resolution No. 88-63) in May 1988. This policy states that all surface waters and groundwater in the State are considered suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Water Boards with certain exceptions. Exceptions include, but are not limited to, waters with existing high dissolved solids (i.e., waters with dissolved solids greater than 3,000 mg/L), low sustainable yield (less than 200 gallons per day for a single well), and waters with contamination that cannot be treated for domestic use using best management practices or best economically achievable treatment practices. Additionally, surface waters in a system designed to collect or treat municipal or industrial wastewaters, agriculture wastewater, and/or stormwater are provided an exception. Groundwater aquifers regulated as a geothermal energy source are administratively exempted from this policy.

Where the Regional Water Board finds that one of these exceptions applies, it can remove the municipal and domestic supply beneficial use designation for that waterbody through a Basin Plan amendment.

Policies Applying to Surface Waters

Water Quality Control Policy for the Enclosed Bays and Estuaries of California

The State Water Board adopted the *Water Quality Control Policy for the Enclosed Bays and Estuaries of California* by State Water Board Resolution No. 74-43 (amended by Resolution No. 95-84). The purpose of this policy is to provide water quality principles and guidelines to prevent water quality degradation and to protect the beneficial uses of waters of enclosed bays and estuaries. Decisions by the Regional Water Board must be consistent with the provisions designed to prevent water quality degradation.

The policy identifies principles of management that include the State Water Board's desire to phase out all discharges (exclusive of cooling waters) to enclosed bays and estuaries as soon as practicable. Additionally, the policy includes the following discharge prohibitions:

- New dischargers of municipal wastewaters and industrial process waters (exclusive of cooling water discharges), which are not consistently treated and discharged in a manner that would enhance the quality of the receiving waters

- Municipal and industrial waste sludge and untreated sludge digester supernatant, centrate, or filtrate
- Rubbish or refuse into surface waters or at any place where they would be eventually transported to enclosed bays and estuaries
- Direct or indirect discharge of silt, sand, soil, clay, or other earthen materials from onshore operations including mining, construction, and lumbering in quantities that unreasonably affect or threaten to affect beneficial uses
- Discharge of materials of petroleum origin in sufficient quantities to be visible or in violation of waste discharge requirements (except for scientific purposes)
- Discharge of radiological, chemical, or biological warfare agent or high-level radioactive waste
- Discharge or by-pass of untreated waste

State of California Executive Order W-59-93 (Wetlands "No Net Loss" Policy)

Executive Order W-59-93 is often referred to as the *Wetlands "No Net Loss" Policy*. This Executive Order, signed by Governor Pete Wilson on August 23, 1993, establishes State policy for wetlands conservation. The primary objectives of this policy are to: (1) ensure no overall net loss and to achieve a long-term net gain in the quantity, quality, and permanence of wetland acreage in California; (2) reduce procedural complexity in the administration of State and federal wetlands conservation programs; and (3) encourage partnerships to make restoration, landowner incentive programs, and cooperative planning efforts the primary focus of wetlands conservation.

Development of a Policy to Protect Wetlands and Riparian Areas in Order to Restore and Maintain the Water Quality and Beneficial Uses of the Waters of the State

On April 15, 2008, the State Water Board directed the *Development of a Policy to Protect Wetlands and Riparian Areas in Order to Restore and Maintain the Water Quality and Beneficial Uses of the Waters of the State* (State Water Board Resolution No. 2008-0026). Through this resolution, the State Water Board recognizes the vital beneficial services provided by wetlands and riparian areas and establishes the intention of the State Water Board to develop a statewide *Wetland and Riparian Area Protection Policy.* In accordance with the resolution, the policy will be developed and implemented in three phases. The current Phase 1 effort is called the *Wetland Area Protection Policy and Dredge and Fill Regulations*. The purpose of Phase 1 is to protect all waters of the State, including wetlands, from dredge and fill discharges. It will include a wetland definition, a wetland regulatory mechanism based on the CWA section 404(b)(1) guidelines (40 C.F.R. §§ 230-233); and an assessment framework for reporting wetland condition.

Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List

Clean Water Act section 303(d) requires states to identify waters that do not meet, or are not expected to meet, applicable water quality standards by the next listing cycle. The State Water Board adopted the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy) on September 30, 2004 (State Water Board Resolution No. 2004-0063) to establish a standardized approach for developing California's Clean Water Act section 303(d) list in order to realize the overall goal of achieving water quality standards and maintaining beneficial uses in all of California's surface waters.

The Listing Policy describes the process and methodologies used by the State and Regional Water Boards to comply with the listing requirements of Clean Water Act section 303(d). The policy establishes requirements for data quality, data quantity, and administration of the listing process. In order to make decisions regarding attainment of water quality standards, the policy provides guidance for interpreting data and information as they are compared to beneficial uses, existing numeric and narrative water quality objectives, and anti-degradation considerations and uses a weight-of-evidence approach. The policy specifies the frequency of exceedance of applicable water quality objectives that is necessary to make a determination that the water is impaired.

Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options

The goal of the *Water Quality Control Policy for Addressing Impaired Waters* (Impaired Waters Policy) (State Water Board Resolution No. 2005-0050) is to ensure that impaired waters are addressed in a timely and meaningful fashion through actions that are consistent with both USEPA guidance, as well as with State technical, regulatory, and legislative requirements. The policy establishes a set of principles that apply to the process of resolving surface water quality impairments and identifies regulatory tools that may be used under various circumstances to redress water quality impairments. The policy also provides the public with a better understanding of the process and tools used to address surface water quality impairments.

Water Quality Control Policy for Guidance on Development of Regional Toxic Hot Spot Cleanup Plans

The State and Regional Water Boards were mandated to identify toxic hot spots in the enclosed bays and estuaries of each of the seven coastal regions of the State (California Water Code, Chapter 5.6, Section 13390 et seq.). The coastal Water Boards were further mandated to develop Regional Toxic Hot Spot Cleanup Plans specifying where and how each identified toxic hot spot would be remediated. The *Water Quality Control Policy for Guidance on Development of Regional Toxic Hot Spot Cleanup Plans* was adopted by the State Water Board on September 2, 1998 (State Water Board Resolution No. 98-090) to address this requirement. The purpose of the policy is to provide guidance on the development of the regional cleanup plans. The policy contains a specific definition of a toxic hot spot, general ranking criteria, the mandatory contents of the cleanup plans, and issues to be considered by the State Water Board in the development of the consolidated toxic hot spot cleanup plan. The principles contained in this policy apply to all enclosed bays, estuaries, and coastal waters in the State.

Policies Applying to Programs of Implementation for Surface Waters

Water Quality Control Policy on Use and Disposal of Inland Water Used for Power Plant Cooling

The *Water Quality Control Policy on Use and Disposal of Inland Water Used for Power Plant Cooling* was adopted by the State Water Board through Resolution No. 75-58. The purpose of this policy is to provide consistent statewide water quality principles and guidance for adoption of discharge requirements and implementation actions for power plants that rely upon inland waters for cooling. In accordance with this policy, the use of fresh inland waters for power plant cooling will be approved by the Water Boards only when it is demonstrated that the use of other water supply sources or other methods of cooling would be environmentally undesirable or economically unsound. This policy is implemented through Regional Water Board adoption of waste discharge requirements.

Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling

The *Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling* was adopted by the State Water Board on May 4, 2010 (State Water Board Resolution No. 2010-0020), and amended on July 19, 2011 (State Water Board Resolution No. 2011-0033) and June 18, 2013 (State Water Board Resolution No. 2013-0018). The policy establishes technology-based requirements for the implementation of CWA section 316(b) for cooling water intake structures at existing coastal and estuarine power plants. Clean Water Act section 316(b) requires that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact. The intent of the policy is to ensure that the beneficial uses of the State's coastal and estuarine waters are protected, while also ensuring that the electrical power needs essential for the welfare of the citizens of the State are met.

The policy applies to the 19 existing power plants, eight of which are located in the Los Angeles Region, that withdraw water from the State's coastal and estuarine waters using a single-pass cooling system, also known as once-through cooling. In accordance with the policy, existing power plants must renovate their operation by: 1) implementing closed-cycle wet cooling systems, or 2) comparably reducing impacts to aquatic life by other means (e.g., reduce intake flow and velocity or use operational and/or structural controls).

This policy is implemented through NPDES permits. A Statewide Advisory Committee on Cooling Water Intake Structures (SACCWIS) has been established to review implementation plans and schedules and provide recommendations to the State Water Board at least annually. The State Water Board will consider SACCWIS's recommendations and make modifications to the policy, as appropriate.

Plan for California's Nonpoint Source Pollution Control Program

The California Nonpoint Source (NPS) Program is charged with reducing and preventing NPS pollution so that the waters of California support a diversity of biological, recreational, and other beneficial uses. This responsibility is met through a series of NPS activities, including the funding of projects to address specific water quality issues/pollutants, and development of regulatory tools to address various land uses and activities (irrigated agriculture, grazing, marinas, etc.).

The *Plan for California's Nonpoint Source Pollution Control Program* (Program Plan) was adopted by the State Water Board through State Water Board Resolution No. 99-114 in December 1999 to improve the State's ability to effectively manage NPS pollution and conform to the requirements of the federal Clean Water Act and the federal Coastal Zone Act Reauthorization Amendments of 1990. The NPS Program Plan consists of a Fifteen Year Strategy with Three Five-Year Implementation Plans. These documents were developed by staff of the State Water Board's Division of Water Quality and the California Coastal Commission (CCC), in coordination with the Regional Water Boards and staff from over twenty other State agencies. The documents were submitted for final federal approval on February 4, 2000, to the USEPA and the National Oceanic and Atmospheric Administration (NOAA). A letter granting full approval of the NPS Program Plan was signed on July 17, 2000.

Policy for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program

The *Policy for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program* (NPS Implementation and Enforcement Policy) was adopted by the State Water Board on May 20, 2004. It explains how the NPS Program Plan will be implemented and enforced using Porter-Cologne Act mandates and authorities delegated to the State and Regional Water Boards by the California Legislature. The policy also provides a bridge between the NPS Program Plan and the State Water Board's Enforcement Policy (described below). The information provided in the NPS Implementation and Enforcement Policy is designed to assist all responsible and/or interested parties in understanding how the State's NPS water quality control requirements will be implemented and enforced.

Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California

The *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* was adopted by the State Water Board in March 2000 and amended in February 2005 (State Water Board Resolution No. 2005-0019). This policy applies to discharges of toxic pollutants into the inland surface waters, enclosed bays, and estuaries of California subject to regulation under the Porter-Cologne Water Quality Control Act and the federal Clean Water Act.

The purpose of this policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean[1] surface waters in a manner that promotes statewide consistency. The policy establishes: 1) implementation provisions for priority pollutant criteria promulgated by the USEPA through the National Toxics Rule (NTR) and through the California Toxics Rule (CTR), and for priority pollutant objectives established by Regional Water Boards in their water quality control plans; 2) monitoring requirements for 2,3,7,8-TCDD equivalents; and 3) chronic toxicity control provisions. In addition, the policy includes special provisions for certain types of discharges and factors that could affect the application of other provisions in this policy.

Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits

The *Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits* (State Water Board Resolution No. 2008-0025) was adopted by the State Water Board in April 2008 and applies to all National Pollutant Discharge Elimination System (NPDES) permits adopted by the Regional Water Boards that are modified or reissued after the effective date of the policy.

The purpose of this policy is to authorize the inclusion of certain compliance schedules in NPDES permits to achieve effluent limitations implementing new or revised water quality standards. The policy applies to all NPDES permits adopted by the Water Boards that must comply with Clean Water Act section 301(b)(1)(C) and that are modified or reissued after the effective date of the Policy. This policy authorizes a Water Board to include a compliance schedule in a permit for an existing discharger to implement a new, revised, or newly interpreted water quality objective or criterion in a water quality standard that results in a permit limitation more stringent than the limitation previously imposed where the Water Board determines that the discharger has complied with the application requirements in the policy and has demonstrated that the discharger needs additional time to implement actions to comply with the limitation. The policy does not authorize compliance schedules for permit limitations based on criteria established in the NTR or CTR.

[1] Ocean waters are the territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

Policies Applying to Programs of Implementation for Groundwater

Policy on the Disposal of Shredder Waste

The State Water Board adopted the *Policy on the Disposal of Shredder Waste* (State Water Board Resolution No. 87-22) in March 1987. The policy allows the disposal of wastes produced by the mechanical destruction of car bodies, old appliances, and similar castoffs, into certain landfills under specific conditions designated and enforced by the Regional Water Boards. Landfills in the Region that receive auto shredder wastes are regulated by waste discharge requirements adopted by the Regional Water Board that include specific monitoring and reporting requirements to ensure that the disposal of shredder wastes at such facilities are consistent with the State Water Board policy.

Policy for Regulation of Discharges of Municipal Solid Waste

The USEPA, under Title 40 of the Code of Federal Regulations (C.F.R.), Parts 257 and 258 (Subtitle D), revised existing regulations for municipal solid waste (MSW) disposal facilities in response to the 1984 Hazardous and Solid Waste Amendments of the Resources Conservation and Recovery Act (RCRA) and added requirements addressing location restrictions, facility operation, design criteria, groundwater monitoring and corrective action, closure and post-closure maintenance, and financial assurance. The USEPA delegated the responsibility for implementing these regulations to states with a fully approved landfill regulatory program. As the responsible agencies for an approved state with respect to water quality protection aspects of the federal MSW regulations, the State Water Board adopted the Policy for Regulation of Discharges of Municipal Solid Waste (State Water Board Resolution No. 93-62) in June 1993 to implement the federal Subtitle D regulatory requirements. Resolution No. 93-62 was amended in 2005 by State Water Board Resolution No. 2005-0058. The Regional Water Board implemented State Water Board Resolution No. 93-62 by adopting WDRs (Order No. 93-062) that revised existing WDRs for all active MSW landfills in the Region to include Subtitle D requirements that were more stringent than State regulations.

Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304

State Water Board Resolution No. 92-49 (amended by Resolution No. 96-79) provides a statewide consistent approach for the investigation and cleanup and abatement of contaminated sites. The policy includes, but is not limited to, the following procedures for site cleanup:

- A reasonable effort to identify all dischargers associated with the discharge; however, it is not necessary to identify all dischargers in order to proceed with site investigation and cleanup.
- Guidelines to determine: 1) the nature and horizontal and vertical extent of the discharge, and 2) appropriate cleanup and abatement measures.
- Direction to approve plans for site investigation and cleanup that proceed concurrently rather than sequentially, when necessary to protect water quality.
- Requirement for the investigation and cleanup to extend to offsite locations affected by the discharge or threatened by the discharge.
- Requirement for the discharger to submit reports on results of all phases of investigations and cleanup.
- Prescribe cleanup levels consistent with levels previously employed by the Regional Water Board for similar waste discharges, site characteristics, and water quality considerations.
- Support the selection of cost-effective methods for investigation and cleanup, as appropriate.
- Actions for cleanup and abatement must conform to the provisions of the Antidegradation Policy (Resolution No. 68-16) and State and Regional Water Quality Control Plans.
- Ensure the cleanup and abatement of discharges in a manner that promotes attainment of either background water quality or the best water quality reasonably attainable if background levels of water quality cannot be restored. Alternative cleanup levels less stringent than background shall:
    - Be consistent with maximum benefit to the people of the State;
    - Not unreasonably affect present and anticipated beneficial use of water; and
    - Not result in water quality less than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards.
- Consider the designation of containment zones in accordance with section III.H of Resolution No. 92-46 (as amended by Resolution No. 96-79).

- Determine schedules for investigation and cleanup taking into account factors such as, degree of impact on water quality and beneficial uses, obligation to achieve timely compliance, financial and technical resources available to the discharger.

Actions to Improve Administration of the Underground Storage Tank (UST) Cleanup Fund and UST Cleanup Program

State Water Board Resolution No. 2009-0042 directs changes to the management of the UST Cleanup Fund (fund) and UST Cleanup Program implementation. Due to increased financial burden on the UST Cleanup Fund, the management of the fund has been restructured to expend limited fund resources on high priority UST cleanup cases (i.e., cases where there is a threat to water quality and sensitive receptors).

This resolution directs a review of all UST cleanup cases to ensure that all cases receive appropriate regulatory action, particularly high priority cases. The general framework for case review is described below.

1. Determination of whether or not the case is ready for closure.
2. If the case is not ready for closure, determination of the following:
    - The impediments to closure.
    - The specific environmental benefits of any additional work to be performed at the site.
    - The existing sensitive receptors that are likely to be impacted by contamination at the site and the probable timeframe for those impacts to occur.
3. Each case review shall be made publicly available on the State Water Board's GeoTracker web site within 30 days of when it is completed.
4. The Regional Water Board will close cases identified as ready for closure within 90 days.

Furthermore, in order to alleviate fund resources, monitoring requirements are reduced from quarterly to semiannual or less frequent unless site-specific conditions warrant otherwise.

Additionally, the fund manager may review the case history for all claims that have been active for five years or more and to make a recommendation to the State Water Board for closure (five year review). Upon receiving a recommendation, the State Water Board may seek to close a case under the jurisdiction of a Regional Water Board.

Water Quality Control Policy for Low-Threat Underground Storage Tank Closure

The State Water Board adopted the *Low-Threat UST Case Closure Policy* on May 1, 2012 (State Water Board Resolution No. 2012-0016). The policy applies to all petroleum UST sites subject to Chapter 6.7 of Division 20 of the Health and Safety Code and Chapter 16 of Division 3 of Title 23 of the California Code of Regulations.

The policy provides criteria for UST case closure evaluation by the regulatory agencies. The policy establishes: (1) general criteria that specify the minimum requirements for a site to be considered for closure, and (2) media-specific criteria that include groundwater, vapor intrusion to indoor air, and direct contact and outdoor air exposure for case specific evaluation. The media specific criteria contain numeric criteria for use. If both the general and applicable media-specific criteria are satisfied, then the leaking UST case is generally considered to present a low threat to human health, safety, and the environment.

The policy recognizes, however, that even if all of the specified criteria are met, there may be unique attributes of the case or site-specific conditions that increase the risk associated with the residual petroleum constituents. In these cases, the regulatory agency overseeing corrective action at the site must identify the conditions that make case closure under the policy inappropriate.

The policy is implemented through all Regional Water Boards and Local Oversight Program (LOP) agencies in the State. Staff of regulatory agencies evaluate each individual case per the policy criteria and determine if the case closure is warranted. The case evaluation process is documented in the Geotracker database where it can be viewed by the public. If no closure is granted by the local agencies, responsible parties may request review by the State Water Board.

Water Quality Control Policy for the Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems

The *Water Quality Control Policy for the Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems* (State Water Board Resolution No. 2012-0032) was adopted by the State Water Board on June 19, 2012. The purpose of the policy is to allow the continued use of onsite wastewater treatment systems (OWTS, commonly known as septic systems), while protecting water quality and public health. The policy establishes a statewide, risk-based, tiered approach for the regulation and management of OWTS installations and replacements and sets the level of performance and protection expected from OWTS. In particular, the policy requires actions where OWTS contribute to water quality degradation that adversely affects beneficial uses of the State's waters.

The policy only authorizes subsurface disposal of domestic strength, and in limited instances high strength, wastewater and establishes minimum requirements for the permitting, monitoring, and operation of OWTS for protecting beneficial uses of waters of the State and preventing or correcting conditions of pollution and nuisance. The policy also conditionally waives the requirement for owners of OWTS to apply for and receive Waste Discharge Requirements in order to operate their systems when they meet the conditions set forth in the policy. Nothing in the policy supersedes or requires modification of Total Maximum Daily Loads or Basin Plan prohibitions of discharges from OWTS.

Policies Related to Water Reclamation and Recycling

Policy with Respect to Water Reclamation in California

The State Water Board adopted the *Policy with Respect to Water Reclamation in California* (State Water Board Resolution No. 77-1) in January 1977. This policy recognizes the shortage of water in many areas of the State and the need to conserve water for beneficial uses. In addition, the policy outlines the State and Regional Water Boards support for and encouragement of water reclamation, while also acknowledging the need to protect public health. As per this policy, the State and Regional Water Boards encourage reclamation projects for which:

- Beneficial use will be made of wastewaters that would otherwise be discharged to marine or brackish receiving waters or evaporation ponds;
- Reclaimed water will replace or supplement the use of fresh water or better quality water; or
- Reclaimed water will be used to preserve, restore, or enhance instream beneficial uses which include, but are not limited to, fish, wildlife, recreation, and aesthetics associated with any surface water or wetlands.

Resolution Requiring Sustainable Water Resources Management

Through Resolution No. 2008-0030, the State Water Board recognized that sustainable water resources management is vital to California's future and declared its commitment to sustainability as a core value for all Water Board activities and programs. Through the resolution, the State Water Board directs staff to require sustainable water resources management in all future policies, guidelines, and regulatory actions. The State Water Board further directs the Water Boards to promote and prioritize projects addressing recycled water, conservation, and low impact development best management practices. Additionally, this resolution directs coordination with partners from other government agencies, non-profit organizations, and businesses to enhance sustainable activities within the administration of Water Board programs.

The Recycled Water Policy

The *Recycled Water Policy* (State Water Board Resolution No. 2009-0011) was adopted in 2009 and revised in 2013 (State Water Board Resolution No. 2013-0003). The purpose of this policy is to increase the beneficial use of recycled water from municipal wastewater sources in a manner that implements State and federal water quality laws. The policy provides direction to the Regional Water Boards, proponents of recycled water projects, and the public regarding the appropriate criteria to be used by the State and Regional Water Boards in issuing permits for recycled water projects.

The streamlined permitting criteria described in the policy are intended to maximize consistency in the recycled water permitting process throughout the State, while also preserving the Regional Water Boards authority and flexibility to address site-specific conditions. The policy also recognizes the potential for increased salt and nutrient loading to groundwater basins as a result of increased recycled water use and, therefore, requires the development of regional or sub-regional salt and nutrient management plans for groundwater basins throughout the State.

Finally, the policy provides requirements for monitoring constituents of emerging concern (CECs) (e.g., endocrine disrupters, personal care products, and pharmaceuticals) in recycled water used for groundwater recharge reuse. Recognizing that the state of knowledge regarding CECs was incomplete, the State Water Board, in consultation with the California Department of Public Health (CDPH), convened an advisory panel to determine the current state of scientific knowledge regarding the risks of CECs to public health and the environment. The ensuing report formed the basis for the monitoring requirements for CECs in recycled municipal wastewater that are prescribed in the policy. These requirements include monitoring for:

- Human health-based CECs;
- Performance indicator CECs (individual CEC used for evaluating a family of CECs with similar physicochemical or biodegradable characteristics); and
- Surrogates (measurable physical or chemical property, such as chlorine residual or electrical conductivity, that can be used to measure the effectiveness of trace organic compound removal by treatment process and/or provide an indication of a treatment process failure).

These monitoring requirements apply to: (i) recycled water producers, including entities that further treat or enhance the quality of recycled water supplied by municipal wastewater treatment facilities, and (ii) groundwater recharge reuse facilities.

Policies Related to Enforcement

Water Quality Enforcement Policy

The *Water Quality Enforcement Policy* (State Water Board Resolution No. 2009-0083) addresses the enforcement component of the State and Regional Water Boards' regulatory framework. The policy creates a structure for identifying and investigating instances of noncompliance, for taking enforcement actions that are appropriate in relation to the nature and severity of the violation, and for prioritizing enforcement resources to achieve maximum environmental benefits. The policy:

- establishes a process for ranking enforcement priorities,
- sets forth an assessment methodology for discretionary administrative civil liabilities,
- sets forth guidance for assessment of mandatory minimum penalties,
- recognizes the use of alternatives to the assessment of civil liabilities,
- identifies circumstances in which the State Water Board will take action,
- addresses the eligibility requirements for small communities to qualify for carrying out compliance projects,
- emphasizes the recording of enforcement data and the communication of enforcement information to the public and the regulated community; and

- establishes annual enforcement reporting and planning requirements for the State and Regional Water Boards.

Policy on Supplemental Environmental Projects

The Regional Water Board may allow a discharger to satisfy part of the monetary assessment imposed in an administrative civil liability (ACL) order by completing or funding one or more Supplemental Environmental Projects (SEPs). SEPs are projects that enhance the beneficial uses of the waters of the State, that provide a benefit to the public at large and that, at the time they are included in the resolution of an ACL action, are not otherwise required of the discharger.

The *SEP Policy* (State Water Board Resolution No. 2009-0013) contains procedures and guidelines for SEP approval and selection. The policy guides the evaluation of SEPs by Regional Water Board staff to ensure that the selected projects have environmental value, further the enforcement goals of the State and Regional Water Boards, and are subject to appropriate input and oversight. Additionally, the policy directs the types of projects that can be SEPs and contains conditions to increase accountability. These conditions include: (1) requiring that all SEPs be imposed as stipulated ACL orders in settlement of an ACL complaint or some other order entered under the authority of a State or Regional Water Board; (2) requiring that funds put towards the SEP be addressed as a suspended liability until the SEP is completed to the satisfaction of the Regional Water Board; and (3) making the discharger responsible for the successful completion of the project from start to finish.

Significant Regional Water Board Resolutions

The Regional Water Board has adopted numerous resolutions over the years that are significant to the Board's mission and implementation of the Basin Plan. For reference, the resolutions of particular significance are listed in Table 5-1, below, and are incorporated by reference.[2] This list is intended to provide historical context to the implementation of the Basin Plan and not all of

[2] Chapter 5 of the 1994 edition of the Basin Plan summarized and incorporated by reference certain Regional Water Board resolutions important to the Regional Water Board's implementation of the Basin Plan. That incorporation by reference did not confer any regulatory authority beyond the Regional Water Board's initial action. For the 2014 edition of this chapter, Regional Water Board resolutions important to Basin Plan implementation, which have been adopted since 1994, have been included with the same intent, while some referenced in the 1994 edition have been removed where no longer relevant.

the resolutions listed below are still applicable (i.e., some may have been replaced by more recent resolutions or orders, while others may have expired).

Table 5-1: Significant Regional Water Board Resolutions, excluding those that amended the Basin Plan (see Table 5-2 below).

Resolution Number	Title	Adoption Date
Triennial Reviews		
84-05	Triennial Review of Water Quality Control Plans - Santa Clara River Basin (4A)/Los Angeles River Basin (4B)	25-Jun-1984
88-10	Completion of the Triennial Review Public Hearing and the 1988 Triennial Review Process for the Water Quality Control Plans (Basin Plans) - Santa Clara River Basin (4A)/Los Angeles River Basin (4B)	25-Jul-1988
95-003	Prioritization of Basin Planning Issues Los Angeles Region	12-Jun-1995
2001-011	Triennial Review Prioritization of Basin Planning Issues	31-May-2001
2005-003	2004 Triennial Review Prioritization of Basin Planning Issues	3-Mar-2005
R10-001	2008-2010 Triennial Review Selection of Basin Planning Projects	1-Apr-2010
R12-001	2011-2013 Triennial Review Selection of Basin Planning Projects	2-Feb-2012
CWA Section 305(b) Water Quality Assessment Reports & Section 303(d) Lists		
89-10	Adoption of Regional Water Quality Assessment Report	4-Dec-1989
92-05	Approval of Regional Water Quality Assessment	27-Jan-1992
92-06	Approval of Regional Water Quality Assessment (Update of Resolution No. 92-05)	9-Mar-1992
98-07	Resolution Adopting the 1998 303(d) List	13-Apr-1998
R09-004	Approval of the 2008 Los Angeles Regional Water Quality Control Board Integrated Report of Federal Clean Water Act (CWA) Section 305(b) and Section 303(d) List of Water Quality Limited Segments	16-Jul-2009
General Water Quality		
73-21	Actions Affecting Water Quality by Local Agency Formation Commissions - Comments by this Agency on any Proposals within this Region to Incorporate New Cities or Form Special Districts that may Affect Water Quality	7-Sep-1973
74-08	Expressing Concern Over Possible Effects on Water Quality from Offshore Oil Drilling and Production	19-Aug-1974

Resolution Number	Title	Adoption Date
90-02	Acceptance of the Southern California Association of Governments' Final Report on the State of Santa Monica Bay	26-Feb-1990
93-006	Accepting the Final Report of the Water Quality Advisory Task Force	1-Nov-1993
96-011	Statement Recognizing Results of a Technical Investigation of Nitrate Contamination In Ground Water - Community of Agua Dulce / Sierra Pelona Basin	30-Sep-1996
98-014	Consideration of a Resolution Approving the Signing of a Memorandum of Understanding and Subsequent Amendment by the Executive Officer Regarding the Los Angeles Basin Contaminated Sediments Task Force	3-Aug-1998
Program Implementation		
52-3	Prescribing Requirements for Subsurface Disposal of Sewage from Private Sewage Disposal Systems	16-Oct-1952
52-4	Waiving Reporting of Sewage Discharges from Family Dwellings	30-Oct-1952
53-5	Waiving Reporting of Waste Water Discharges from Family Dwelling Swimming Pools	15-Oct-1953
53-6	Waiving Reporting of Sewage Discharges from Family Dwellings, City of South Pasadena	15-Oct-1953
54-4	Waiving Reporting of Sewage Discharges from Family Dwellings with the City of Ojai	14-Jan-1954
69-33	Recommending Consideration of Reclamation of Water from Sewage in the Malibu Area	30-Jul-1969
70-17	Well Standards in Central, Hollywood, Santa Monica and West Coast Basins, Los Angeles County	11-Feb-1970
70-18	Well Standards in Ventura County	11-Feb-1970
70-68	Requiring Cities and Counties to Notify the Regional Board of the Filing of Development Proposals Which Involve a Major Waste Discharge	18-Nov-1970
71-10	Consideration of Dredging Activities Los Angeles-Long Beach Harbors	27-Oct-1971
72-4	Policy Statement Relative to Sewage Disposal in the Malibu Area	31-May-1972
73-14	Statement of Policy on Water Supply and Wastewater Disposal in Newly Developing Areas Within the Los Angeles Region	22-May-1973
74-11	Permitting the Use of a Subsurface Disposal System Requiring a Protective Seawall (including Policy Statement Regarding Seawalls)	18-Nov-1974

Resolution Number	Title	Adoption Date
77-06	Guidance for Persons Wishing to Use Reclaimed Wastewater During the Drought	26-Sept-1977
78-07	Resolution of Intent Regarding Compliance Date for Trace Element Limits in the Ocean Plan	26-Jun-1978
78-09	A Resolution Requesting the State Board to Seek Exemption from U.S. Coast Guard Regulations for Channel Islands Harbor Relative to Vessel Waste Discharges	24-Jul-1978
78-10	A Resolution Requesting the State Water Resources Control Board to Seek Exemption from U.S. Coast Guard Regulations for Avalon Bay Relative to Vessel Waste Discharges	24-Jul-1978
78-12	Regional Board Consideration of the 208 Area wide Waste Treatment Management Plan for Ventura County Adopted by the Board of Directors of the Ventura Regional County Sanitation District on June 22, 1978	28-Aug-1978
83-03	Implementation of Those Elements of the Amendment to the Area wide Waste Treatment Management Plan Appropriate to its Jurisdiction	24-Oct-1983
85-03	Rescinding Resolution No. 56-45, “Adopting an Operating Procedure for Simplifying Filing of Reports on Disposal of Rotary Mud Resulting from Oil Well Drilling Operations”	25-Mar-1985
85-09	Designation of Class III Landfill Within the Los Angeles Region to Accept Shredder Wastes as Required by Senate Bill No. 976	25-Nov-1985
88-11	Directing Staff to Apply for a Cooperative Agreement With the U.S. Environmental Protection Agency to Accelerate Source Investigation Activities in the San Gabriel Valley	22-Aug-1988
88-12	Supporting Beneficial Use of Available Reclaimed Water in Lieu of Potable Water for the Same Purpose	26-Sep-1988
90-10	Resolution of Recommendation to State Water Resources Control Board to Grant an Exception to the Ocean Plan Prohibition for Waste Discharge to an Area of Special Biological Significance - San Nicolas Island	20-Aug-1990
94-005	Santa Monica Bay Restoration Plan: A Comprehensive Conservation and Management Plan for the Bay, and that the Regional Water Board Acknowledges the Five Years of Cooperative Effort that Produced this Plan, which Effort included Significant Contributions from the Staff of the Regional Water Board	9-May-1994
94-009	Resolution to Approve the Proposal by the City of Los Angeles to Phase out the Discharge of Wastewater Effluent from Terminal Island Treatment Plant into Los Angeles Harbor through Implementation of a Water Reclamation Plan	31-Oct-1994

Resolution Number	Title	Adoption Date
98-08	Approving Best Management Practices for Municipal Storm Water and Urban Runoff Management Programs in Los Angeles County (NPDES NO. CAS614001)	13-Apr-1998
98-022	Oxnard Forebay: Strategy for Addressing Nitrogen Impacts	14-Dec-1998
99-03	Approving Best Management Practices for Municipal Storm Water and Urban Runoff Management Programs in Los Angeles County (NPDES NO. CAS614001)	22-Apr-1999
2000-02	Approving the Standard Urban Storm Water Mitigation Plan for Municipal Storm Water and Urban Runoff Management Programs in Los Angeles County	26-Jan-2000
2000-21	To Extend the Interim Limits for Discharges to the Santa Clara River Until December 7, 2001	7-Dec-2000
2000-22	To Extend the Interim Chloride Limits for Discharges to Calleguas Creek until March 31, 2001	7-Dec-2000
R4-02-014	Supporting a Local Coastal Program for the City of Malibu	29-Aug-2002
2002-013	Support the Consolidated Slip Restoration Project's Plan to Implement the Consolidated Slip Contaminated Sediment Cleanup Project to Address Contaminated Sediment Problems and Eliminate Beneficial Use Impairments in Consolidated Slip, a Waterway Within Los Angeles Harbor	11-Jul-2002
R02-021	Waiver of Waste Discharge Requirements for Specified Composting Operations	12-Dec-2002
R04-008	Approving Waivers of Waste Discharge Requirements and a Template Memorandum of Understanding for Onsite Wastewater Treatment Systems	10-Jun-2004
R04-014	Approving a Memorandum of Understanding and Waivers of Waste Discharge Requirements for Onsite Wastewater Treatment Systems in the City of Malibu	5-Aug-2004
2005-002	Reiteration of Existing Authority to Regulate Hydromodifications Within the Los Angeles Region, and Intent to Evaluate the Need for and Develop as Appropriate New Policy or other Tools to Control Adverse Impacts from Hydromodification on the Water Quality and Beneficial Uses of Water Courses in the Los Angeles Region	27-Jan-2005
R06-023	Establishing a Brownfield Subcommittee at the California Regional Water Quality Control Board, Los Angeles Region	14-Dec-2006
R4-2008-011	Consideration of Termination of the Memorandum of Understanding for Onsite Wastewater Treatment Systems for the City of Malibu	20-Nov-2008
R11-010	Authorizing the Executive Officer to Sign a Memorandum of Understanding with the City of Malibu and the State Water Resources Control Board Regarding the Malibu Civic Center Area Prohibition	14-Jul-2011

Resolution Number	Title	Adoption Date
Enforcement		
96-030	Water Quality Enforcement Policy	18-Apr-1996
97-005	Regional Board Enforcement Strategy	3-Mar-1997

Regional Water Board Resolutions Incorporating Basin Plan Updates and Amendments (not including TMDLs)

In addition to the significant Regional Water Board resolutions listed above, some Regional Water Board resolutions specifically incorporated updates and amendments to the Basin Plan. A chronology of the updates and amendments to the Basin Plan is provided in Table 5-2, below. More information about the most recent Basin Plan updates and amendments can be found under the following link: http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/wqs_list.shtml.

Table 5-2: Regional Water Board Resolutions incorporating Basin Plan Updates and Amendments (not including TMDLs; see Table 5-3).

Resolution Number	Title	Adoption Date
71-6	Interim Water Quality Control Plan for Santa Clara River Basin and Los Angeles River Basin	10-Jun-1971
71-7	Interim Water Quality Control Plan for Santa Clara River Basin and Los Angeles River Basin - with Project List Titled Appendix A	10-Jun-1971
75-10	Water Quality Control Plan for Santa Clara River Basin (4A)	3-Mar-1975
75-11	Water Quality Control Plan for Los Angeles River Basin (4B)	10-Mar-1975
76-05	Revisions to Water Quality Control Plan for Santa Clara River Basin (4A)	26-Apr-1976
76-06	Revisions to Water Quality Control Plan for Los Angeles River Basin (4B)	26-Apr-1976
78-02	Revisions to Water Quality Control Plan for Santa Clara River Basin (4A)	27-Mar-1978
78-13	Revisions to Water Quality Control Plan for Los Angeles River Basin (4B)	27-Nov-1978

Resolution Number	Title	Adoption Date
89-03	Incorporation of Sources of Drinking Water Policy into the Water Quality Control Plans (Basin Plans) - Santa Clara River Basin (4A)/Los Angeles River Basin (4B)	27-Mar-1989
90-11	Adoption of Revised Water Quality Objectives and Beneficial Uses for Piru, Sespe, and Santa Paula Hydrologic Areas - Santa Clara River Basin (4A)	22-Oct-1990
91-06	Amendment to the Water Quality Control Plan for the Los Angeles River Basin and Implementation Plan Concerning the Extraction of Ground Water Within the San Gabriel Valley Basin	3-Jun-1991
94-007	Adoption of an Update of the Water Quality Control Plans for the Los Angeles Region	13-Jun-1994
97-02	Amendment to the Water Quality Plans to Incorporate a Policy for Addressing Levels of Chloride in Discharges of Wastewaters	27-Jan-1997
98-018	Amendment to the Water Quality Plans to Incorporate Changes in [Municipal and Domestic Supply] Beneficial Use Designations for Selected Waters	2-Nov-1998
99-13	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Septic System Prohibition in the Oxnard Forebay	12-Aug-1999
2001-018	Amendment to the Water Quality Control Plan for the Los Angeles Region to Update the Bacteria Objectives for Water Bodies Designated for Water Contact Recreation	25-Oct-2001
2002-011	Amendment to the Water Quality Control Plan for the Los Angeles Region to Update the Ammonia Objectives for Inland Surface Waters (Including Enclosed Bays, Estuaries and Wetlands) with Beneficial Uses Designations for Protection of "Aquatic Life"	25-Apr-2002
2002-022	Amendment to the Water Quality Control Plan (Basin Plan) for the Los Angeles Region to Incorporate Implementation Provisions for the Region's Bacteria Objectives and to Incorporate a Wet-Weather Total Maximum Daily Load for Bacteria at Santa Monica Bay Beaches	12-Dec-2002
2003-001	Resolution Amending the Water Quality Control Plan for the Los Angeles Region to Incorporate Language Authorizing Compliance Schedules in NPDES Permits	30-Jan-2003
2003-010	Amendment to the Water Quality Control Plan for the Los Angeles Region to Suspend the Recreational Beneficial Uses in Engineered Channels During Unsafe Wet Weather Conditions	10-Jul-2003
03-015	Amendment to the Water Quality Control Plan for the Los Angeles Region to Update the Chloride Objective for Reach 3 at Santa Paula in the Lower Santa Clara River	6-Nov-2003

Resolution Number	Title	Adoption Date
2004-022	Amendment to the Water Quality Control Plan for the Los Angeles Region to Update the Ammonia Objectives for Inland Surface Waters not Characteristic of Freshwater (Including Enclosed Bays, Estuaries, And Wetlands) with Beneficial Use Designations for Protection of "Aquatic Life"	4-Mar-2004
2005-014	Amendment to the Water Quality Control Plan for the Los Angeles Region to Revise the Early Life Stage Implementation Provision of the Freshwater Ammonia Objectives for Inland Surface Waters (Including Enclosed Bays, Estuaries And Wetlands) for Protection of Aquatic Life	1-Dec-2005
2006-003	Basin Plan Amendment to Incorporate a Variance Provision for the Groundwater Mineral Quality Objectives from Coastal Groundwater Areas with High Concentrations of Naturally Occurring Minerals	9-Mar-2006
R4-2006-021	Nunc Pro Tunc Amendment to Correct a Clerical Error in the Basin Plan Amendment to Incorporate a Variance Provisions for the Groundwater Mineral Quality Objectives from Coastal Groundwater Areas with High Concentrations of Naturally Occurring Minerals	9-Nov-2006
2006-022	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate Water-Effects Ratios (WERs) for Copper in Lower Calleguas Creek and Mugu Lagoon Located in the Calleguas Creek Watershed, Ventura County	9-Nov-2006
2007-005	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate Site-Specific Objectives for Ammonia in Select Waterbodies in the Santa Clara, Los Angeles and San Gabriel River Watersheds	7-Jun-2007
R4-2008-012	Amendment to the Water Quality Control Plan for the Los Angeles Region to Adopt Site Specific Chloride Objectives and to Revise the Upper Santa Clara River Chloride TMDL	11-Dec-2008
R09-007	Amendment to the Water Quality Control Plan for the Coastal Watersheds of Ventura and Los Angeles Counties to Prohibit On-Site Wastewater Disposal Systems in the Malibu Civic Center Area	5-Nov-2009
R10-005	Amendment to the Water Quality Control Plan for the Los Angeles Region to Update the Bacteria Objectives for Freshwaters Designated for Water Contact Recreation by Removing the Fecal Coliform Objective	8-Jul-2010
R11-011	Non-Regulatory Amendments to the Water Quality Control Plan for the Los Angeles Region to Administratively Update Chapter 2 "Beneficial Uses" by Incorporating Previously Adopted Amendments, and Updated Surface and Groundwater Maps and Corresponding Beneficial Use Tables	10-Nov-2011

Resolution Number	Title	Adoption Date
R11-013	Proposed Non-Regulatory Amendment to the Basin Plan to Administratively Update Chapter 7: "Total Maximum Daily Loads (TMDLs)" by Incorporating Previously Adopted TMDLs	8-Dec-2011
R13-003	Non-Regulatory Amendments to the Water Quality Control Plan for the Los Angeles Region to Administratively Update Chapter 3 "Water Quality Objectives" by Incorporating Previously Adopted Amendments and Updated Tables	2-May-13

Total Maximum Daily Loads (TMDLs)

The majority of TMDLs for waterbodies in the Los Angeles Region have been developed and adopted by the Regional Water Board as amendments to the Basin Plan and are included in Chapter 7. However, in some cases, USEPA established TMDLs for waterbodies in the Region or the Regional Water Board established a TMDL through a single regulatory action. In accordance with CWA sections 303(d)(2) and 303(e)(3)(C) and federal regulations at 40 C.F.R. section 130.6(c)(1), the USEPA-established TMDLs and those TMDLs established by the Regional Water Board through a single regulatory action are listed below in Table 5-3 along with those TMDLs adopted as amendments to this Basin Plan. More information about the Region's TMDLs can be found on the Regional Water Board's website (http://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/). The TMDLs are grouped by watershed in the table below.

Table 5-3: TMDLs Applicable to Waterbodies within the Los Angeles Region.

Resolution/Order number	Title	Date Adopted/ Established	Regulatory Action
Ballona Creek			
2001-014	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Trash in the Ballona Creek and Wetland	19-Sep-2001	BPA
04-023	Amendment to the Water Quality Control Plan for the Los Angeles Region to Amend the Total Maximum Daily Load for Trash in the Ballona Creek and Wetland	4-Mar-2004	BPA

Resolution/Order number	Title	Date Adopted/ Established	Regulatory Action
R05-008	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Toxic Pollutants in Ballona Creek Estuary	7-Jul-2005	BPA
2006-011	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Bacteria in Ballona Creek, Ballona Estuary and Sepulveda Channel	8-Jun-2006	BPA
R2007-015	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Metals in Ballona Creek	6-Sep-2007	BPA
N/A	Ballona Creek Wetlands Sediments and Invasive exotic Vegetation TMDL	26-Mar-2012	USEPA TMDL
Calleguas Creek			
02-017	Amendment to the Water Quality Control Plan for the Los Angeles Region to Include a TMDL for Nitrogen Compounds and Related Effects in Calleguas Creek	24-Oct-2002	BPA
R4-2005-009	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Toxicity, Chlorpyrifos, and Diazion in Calleguas Creek, its Tributaries and Mugu Lagoon	7-Jul-2005	BPA
R4-2005-010	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Organochlorine Pesticides, Polychlorinated Biphenyls, and Siltation in Calleguas Creek, its Tributaries, and Mugu Lagoon	7-Jul-2005	BPA
R4-2006-012	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate aTotal Maximum Daily Load for Metals for the Calleguas Creek, its Tributaries, and Mugu Lagoon	8-Jun-2006	BPA
R4-2007-007	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Trash in Revolon Slough and Beardsley Wash	7-Jun-2007	BPA
R4-2007-016	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Boron, Chloride, Sulphate, and TDS (Salts) for Calleguas Creek Watershed	4-Oct-2007	BPA
R4-2008-009	Amendment to the Water Quality Control Plan for the Los Angeles Region through Revision of the waste Load Allocations for the Calleguas Creek Watershed Nitrogen Compounds and Related Effects to Total maximum Daily Load	11-Sep-2008	BPA
N/A	Total Maximum Daily Loads for Pesticides, PCBs, and Sediment Toxicity in Oxnard Drain 3	6-Oct-2011	USEPA TMDL

Resolution/Order number	Title	Date Adopted/ Established	Regulatory Action
Dominguez Channel			
R4-2007-006	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Trash in Machado Lake	7-Jun-2007	BPA
R08-006	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Eutrophic, Algae, Ammonia, and Odors (Nutrient) for Machado Lake	1-May-2008	BPA
R10-008	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Pesticides and PCBs for Machado Lake	2-Sep-2010	BPA
R11-008	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Toxic Pollutants in Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters	5-May-2011	BPA
LA Co. Coastal Streams			
R09-005	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate aTotal Maximum Daily Load for Organochloride (OC) Pesticides, Polychlorinated Biphenyls (PCBs), Sediment Toxicity, Polycyclic Aromatic Hydrocarbons (PAHs), and Metals for Colorado Lagoon	1-Oct-2009	BPA
Los Angeles Area Lakes			
N/A	Los Angeles Area Lakes Total Maximum Daily Loads for Nitrogen, Phosphorus, Mercury, Trash, Organochlorine Pesticides and PCBs	26-Mar-2012	USEPA TMDL
Los Angeles Harbor			
2004-011	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Bacteria at Los Angeles Harbor (Inner Cabrillo Beach and Main Ship Channel)	1-Jul-2004	BPA
Los Angeles River			
2001-013	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Trash in the Los Angeles River Watershed	19-Sep-2001	BPA
R03-009	Amendment to the Water Quality Control Plan for the Los Angeles Region to Include a TMDL for Nitrogen Compounds and Related Effects in the Los Angeles River	10-Jul-2003	BPA

Resolution/Order number	Title	Date Adopted/ Established	Regulatory Action
03-016	Revision of Interim Effluent Limits for Ammonia in the Amendment to the Water Quality Control Plan for the Los Angeles Region to Include a TMDL for the Nitrogen Compounds and Related Effects in the Los Angeles River, Resolution 03-009	4-Dec-2003	BPA
R05-006	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Metals for the Los Angeles River and its Tributaries	2-Jun-2005	BPA
06-013	To Set Aside Action in Adopting the Trash Total Maximum Daily Load for the Los Angeles River Watershed, dated September 19, 2001, and in Adopting Resolution No. 01-013; and to Direct Staff to Revise the California Environmental Quality Act Documentation as Required by the Court of Appeal and to Submit for the Regional Board's Reconsideration a Total Maximum Daily Load for Trash in the Los Angeles River Watershed as Early as Practical	8-Jun-2006	BPA
R4-2007-012	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Trash in the Los Angeles River Watershed	9-Aug-2007	BPA
R2007-014	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Metals in Los Angeles River	6-Sep-2007	BPA
R09-003	Rescinding Resolutions R05-006 and R05-007, which Incorporated the 2005 Versions of the Los Angeles River and Ballona Creek Total Maximum Daily Loads into the Water Quality Control Plan for the Los Angeles Region	7-May-2009	BPA
R10-003	Amendment to the Water Quality Control Plan for the Los Angeles Region to Revise the Total Maximum Daily Load of Metals for the Los Angeles River and its Tributaries	6-May-2010	BPA
R10-007	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Indicator Bacteria in the Los Angeles River Watershed	9-Jul-2010	BPA
N/A	Long Beach City Beaches and Los Angeles River Estuary Total Maximum Daily Loads for Indicator Bacteria	26-Mar-2012	USEPA TMDL
Los Cerritos Channel and Alamitos Bay WMA			
N/A	Los Cerritos Channel Total Maximum Daily Loads for Metals	17-Mar-2010	USEPA TMDL

Resolution/Order number	Title	Date Adopted/ Established	Regulatory Action
Malibu Creek			
N/A	Total Maximum Daily Loads for Nutrients Malibu Creek Watershed	21-Mar-2002	USEPA TMDL
2004-019	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Bacteria in the Malibu Creek Watershed	13-Dec-2004	BPA
R4-2008-007	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Trash Total Maximum Daily Load for Malibu Creek Watershed	1-May-2008	BPA
N/A	Malibu Creek and Lagoon Total Maximum Daily Loads for Sedimentation and Nutrients to Address Benthic Community Impairments	2-Jul-2013	USEPA TMDL
Marina Del Rey			
2003-012	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Bacteria at Marina Del Rey Harbor Mothers' Beach and Back Basins	7-Aug-2003	BPA
2005-012	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Toxic Pollutants in Marina Del Ray Harbor	6-Oct-2005	BPA
2006-009	Statement of Support for the Efforts of Responsible Jurisdictions and Agencies in the Marina Del Ray Watershed to Utilize an Integrated Water Resources Approach to Achieve Full Compliance with the Marina Del Ray Harbor Mother's Beach and Back Basins Bacteria TMDL in the Shortest Possible Timeframe and no later than 2021	6-Apr-2006	BPA
Miscellaneous Ventura Coastal			
R4-2003-0065	Total Maximum Daily Loads for Santa Clara River Estuary Beach/Surfers' Knoll, McGrath State Beach, and Mandalay Beach Coliform and Beach Closures	14-Jul-2003	Cleanup and Abatement Order
R4-2007-017	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Bacteria in the Harbor Beaches of Ventura County (Kiddie Beach and Hobie Beach)	1-Nov-2007	BPA
R09-006	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for PCBs, Organochlorine Pesticides and Sediment Toxicity for McGrath Lake	1-Oct-2009	BPA

Resolution/Order number	Title	Date Adopted/ Established	Regulatory Action
San Gabriel River			
99-15	Amendment to the Water Quality Control Plan For The Los Angeles Region To Incorporate A Total Maximum Daily Loads (TMDL) For The East Fork San Gabriel River	28-Oct-1999	BPA
2000-010	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate the Trash Total Maximum Daily Load (TMDL) for the East Fork of the San Gabriel River	25-May-2000	BPA
N/A	Total Maximum Daily Loads for Metals and Selenium in San Gabriel River and Impaired Tributaries	26-Mar-2007	USEPA TMDL
R4-2007-010	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Trash in Legg Lake	7-Jun-2007	BPA
R4-2012-0003	El Dorado Park Lakes Copper Total Maximum Daily Load	10-Jan-2012	Cleanup and Abatement Order
Santa Catalina Island			
R4-2012-0077	Avalon Beach Bacteria Total Maximum Daily Load	5-Apr-2012	Cease and Desist Order
Santa Clara River			
R02-018	Amendment to the Water Quality Control Plan (Basin Plan) for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Chloride at the Upper Santa Clara River	24-Oct-2002	BPA
N/A	Total Maximum Daily Loads for Chloride in the Santa Clara River, Reach 3	18-Jun-2003	USEPA TMDL
R03-008	Amendment to the Water Quality Control Plan (Basin Plan) for the Los Angeles Region to Incorporate a Total Maximum Daily Load For Chloride at the Upper Santa Clara River	10-Jul-2003	BPA
03-011	Amendment to the Water Quality Control Plan for the Los Angeles Region to Include A TMDL for Nitrogen Compounds in the Santa Clara River	7-Aug-2003	BPA
04-004	Revision Of Interim Waste Load Allocations and Implementation Plan for Chloride in the Amendment to the Water Quality Control Plan for the Los Angeles Region to Include a TMDL for Chloride in the Upper Santa Clara River, Resolution 03-008	6-May-2004	BPA

Resolution/Order number	Title	Date Adopted/ Established	Regulatory Action
R4-2006-016	Amendment to the Water Quality Control Plan for the Los Angeles Region through Revision of the Implementation Plan for the Upper Santa Clara River Chloride TMDL, Resolution 04-004	3-Aug-2006	BPA
R4-2007-009	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Trash in Lake Elizabeth, Munz Lake and Lake Hughes in the Santa Clara River Watershed	7-Jun-2007	BPA
R4-2008-012	Amendment to the Water Quality Control Plan for the Los Angeles Region to Adopt Site Specific Chloride Objectives and to Revise the Upper Santa Clara River Chloride TMDL	11-Dec-2008	BPA
R10-006	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Indicator Bacteria in Santa Clara River Estuary and Reaches 3, 5, 6 and 7	8-Jul-2010	BPA
R4-2010-0186	Total Maximum Daily Load for Toxaphene for the Santa Clara River Estuary	19-Nov-2010	Conditional Waiver of WDR from Irrigated Agriculture Lands
Santa Monica Bay			
2002-004	Amendment to the Water Quality Control Plan (Basin Plan) for The Los Angeles Region to Incorporate a Dry weather Total Maximum Daily Load for Bacteria at Santa Monica Bay Beaches	24-Jan-2002	BPA
2002-022	Amendment to the Water Quality Control Plan (Basin Plan) for the Los Angeles Region to Incorporate Implementation Provisions for the Region's Bacteria Objectives and to Incorporate a Wet-Weather Total Maximum Daily Load for Bacteria at Santa Monica Bay Beaches	12-Dec-2002	BPA
2006-005	Statement of Support for the Efforts Of Responsible Jurisdictions and Agencies in Jurisdictional Groups 1 and 4 to Utilize an Integrated Water Resources Approach to Achieve Full Compliance with the Santa Monica Bay Beaches Bacteria Wet Weather TMDL in the Shortest Possible Timeframe and no later than 2021	6-Apr-2006	BPA
2006-006	Statement of Support for the Efforts of Responsible Jurisdictions and Agencies in Jurisdictional Groups 2 And 3 to Utilize an Integrated Water Resources Approach to Achieve Full Compliance with the Santa Monica Bay Beaches Bacteria Wet Weather TMDL in the Shortest Timeframe and no later than 2021	6-Apr-2006	BPA

Resolution/Order number	Title	Date Adopted/ Established	Regulatory Action
2006-007	Statement of Support for the Efforts of Responsible Jurisdictions and Agencies in Jurisdictional Groups 5 And 6 to Utilize an Integrated Water Resources Approach to Achieve Full Compliance with the Santa Monica Bay Beaches Bacteria Wet Weather TMDL in the Shortest Possible Timeframe and no later than 2021	6-Apr-2006	BPA
2006-008	Statement of Support for the Efforts of Responsible Jurisdictions and Agencies in Jurisdictional Group 7 to Maintain and Improve Water Quality in Compliance with the Santa Monica Bay Beaches Bacteria Wet Weather TMDL	6-Apr-2006	BPA
R10-010	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Debris for Nearshore and Offshore Santa Monica Bay	4-Nov-2010	BPA
N/A	Santa Monica Bay Total Maximum Daily Loads for DDTs and PCBs	26-Mar-2012	USEPA TMDL
Ventura River			
R4-2007-008	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Trash in the Ventura River Estuary	7-Jun-2007	BPA
R12-011	Amendment to the Water Quality Control Plan for the Los Angeles Region to Incorporate a Total Maximum Daily Load for Algae, eutrophic Conditions, and Nutrients in Ventura River, including the Estuary, and its Tributaries	6-Dec-2012	BPA

Chapter 6:
Monitoring and Assessment

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Introduction

Monitoring and assessment are essential to the success of the Region's water quality control programs and are part of the Regional Water Board's program of implementation for achieving water quality objectives required pursuant to Water Code section 13242. Additionally, Water Code section 13163 directs the State Water Board to coordinate water quality investigations with the Regional Water Boards and among state agencies and evaluate the need for water quality investigations to effectively develop and implement statewide policy for water quality control.

The varied objectives of the State's water quality monitoring programs include:

- Evaluate attainment and maintenance of water quality objectives and beneficial uses consistent with State and federal requirements
- Measure effects of water quality changes on beneficial uses
- Measure background and existing conditions of water quality and determine long-term trends
- Locate and identify sources of pollutants that pose an acute, accumulative, and/or chronic threat to waters
- Provide information needed to relate receiving water quality to mass emissions of pollutants by waste dischargers
- Provide data for determining discharger compliance with the requirements of permits and other orders (e.g., Cleanup and Abatement Orders) and supporting the enforcement of permit and order requirements
- Evaluate effectiveness of treatment and remediation activities
- Provide data needed to implement water quality planning programs
- Measure the effects of water rights decisions on water quality, and to guide the State Water Board in its responsibility to regulate unappropriated water for the control of quality
- Provide a clearinghouse for water quality data gathered by other agencies, regulated parties, and/or citizen monitoring programs
- Report on water quality conditions as required by federal and State regulations or requested by others

To fulfill these objectives, monitoring programs track a wide variety of parameters and metrics to assess the physical, chemical, and biological condition of a waterbody. Physical measurements may include parameters such as temperature and turbidity, while chemical measurements may include pH, salinity, dissolved oxygen, and the concentrations of various pollutants such as nutrients, metals, salts, pesticides, PCBs, radionuclides, and bacteria. Toxicity testing and tissue sampling may also be used to identify concentrations of pollutants that may be inherently harmful to the biota or may pose risks to human health. In addition, biological assessment (bioassessment) monitoring may be conducted to determine how well a waterbody supports a healthy and diverse aquatic ecosystem. Bioassessments include surveys and other direct measurements of habitat quality and species (benthic macroinvertebrates and algae) diversity and abundance in the waterbody. Because aquatic life is sensitive to the cumulative effects of both chemical (e.g., nutrient concentrations, pH, oxygen levels) and non-chemical (e.g. flow, substrate quality, canopy cover, hydromodification) stressors, bioassessments include measurements that aggregate the impacts of all these stressors.

The Regional Water Board occasionally conducts surveys and monitoring assessments related to specific projects, and also relies on data gathered by existing monitoring or assessment programs. This chapter contains a description of the various State and Regional Water Board monitoring, assessment, and tracking programs, as well as multi-agency programs that contribute to the available pool of data. A large part of these data are available online through a variety of databases that are described below. State programs using this information to assess the quality of regional waters are also described. Additional information about the programs described and web links can be found on the Regional Water Board's website (http://www.waterboards.ca.gov/losangeles/), through the "Our Watersheds" link.

State and Regional Water Board Monitoring, Assessment, and Tracking Programs

Active Programs

Surface Water Ambient Monitoring Program

The Surface Water Ambient Monitoring Program (SWAMP) is a statewide effort designed to monitor and assess the conditions of surface waters throughout the state of California. SWAMP was developed in 2001 as a statewide monitoring effort that provides the scientifically sound data needed to effectively manage California's water resources. SWAMP has four primary responsibilities:

- Monitor, assess, and report on California's water quality;
- Create a common framework that coordinates statewide monitoring efforts by offering a uniform and objective approach to monitoring, sampling, and analytical methods and by maintaining quality control through consistent data quality assurance protocols, data validation, and centralized data management;
- Serve as a technical resource by communicating among project participants and stakeholders and by providing technical expertise; and
- Collaborate with other agencies in the state that monitor water quality so that efforts are comprehensive, integrated, non-duplicative, and appropriately funded.

The SWAMP mission is to provide resource managers, decision makers, and the public with timely, high-quality information to evaluate the condition of all waters throughout California. The program's purpose is to monitor and assess water quality to determine whether waterbodies are attaining and maintaining water quality standards and beneficial uses are protected. SWAMP accomplishes this through carefully designed, externally reviewed monitoring programs, and by assisting other entities state-wide in the generation of comparable data that can be brought together in integrated assessments that provide answers to current regulatory and management questions. Data from SWAMP are used to improve the state's water quality assessment and add or remove water bodies from the impaired water bodies list as required under CWA sections 305(b) and 303(d).

Regardless of scope, all monitoring programs are designed to answer specific assessment questions. SWAMP statewide and regional monitoring programs are each designed to address one or more of the following assessment questions for defined waterbody types and beneficial uses:

- Status: What is the overall quality of California's surface waters?
- Trends: What is the pace and direction of change in surface water quality over time?
- Problem Identification: Which water bodies have water quality problems and which areas are at risk?
- Diagnostic: What are the causes of water quality problems and where are the sources of those stressors?
- Evaluation: How effective are clean water projects and programs?

SWAMP has designed and implemented several regional and statewide assessment programs including: the Perennial Streams Assessment; Bioaccumulation Monitoring Program; and Stream Pollution Trends Monitoring Program. Additionally, SWAMP created a Quality Assurance program; developed a standardized data management, evaluation, and reporting system; and created sampling Standard Operating Procedures (SOPs) for receiving water monitoring. The California Environmental Data Exchange Network (CEDEN) serves as the repository through which SWAMP data are made available to the public.

More information about the Surface Water Ambient Monitoring Program can be found on the State Water Board's website under the following link: http://www.waterboards.ca.gov/water_issues/programs/swamp/.

Groundwater Ambient Monitoring and Assessment Program

The Groundwater Ambient Monitoring and Assessment (GAMA) Program is California's comprehensive groundwater quality monitoring program. The GAMA program was created by the State Water Board in 2000 and was expanded by Assembly Bill 599 -- the Groundwater Quality Monitoring Act of 2001. The goals of GAMA are to improve statewide groundwater monitoring and increase the availability of groundwater quality information to the public. Major groundwater basins are a specific focus of the GAMA program.

GAMA collects data by testing untreated, raw water in different types of wells for naturally occurring and man-made chemicals. These test results are compiled with groundwater quality data from several other agencies into a publicly accessible internet database, GeoTracker GAMA.

More information about the GAMA Program can be found on the State Water Board's website under the following link: http://www.waterboards.ca.gov/water_issues/programs/gama/.

Clean Water Team and Citizen Monitoring

The Clean Water Team (CWT) works to build watershed stewardship through citizen monitoring programs (citizen science and volunteer water quality monitoring) that collect water quality data to support efforts to reduce and prevent water pollution and restore beneficial uses. Citizen monitoring encompasses any monitoring activity of aquatic resources, aquatic habitat, and/or water quality that relies in whole or in part on participation by volunteers, students, or non-paid staff of monitoring programs. Throughout California, citizen monitoring programs evaluate the condition of streams, rivers, lakes, reservoirs, estuaries, coastal waters, wetlands, and groundwater wells. These efforts are of value both because they provide water quality data and build stewardship of local waterbodies.

The CWT fosters sustainable and robust citizen monitoring programs and directly assists local groups to develop or expand monitoring programs. The CWT typically assists groups through its core functions, which include:

- Technical assistance/quality assurance
- Training
- Loans of equipment
- Information management
- Outreach and communication
- Event support

Additional information on current citizen monitoring programs in the Los Angeles Region or establishing a citizen monitoring program can be obtained by contacting the Regional Water Board.

More information about the Clean Water Team can be found on the State Water Board's website under the following link:
http://www.waterboards.ca.gov/water_issues/programs/swamp/cwt_volunteer.shtml.

Total Maximum Daily Load Monitoring

Total Maximum Daily Loads (TMDLs) include implementation plans for achieving water quality standards. Essential to the implementation plan are the methods that will be used to monitor and track progress. Monitoring is needed for the following purposes:

- Track progress toward meeting water quality standards
- Evaluate compliance with interim and final TMDL allocations
- Assess the effectiveness of short- and long-term implementation actions
- Verify or refine assumptions, resolve uncertainties, and improve scientific understanding
- Identify potential needs for revision or update of regulatory actions

To achieve these objectives, most TMDLs include a monitoring program that consists of three components: (1) receiving water monitoring, (2) compliance assessment monitoring, and (3) special studies. The TMDL identifies the type of information necessary for a monitoring program and assigns responsibility for its development. Responsible parties then prepare a monitoring plan for approval by the Regional Water Board Executive Officer. As a result, there are numerous TMDL monitoring programs throughout the region. These programs range from plans developed by a single responsible party to address a single waterbody-pollutant combination, to plans developed by numerous stakeholders that address multiple pollutants on a watershed-wide basis.

More information about the TMDLs adopted in the Region can be found on the Regional Water Board's website under the following link:
http://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/.

Discharger Monitoring

Section 308(a) of the federal Clean Water Act and sections 122.41(h), (j)-(l), 122.44(i), and 122.48 of Title 40 of the Code of Federal Regulations require that all National Pollutant Discharge Elimination System (NPDES) permits specify monitoring and reporting requirements. California Water Code sections 13267 and 13383 further authorize the State and Regional Water Boards to establish monitoring and reporting requirements in permits and other orders. Dischargers regulated under Waste Discharge Requirements (WDRs) and NPDES permits are required to collect and analyze samples of influent, effluent, and/or receiving waters according to prescribed schedules to determine discharger facility performance and discharger compliance with permit conditions. Dischargers subject to an enforcement order (e.g., Cleanup and Abatement Order, Cease and Desist Order, or Time Schedule Order) are also required to monitor and report to evaluate the effectiveness of treatment and remediation activities.

The Regional Water Board ensures that discharger monitoring of receiving waters is integrated with other receiving water monitoring programs to the extent possible. The Regional Water Board uses these data to determine compliance with requirements of permits and other orders, support enforcement actions, and perform water quality assessments.

Some monitoring data and discharger reports are available electronically on the State Water Board's website under the following links:
http://www.waterboards.ca.gov/water_issues/programs/ciwqs/
https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.jsp

Municipal Separate Storm Sewer System Monitoring

Federal regulations applicable to municipal separate storm sewer systems (MS4s) also specify additional monitoring and reporting requirements (40 C.F.R. §§ 122.26, subds. (d)(2)(i)(F) & (d)(2)(iii)(D), 122.34(g), 122.42(c)).

All current MS4 permits in the Region require receiving water monitoring to assess trends, ensure the beneficial uses of the receiving waters are protected, and to determine whether a permittee is in compliance with applicable Receiving Water Limitations. Outfall monitoring is also required to measure the quality of MS4 discharges and determine whether a permittee(s) is in compliance with applicable effluent limitations. In addition to monitoring of pollutants, all MS4 permits require toxicity testing to determine if there is an aggregate toxic effect to aquatic organisms from the pollutants discharged from the MS4. MS4 permittees also participate in the Stormwater Monitoring Coalition (SMC) bioassessment program, which examines the organisms present at various sites to determine if the habitat is impaired by pollutants being discharged to the receiving waters.

The two most recently adopted MS4 permits in the Region (2012 Los Angeles County MS4 Permit and 2014 City of Long Beach MS4 Permit) feature an Integrated Monitoring Program (IMP) provision, which allows a permittee to leverage monitoring resources by selecting monitoring locations, parameters, and monitoring techniques that will satisfy multiple monitoring requirements. In addition to the IMP, the permits feature a Coordinated Integrated Monitoring Program (CIMP) provision, which allows multiple permittees to coordinate their monitoring efforts to address one or more of the required monitoring elements (i.e., receiving water monitoring, outfall based monitoring, regional monitoring, and special studies) on a watershed or subwatershed basis.

Compliance Monitoring

In addition to self-monitoring by dischargers, pursuant to California Water Code sections 13267 and/or 13383, the Regional Water Board may make unannounced inspections and collect samples to determine compliance with the California Water Code, order requirements, and/or receiving water quality objectives, and to provide data for enforcement actions. In the event of violations, the Regional Water Board undertakes appropriate enforcement actions as described in Chapter 4. The scope of the Regional Water Board’s compliance monitoring depends on the number and complexity of discharges, the discharger’s history of compliance, and the Regional Water Board’s resources.

Complaint Investigations

The Regional Water Board responds to a variety of incidents, including accidental and illegal discharges of oil from offshore pipelines, oily waste discharges, problems associated with permitted discharges, sanitary sewer overflows, discharges of sediment to streams, illegal activities in streams, and dumping in storm drains, rivers, and streams. Complaints and reports of such incidents, which are received from citizens as well as other agencies, often require on-site inspections during which the Regional Water Board collects samples and obtains other evidence (e.g., photographs) to investigate and document the extent of the problem. In addition, such documentation provides a basis for enforcement of corrective action and/or penalty assessments that are levied on responsible parties.

Inactive Programs

In the past, the following programs, independent Regional Water Board studies, and other studies were used extensively to evaluate beneficial use impacts in many California enclosed bays and estuaries. While the following programs are inactive, these efforts produced large amounts of data that were notably used to identify a number of waterbodies as impaired on the CWA section 303(d) list of impaired waters.

Toxic Substances Monitoring and State Mussel Watch Programs

In the 1970s, the State Water Board launched two statewide programs that focused on monitoring bioaccumulation of chemicals in aquatic organisms. The Toxic Substances Monitoring Program (TSMP) was initiated in 1976 and measured chemicals in both fish and clams in lakes, rivers, streams, and estuaries. The State Mussel Watch Program (SMWP), initiated the following year, focused on chemicals in mussels in coastal waters. In 1998, the State Water Board started a third program, the Coastal Fish Contamination Program (CFCP), which assessed health risks to humans from eating sport fish and shellfish from coastal waters. During the course of the programs, the State Water Board accumulated a considerable amount of data that have been useful in assessing regional waters as they provided a direct measure of beneficial use impairment. Sampling under all three programs ended in 2003, as plans for a comprehensive statewide monitoring program took shape in the form of the Surface Water Ambient Monitoring Program (SWAMP). Data and reports from the Mussel Watch/Toxic Substances Monitoring Programs are available through the SWAMP page on the State Water Board's web site (http://www.waterboards.ca.gov/water_issues/programs/swamp/).

Bay Protection and Toxic Cleanup Program

In 1989, state legislation added sections 13390 through 13396 to the California Water Code, which established the Bay Protection and Toxic Cleanup Program (BPTCP). The BPTCP is a comprehensive effort by the State and Regional Water Boards to programmatically link standards development, environmental monitoring, water quality control planning, and site cleanup planning. Specifically, the program has four main goals:

- To provide protection of existing and future beneficial uses of bays and estuarine waters,
- To identify and characterize toxic hot spots,
- To plan for cleanup or other mitigating actions of toxic hot spots, and
- To develop effective strategies to control toxic pollutants, abate existing sources of toxicity, and prevent new sources of toxicity.

Among the Program's primary activities, each Regional Water Board developed a Consolidated Toxic Hot Spots Cleanup Plan. The Consolidated Cleanup Plan is divided into two volumes.

Volume I contains the consolidated list of known toxic hot spots proposed by the seven coastal regional water boards, direction to the Regional Water Boards on implementation of the plan, delisting procedures, waste discharge requirement guidance, strategies to prevent toxic hot spots, and findings on the funding needs. Volume II contains each of the Regional Toxic Hot Spots Cleanup Plans. The State Water Board adopted the Consolidated Cleanup Plan and approved the associated a functional equivalent document in 1999. Those were subsequently revised in 2004. The complete Amended Consolidated Hotspots Cleanup Plan, as well as BPTCP data and reports, are available through the State Water Board's web site (http://www.waterboards.ca.gov/water_issues/programs/bptcp/).

Lake Surveillance

The Lake Surveillance program stemmed from early requirements set forth in CWA section 314, which directed states to identify the trophic condition of all publicly owned freshwater lakes. As part of this program, the State Water Board inventoried about 5,000 freshwater lakes in California and initiated a program to evaluate the lakes' trophic status. For the 1994 Basin Plan update, the Regional Water Board contracted with the University of California at Riverside (Lund, 1993[1]) for a comprehensive water quality assessment of 24 lakes in the Region. Visual observations, aerial photographs, water quality data, and analyses of fish tissue were used in the assessments, and observations from this study were used to update the Basin Plan. While the lake surveillance program is now inactive, lake surveillance and monitoring is still conducted under SWAMP. Most notably, these efforts included a 2007-2008 survey of contaminants in fish conducted in 272 California lakes and reservoirs[2] (http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/lakes_study/lake_survey_yr2_full_rpt.pdf).

[1] Lund, L.J. et al. (1994). Evaluation of Water Quality for Selected Lakes in the Los Angeles Hydrological Basin. Prepared for the Los Angeles Regional Water Quality Control Board by the Department of Soil Science, University of California, Riverside, CA.

[2] Davis J.A. et al., (2010) Contaminants in Fish from California Lakes and Reservoirs, 2007-2008: Summary Report on a Two-Year Screening Survey. A Report of the Surface Water Ambient Monitoring Program (SWAMP). California State Water Resources Control Board, Sacramento, CA.

Multiagency Programs

In addition to the previously described programs that are implemented under the direct supervision of the State and Regional Water Boards, the following region-wide multiagency programs also collect water quality data that support the assessment of the health of regional waters. Finally, there are also many watershed specific monitoring programs, which are described in the Regional Water Board's Watershed Management Initiative (WMI) chapters.

Southern California Bight Regional Monitoring Program

The Southern California Bight (SCB), an open embayment in the coast between Point Conception (central California) and Cape Colnett (south of Ensenada, Mexico), is an important and unique ecological resource. It is a transitional area that is influenced by currents from cold, temperate ocean waters from the north, and warm, tropical waters from the south. In addition, the bight has a complex topography, with offshore islands, submarine canyons, ridges, and basins, which provide a variety of habitats. The mixing of currents and the diverse habitats in the SCB allow for the coexistence of a broad spectrum of species, including more than 500 species of fish and several thousand species of invertebrates. The SCB also is a major migration route, with marine bird and mammal populations ranking among the most diverse in all northern temperate waters.

Although many organizations conduct environmental monitoring to assess the potential effects of human activities on southern California's coastal ocean, only about 5 percent of the SCB is routinely monitored. The Southern California Bight Regional Monitoring Program is designed to conduct large-scale regional surveys and to provide an integrated assessment of environmental conditions within the SCB.

The Southern California Bight Regional Monitoring Program is a cooperative regional-scale monitoring program that has been conducted approximately every five years since 1994 and represents the joint efforts of more than 90 participating organizations, many of which discharge treated wastewater to the Bight. The Bight Regional Surveys provide regionally based information to assess cumulative impacts of contaminant inputs and to evaluate relative risk among different types of stressors. Prior to each regional survey, the participants develop work plans for each technical element (e.g., Contaminant Impact Assessment, Shoreline

Microbiology, Water Quality, Marine Protected Areas, etc.) and determine the assessment questions to be answered and the level of monitoring effort required. Certain core elements have been part of every bight survey (e.g., benthic infaunal community, sediment chemistry and toxicity, demersal fish and macroinvertebrate communities), while others may change. The Bight Regional Surveys are used to support the development of new technical tools and analysis that are best developed with regional data sets and participation by multiple organizations. The Bight Regional Surveys also have improved comparability of data collected by monitoring organizations in the SCB. Quality assurance and quality control have improved significantly following laboratory intercalibration exercises for chemistry, group training for field crews, and taxonomic resolution for biologists. A series of manuals containing standardized field, laboratory, and data management activities have been produced that increase continuity of data and data reporting among participants even after the regional monitoring surveys are completed.

More information about the Southern California Bight Regional Monitoring can be found at the following website:
http://www.sccwrp.org/researchareas/RegionalMonitoring/BightRegionalMonitoring.aspx.

Southern California Stormwater Monitoring Coalition

The Southern California Stormwater Monitoring Coalition (SMC) was formed in 2001 by cooperative agreement. The SMC member agencies include Phase I MS4 NPDES lead permittees, State and federal NPDES regulatory agencies, the California Department of Transportation, and the Southern California Coastal Water Research Project. The goal of the SMC is to develop the technical information necessary to better understand stormwater mechanisms and impacts, and then develop tools that will effectively and efficiently improve stormwater decision-making. The SMC develops and funds cooperative projects to improve knowledge of stormwater quality management.

The SMC designed a comprehensive monitoring program in 2008 to coordinate and leverage existing monitoring efforts to produce regional estimates of the condition of freshwater perennial streams, improve data comparability and quality assurance, and maximize data availability, while conserving monitoring expenditures. The monitoring program uses several indicators of water quality (benthic macroinvertebrates, benthic algae, riparian wetlands, water chemistry, water toxicity, and physical habitat) to assess the health of 15 coastal southern California watersheds from Ventura to the US-Mexico border. All data collected by the SMC are also used by the Surface Water Ambient Monitoring Program (SWAMP) for the statewide Perennial Streams Assessment.

The SMC is managed by a Steering Committee of its members that meets quarterly to review new projects and assess progress of ongoing projects.

More information about the SMC can be found under the following link: http://www.socalsmc.org/.

Shoreline Bacteria Monitoring

Shoreline bacteria monitoring in the Los Angeles Region is conducted by various agencies including the County of Los Angeles Department of Public Health, the County of Ventura Environmental Health Agency, the City of Los Angeles Bureau of Sanitation, and the County Sanitation Districts of Los Angeles County. Samples are taken in ankle-to-knee high waters adjacent to public beaches, and then tested for bacterial indicators using USEPA approved methods.

Shoreline bacteria monitoring became more frequent following passage of California Assembly Bill 411 (1999), which amended sections 115880, 115885, and 115915 of the California Health and Safety Code. Implementing regulations mandate a weekly or greater sampling frequency for the summer months in waters adjacent to public beaches visited by more than 50,000 people annually or located adjacent to a storm drain that is flowing in the summer months. Additionally, the regulations require posting of beaches failing to meet standards for bacterial indicators and require closing or restricting usage of beaches affected by the release of untreated sewage (17 Cal. Code Regs. § 7961). Some agencies have also conducted summer sampling on a more frequent basis and during winter months due to TMDL or NPDES monitoring requirements. The environmental group Heal the Bay produces a Beach Report Card, which provides grades of “A” to “F” for over 500 beaches in Southern California.

Southern California Wetlands Recovery Project

The Southern California Wetlands Recovery Project (WRP) is a multi-agency group; one of its tasks is monitoring of the State’s wetlands. More generally, the WRP is a broad-based partnership, chaired by the Natural Resources Agency and supported by the State Coastal

Conservancy that has public agencies, non-profits, scientists, and local communities working cooperatively to acquire and restore rivers, streams, and wetlands in coastal southern California. The WRP's mission is implemented through a working agreement among State and federal resource directors and managers. Using a non-regulatory approach, the WRP partners work together to identify wetland acquisition and restoration priorities, prepare plans for these priority sites, pool funds to undertake these projects, implement priority plans, and oversee post-project maintenance and monitoring.

In 2002, the group began development of a template for a wetlands regional monitoring program for coastal southern California watersheds, some aspects of which have been implemented at a project level so far. This Integrated Wetlands Regional Assessment Program (IWRAP) is based on the USEPA's three-tiered approach to wetland assessment: Level 1 (habitat mapping and landscape assessment), Level 2 (rapid assessment, the origin of the California Rapid Assessment Method (CRAM) used by SWAMP and other monitoring programs), and Level 3 (intensive assessment). The goal of the IWRAP is to provide a cost-effective way to evaluate the status and trends in extent and condition of wetland and riparian areas. It also aids in assessing the WRP's progress toward achieving its regional wetland recovery objectives.

More information about the Wetland Recovery Project can be found under the following link: http://scwrp.org/.

Quality Assurance and Quality Control

Every project that collects monitoring data needs a Quality Assurance Management Program (QAMP) that addresses how quality assurance (QA) and quality control (QC) activities will be performed. The QAMP and QA Project Plans (QAPPs) developed for each monitoring project and/or program must be maintained, and reviewed to ensure the scientific validity of monitoring and laboratory activities. Quality assurance and quality control are distinct but related activities. QA involves the upfront planning and management of monitoring activities conducted prior to sampling and analysis to ensure that the appropriate types and quantities of data are collected. QC activities are implemented to evaluate the effectiveness of QA activities. QA/QC principles and procedures are applicable to the generation of all monitoring data by all State and Regional Water Board programs and discharger monitoring programs.

In particular, the Surface Water Ambient Monitoring Program developed a Quality Assurance Program Plan (QAPrP) that serves as an umbrella document for use by each of SWAMP's contributing projects. It describes the program's quality system in terms of organizational structure, the functional responsibilities of management and staff, the lines of authority, and the interfaces for those planning, implementing, and assessing all activities conducted. Although developed for SWAMP, this QAPrP is applicable to all programs that collect ambient surface monitoring data and can be used by other programs or modified as necessary. Data collected by many of the State's programs must be submitted in a SWAMP comparable format, which means that the projects meet the requirements specified in the SWAMP QAPrP (specifically laboratory and field quality control, frequency of analysis, measurement quality objectives, and holding times) and related documents (such as standard operating procedures).

More information about quality assurance and quality control can be found under the following link: http://www.waterboards.ca.gov/water_issues/programs/quality_assurance/index.shtml.

Monitoring, Assessment, and Tracking Databases

Several online databases have been created that serve as repositories for a variety of monitoring programs. This section describes the main databases where data related to the programs described above can be found.

California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is one of the Water Boards' primary regulatory information tracking systems. It is a web-based relational database for core regulatory data for use by the Water Boards, regulated community, stakeholders, and the general public. It allows the regulated community to submit certain types of information to the

Water Boards in compliance with adopted orders. CIWQS provides one central location for data from a variety of sources, for the purpose of storing, aggregating, analyzing, and disseminating information. A secondary role of CIWQS is to improve the efficiency of the Water Boards through the use of automated tools and automatic processing of voluminous data sets.

CIWQS is used by the State and Regional Water Boards to manage permits and other orders issued by the State and Regional Water Boards, track violations and inspections, and manage enforcement activities. The public interfaces with CIWQS through the public reports web page. This allows the public to see information on regulated facilities, and violation and enforcement data.

The general functions provided by CIWQS are:

- Permit and order tracking
- Violations and inspections tracking
- Complaint investigations relating to a permit
- Self-monitoring reports tracking
- Management of enforcement activities
- Report of regulatory information both internally and externally, including to the public
- Billing information tracking
- Incidents of sanitary sewer overflows tracking

The Water Board programs that utilize CIWQS include:

- NPDES (discharges to surface waters) – excluding general industrial and construction NPDES programs. MS4 NPDES permits are currently hosted by CIWQS, but will be transitioning to SMARTS (see below).
- WDR (discharges to land or non-federal waters), including recycled water
- Landfills
- Water Rights (eWRIMS)
- Irrigated Lands

CIWQS receives, manages, and provides data submitted by regulated entities for the following:

- Online reporting of sanitary sewer overflows (SSO)
- Online submittal of NPDES self-monitoring reports (eSMR)

- Online submittal of Recycled Water for Landscape Irrigation information (RWLI)

CIWQS enables users (Regional Water Board staff, stakeholders, and the public) to access this vast array of information by:

- Storing billing information
- Storing discharger contact information
- Enabling dischargers to submit their self-monitoring reports electronically (eSMR)
- Storing administrative and performance data about regulated facilities
- Providing information to assist the Water Boards monitor and prioritize workload
- Storing information that can be shared with the public and other stakeholders

More information about CIWQS and access to public reports is available on the State Water Board’s website under the following link: http://www.waterboards.ca.gov/water_issues/programs/ciwqs/.

Stormwater Multiple Application and Report Tracking System

The Stormwater Multiple Application and Report Tracking System (SMARTS) is an online database currently used for the statewide general industrial and construction stormwater permits and the California Department of Transportation MS4 permit. Other MS4 permits are migrating from CIWQS to SMARTS. The database provides an online tool for dischargers to submit required information including: Notices of Intent, Notices of Termination, annual reports, and view application/renewal fee statements. The database is also used by State and Regional Water Board staff to process and track documents submitted by dischargers to implement the permits. Additionally, the SMARTS database is available to the public and provides general information on permittees and annual water quality data.

Access to the SMARTS database is available under the following link: https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.jsp.

GeoTracker

GeoTracker is the Water Boards’ data management system for managing sites that impact groundwater, especially those that require groundwater cleanup (Underground Storage Tanks, Department of Defense, Site Cleanup Program) as well as permitted facilities such as operating

USTs and land disposal sites. GeoTracker enables the State and Regional Water Boards to oversee and track project activities, compliance responses, milestones, land use controls, and risk to water quality. Tools help regulators manage case load, schedule and track when deliverables/reports are due from responsible parties, evaluate sites for risk, and allocate staff resources. GeoTracker provides most of the public record for a site to the public through its Document Manager Module, including regulatory communications with responsible parties, regulatory actions such as records of decision documents, and all data and documents submitted electronically by responsible parties.

Access to the GeoTracker database is available under the following link: http:/geotracker.waterboards.ca.gov/.

California Environmental Data Exchange Network

The California Environmental Data Exchange Network (CEDEN) is a statewide cooperative effort of various groups engaged with the water and environmental resources of the State of California. This network is open to federal, state, county, and private organizations interested in sharing data throughout the state. The purpose of CEDEN is to allow the exchange and integration of water and environmental data between groups and to make it accessible to the public.

Data stored within CEDEN encompass a wide variety of environmental monitoring programs, including SWAMP. These programs have been developed throughout California to answer a number of important questions and aid in developing policy regarding California's vast system of waterbodies. Data in CEDEN include field, sediment, and water column data collected from freshwater, estuarine, and marine environments

CEDEN uses a Regional Data Center concept, which means that a local contact for a designated region of California is available to assist data providers in getting their data into CEDEN. Currently, there are four Regional Data Centers within California: Central Coast Regional Data Center, Central Valley Regional Data Center, San Francisco Regional Data Center, and Southern California Regional Data Center. Each Regional Data Center provides participants with tools and instructions for getting their data into CEDEN.

Access to the CEDEN database is available under the following link: http:/www.ceden.org/.

GeoTracker GAMA

GeoTracker GAMA is the data management system envisioned by the Groundwater Quality Monitoring Act of 2001 (Assembly Bill 599 (2001), Water Code section 10781). The system integrates and geographically displays groundwater quality data from multiple sources through public and secure portals. It has analytical tools and reporting features to assess groundwater quality and identify potential groundwater issues in relationship to roads, satellite imagery, and terrain using Google maps filtered by county, legislative district, groundwater basin, etc. There are a number of reports that allow users to see results above chemical contaminant thresholds and water level data are also displayed. These data can be exported for use in other programs.

Access to the GeoTracker GAMA database is available under the following link: http://geotracker.waterboards.ca.gov/gama/.

Electronic Water Rights Information Management System

The Electronic Water Rights Information Management System (eWRIMS) is a database developed by the State Water Board to track information on water rights in California. eWRIMS contains information on Statements of Water Diversion and Use that have been filed by water diverters, as well as registrations, certificates, and water right permits and licenses that have been issued by the State Water Board and its predecessors.

More information about eWRIMS is available on the State Water Board's website under the following link: http://www.waterboards.ca.gov/waterrights/water_issues/programs/ewrims/.

EcoAtlas

The California EcoAtlas provides access to information about the quantity and quality of California wetlands. The web based Atlas aggregates data from a variety of data sources to create maps and tools that can be used to create a complete picture of aquatic resources in the landscape by integrating stream and wetland maps, restoration information, and monitoring results with land use, transportation, and other information important to the State's wetlands.

Access to EcoAtlas is available under the following link: http://www.ecoatlas.org/.

Table 6-1: Databases used as repositories for the data collected from various monitoring programs.

Database	Monitoring/Tracking/Reporting Program
CIWQS	Discharger Monitoring Compliance Monitoring Complaint investigations**
SMARTS	General industrial and construction stormwater permits reporting and tracking Caltrans MS4 permit reporting and tracking Other MS4 permit reporting and tracking (coming soon)
GeoTracker	Groundwater cleanup activity tracking (USTs, Dept. of Defense, Site Cleanup Program) Land disposal permitting tracking
CEDEN	SWAMP Southern California Bight Regional Monitoring Project SMC Clean Water Team and Citizen Monitoring*
GeoTracker GAMA	GAMA
eWRIMS	Water rights tracking
EcoAtlas	Integrated Wetlands monitoring and tracking (IWRAP)
My Water Quality web portal***	Shoreline Bacteria Monitoring

*Only some of the citizen monitoring data are available through CEDEN.
**Complaint investigation data are only put into CIWQS if the complaint relates to a permit.
*** See California Water Quality Monitoring Council section.

Data Use

The data collected through the programs described previously is used by regulatory and non-regulatory entities to assess the quality of the Region's waters, make management decisions, or recommend further monitoring. This section describes specific State programs that use this information.

Biennial Water Quality Assessment Report and Impaired Waters List

Clean Water Act (CWA) section 305(b) requires each state to assess the status of water quality in the state and section 303(d) requires each state to provide a list of impaired water bodies to the USEPA every two years. These required reports are developed and approved together as an Integrated Report. While the State of California reports to USEPA every two years, individual regions may update regional assessments less frequently.

After the Regional Water Board updates water quality assessments and approves an Integrated Report, the report is submitted to the State Water Board for approval. The Los Angeles Region Integrated Report is compiled with other Regional Water Board reports into a statewide integrated report referred to as the "California 303(d)/305(b) Integrated Report." The statewide Integrated Report, including the list of all the water quality limited segments, requires final approval by USEPA. The USEPA then compiles these assessments into a biennial "National Water Quality Inventory Report" to Congress.

Water quality data to be assessed comes from many sources, including: data collected pursuant to NPDES permits (including MS4 permits); data collected through SWAMP; Southern California Bight Regional Monitoring data; and data submitted by stakeholders. Data must be of sufficient data quality. The integrated reports and supporting documentation are available on the State Water Board's website.

The Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (Listing Policy) described in Chapter 5 establishes a standardized approach for developing California's CWA section 303(d) list. The Listing Policy also establishes requirements for data quality, data quantity, and administration of the listing process. The Listing Policy specifies the frequency of exceedance of applicable water quality objectives that is necessary to make a determination that the water is impaired.

For water quality limited segments included on the CWA section 303(d) list, the State is required to develop a Total Maximum Daily Load (TMDL) or take other action to address the impairment.

The Integrated Report and CWA section 303(d) list can be found on the Regional Water Board's website under the following link: http://www.waterboards.ca.gov/losangeles/water_issues/programs/303d_list.shtml.

State of the Watershed Reports

State of the Watershed Reports are periodically prepared by Regional Water Board staff to provide summaries of available data and information for each watershed from multiple Water Board programs as well as data and information from non-Water Board databases and documents. Frequently utilized are data and information about water and sediment quality (from CEDEN), and permitting activities and compliance issues (from CIWQS and SMARTS). Depending on the watershed, groundwater quality may be a major issue and data from GAMA will be utilized. And, in some watersheds, important wetlands occur with many restoration and enhancement activities being undertaken through the Wetlands Recovery Project that are essential to document in a watershed context. Much of this information is available to display visually using mapping tools in order to understand the larger picture of what is going on in a watershed.

State of the Watershed Reports can be found on the Regional Water Board's website under the following link: http://www.waterboards.ca.gov/losangeles/water_issues/programs/regional_program/watershed/index.shtml.

SWAMP Water Quality Assessment Reports

Through its monitoring programs and the many projects it is part of, the Surface Water Ambient Monitoring Program (SWAMP) collects numerous data that are aggregated in a variety of reports and documents. These are grouped below according to (1) regionwide and watershed specific reports, (2) statewide topical reports, and (3) special studies. Some of the key reports and documents available in each category include the following:

- **Regional reports and documents for the Los Angeles area**
    - Yearly Regional Monitoring Plans
    - Toxicity in California Waters - Los Angeles Region (2012)
    - Water Quality in the Dominguez Channel and Los Angeles Long Beach Harbor Watershed Management Area (2007)

- Toxicity Testing and Toxicity Identification Evaluation Final Report (April 2007)
- Annual Report on Monitoring Activities for 2005 - San Gabriel River Regional Monitoring Program (2007)
- Water Quality in the Calleguas Creek and Santa Clara River Watersheds - Under the Surface Water Ambient Monitoring Program, FY 2000-2001 (2005)
- Water Quality in the Santa Monica Bay Watershed - Under the Surface Water Ambient Monitoring Program, FY 2001-2002 (2005)
- Assessing the Health of Southern California Streams (fact sheet)

- **Topical Reports**

  - Bioaccumulation Monitoring Program

    The goal of the Bioaccumulation Monitoring Program is to address the "fishable" beneficial use through surveys of contaminant concentrations in fish tissue throughout waters of the State. Sampling for the Bioaccumulation Monitoring Program occurs on a five-year cycle, rotating between lakes and reservoirs, coastal waters, and rivers and streams. Publications include:

    - Lakes Study - Bioaccumulation in Sport Fish reports
    - Coastal Study - Bioaccumulation in Sport Fish reports
    - Rivers & Streams - Bioaccumulation in Sport Fish reports
    - Bioaccumulation of Pollutants in California Waters: A Review of Historic Data and Assessment of Impacts on Fishing and Aquatic Life (2007)

  - Bioassessment Monitoring Program

    - *Perennial Streams Assessment (PSA)*: The PSA is an ongoing, long-term statewide survey of the ecological condition of wadeable perennial streams and rivers. The program collects samples for biological indicators (benthic macroinvertebrates, algae) and chemical constituents (nutrients, major ions, etc.), and conducts habitat assessments (both for in-stream and riparian corridor conditions). The PSA has produced numerous reports, including:

      - Ecological Condition Assessments of California's Perennial Wadeable Streams (2000 through 2007) (2011)
      - Water Quality Assessment Report of the Condition of California Coastal Waters and Wadeable Streams (Clean Water Act, Section 305(b) Report) (2006)
      - Assessing the Health of Southern California Streams (Fact sheet)

- *Freshwater Algae Reports*
    - Condition of California Perennial, Wadeable Streams Based on Algal Indicators (2013)

- Streams Pollution Trends (SPoT) Monitoring Program

  The SPoT project, funded primarily by SWAMP, monitors trends in sediment toxicity and sediment contaminant concentrations in selected large rivers throughout California, and relates contaminant concentrations to watershed land uses. Reports include:

    - Initial Trends in Chemical Contamination, Toxicity and Land Use in California Watersheds - Field Years 2009-2010 (2013)
    - Statewide Perspective on Chemicals of Concern and Connections between Stream Water Quality and Land Use - Field Year 2008 (2012)
    - SWAMP Statewide Stream Contaminant Trend Monitoring at Integrator Sites (2008)

- **Special Studies**
  - Coastal Studies
    - Characterization of the rocky intertidal ecological communities associated with southern California Areas of Special Biological Significance (2012)
    - Assessing water quality in Marine Protected Areas from Southern California, USA (2011)
    - Status of California's Marine Water Quality Protected Areas (2010)
    - Watershed-scale Evaluation of Agricultural BMP Effectiveness in Protecting Critical Coastal Habitats (2010)
  - Constituents of Emerging Concern
    - Monitoring Strategies for Chemicals of Emerging Concern (CECs) in California Ecosystems (2012)
  - Healthy Streams Partnership
    - California Integrated Assessment of Watershed Health: A Report on the Status and Vulnerability of Watershed Health in California, 2013.
  - Specific Stressors
    - Co-occurrence of Pesticides and Aquatic Species (2012)
    - Bacteria Monitoring Inventory of California's Freshwater Beaches (2008)
    - Screening California Surface Waters for Estrogenic Endocrine Disrupting Chemicals (EEDC) with a Juvenile Rainbow Trout Liver Vitellogenin mRNA Procedure (2006)

- Toxicity Studies
  - Toxicity in California Waters (2011)
  - Statewide Investigation of the Role of Pyrethroid Pesticide in Sediment Toxicity in California's Urban Waterways (2008)
  - Toxicity Testing and Toxicity Identification Evaluation Final Report (2007)
- Wetland Studies
  - The Status of Perennial Estuarine Wetlands in the State of California (2008)

The SWAMP Reports are available online on the State Water Board's SWAMP website (http://www.waterboards.ca.gov/water_issues/programs/swamp/).

California Water Quality Monitoring Council

The California Water Quality Monitoring Council was created as a result of California Senate Bill 1070 (Kehoe, 2006), which required the California Environmental Protection Agency (Cal/EPA) and the California Natural Resources Agency to enter into a Memorandum of Understanding (MOU). The legislation and MOU task the Monitoring Council with developing recommendations for a comprehensive monitoring program strategy to improve the efficiency and effectiveness of water quality and ecosystem monitoring and assessment activities in California through coordination among organizations both inside and outside state government. While the Monitoring Council may recommend new monitoring or management initiatives, it builds on existing efforts to the greatest extent possible.

The legislation directed the Monitoring Council to be administered by the State Water Board. Actions of the Monitoring Council are advisory to the Secretaries of Cal/EPA and the Natural Resources Agency, who can implement those recommendations through their departments, boards, commissions, and conservancies. The Monitoring Council's authority consists of its ability to set examples, offer persuasive recommendations, and encourage member agencies and organizations to participate.

Additionally, both the legislation and MOU call for monitoring and assessment information to be made available to decision makers and the public via the internet. This is realized through a web portal (My Water Quality web portal: http://www.mywaterquality.ca.gov/), which is organized around themes framed as easily understood questions that deliver user-oriented access to California's water quality monitoring and assessment information.

Theme-specific workgroups are tasked with developing and enhancing the web portals and their underlying monitoring and assessment programs. Each workgroup is empowered by the Monitoring Council to address a specific theme in water quality or related ecosystem health, approaching problems from the users' perspective to make data comparable and accessible to multiple audiences. A Monitoring Council workgroup is composed of experts representing a variety of agencies and entities, both within and outside state government, who are involved or have expertise in water quality and/or associated ecosystem monitoring and assessment that relates to a specific theme (e.g., the safety of eating fish from our waters). Workgroups to date are listed below.

- Beach Water Quality Workgroups
- Bioaccumulation Oversight Group
- California Estuary Monitoring Workgroup
- California Wetland Monitoring Workgroup
- California Water Quality Monitoring Collaboration Network
- Data Management Workgroup
- Groundwater Ambient Monitoring and Assessment (GAMA) Program
- Healthy Streams Partnership
- Multi-Agency Rocky Intertidal Network (MARINe)
- Safe Drinking Water Workgroup
- Safe-to-Swim Workgroup

The portals include interactive maps and monitoring data that focus on these questions from a variety of perspectives. Data that are displayed or interpreted in the portals originate from a variety of databases led by the California Environmental Data Exchange Network (CEDEN), which itself accepts data from a large number of monitoring programs including the Surface Water Ambient Monitoring Program.

Contaminated Sediments Task Force / Dredge Material Management Team

The Los Angeles Contaminated Sediments Task Force (CSTF) was formed in 1997 to create a long-term strategy for managing contaminated sediments within coastal waters of Los Angeles County, as authorized by California Senate Bill 673 (1997) and Water Code section 13396.9. Since 1997, the CSTF has provided a forum for discussion and a process whereby dredging proponents, State and federal regulators, and representatives of environmental organizations can work together to minimize potential adverse environmental impacts associated with the dredging and disposal of contaminated sediments. The Regional Water Board is an important member of the CSTF due to the Board's regulatory oversight of dredging projects.

The CSTF Long-Term Management Strategy (2005) includes recommendations on regional coordination of sediment management efforts, a process for evaluating contaminated sediment dredging projects, a proposed long-term goal of beneficially reusing all contaminated sediments, and a commitment to continue working on future treatment and reuse issues. The CSTF Strategy seeks to ensure protection of aquatic resources from the discharge of contaminated dredged materials into the water, as well as providing the dredging community with greater certainty and predictability about the results of the regulatory decision-making process. The CSTF has procedures for joint project review by State and federal regulatory agencies, tools for project development and evaluation, and recommended policies for responsible agencies to implement during review of proposed dredging projects.

More information about the CSTF is available on the Regional Water Board's website under the following link:
http://www.waterboards.ca.gov/losangeles/water_issues/programs/contaminated_sediments.shtml.

More recently, in 2010, the United States Army Corps of Engineers established the Dredged Material Management Team (DMMT) for the Southern California area (counties of San Diego, Orange, Los Angeles, Ventura, Santa Barbara, and parts of San Luis Obispo) to facilitate the coordinated review of dredging projects and dredging policy issues. This interagency team meets monthly to discuss technical and policy issues associated with upcoming dredging projects. The core member agencies are the United States Army Corps of Engineers, USEPA, the California Coastal Commission, and the four Regional Water Boards in Southern California (Central Coast, Los Angeles, Santa Ana, and San Diego). Other regulatory agencies are invited to participate in DMMT meetings (including the California State Lands Commission, California Department of Fish and Wildlife, United States Fish and Wildlife Service, and National Oceanic and Atmospheric Administration (NOAA) Fisheries). For dredging projects in Los Angeles County, DMMT meetings are conducted within the framework of the CSTF guidelines, allowing participation by environmental groups and other interested stakeholders.

California Regional Water Quality Control Board
Los Angeles Region

Attachment to Resolution No. R11-013

7 TMDLs (Total Maximum Daily Loads)

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Introduction

Legal Basis and Authority

Section 303(d)(1)(a) of the Clean Water Act (CWA) requires that “each state shall identify those waters within its boundaries for which the effluent limitations … are not stringent enough to implement any water quality standard applicable to such waters.” The CWA also requires states to establish a priority ranking for these waters. This list of prioritized impaired waterbodies is known as the 303(d) list. The CWA then requires that Total Maximum Daily Loads (TMDLs) be established for waters on the 303(d) list. On California’s 1998 303(d) list, the Los Angeles Regional Water Quality Control Board (RWQCB) identified 832 waterbody reaches as water quality impaired. Since this listing, these impaired reaches have been consolidated into 92 “TMDL Analytical Units” in order to better manage and prioritize impaired watersheds for TMDL development.

A consent decree between the U.S. Environmental Protection Agency (USEPA), Heal the Bay, Inc. and BayKeeper, Inc. was approved on March 22, 1999. This court order directs the USEPA to complete TMDLs for all impaired waters within 12 years. A schedule was established in the consent decree for the completion of the first 29 TMDLs within 7 years. The remaining TMDLs will be scheduled by Regional Board staff within the 12-year period.

The elements of a TMDL are described in 40 CFR 130.2 and 130.7 and Section 303(d) of the CWA, as well as in USEPA guidance documents (e.g., USEPA, 1991). A TMDL is defined as “the sum of the individual waste load allocations for point sources and load allocations for nonpoint sources and natural background” (40 CFR 130.2). Regulations further stipulate that TMDLs must be set at “levels necessary to attain and maintain the applicable narrative and numeric water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality” (40 CFR 130.7(c)(1)). The regulations in 40 CFR 130.7 also state that TMDLs shall take into account critical conditions for stream flow, loading and water quality parameters.

Upon establishment of TMDLs by the State or USEPA, the State is required to incorporate the TMDLs along with appropriate implementation measures into the State Water Quality Management Plan (40 CFR 130.6(c)(1), 130.7). This Water Quality Control Plan for the Los Angeles Region (Basin Plan), and applicable statewide plans, serve as the State Water Quality Management Plans governing the watersheds under the jurisdiction of the RWQCB.

Before approval by USEPA or incorporation into the Basin Plan, TMDLs must be subject to public review (40 CFR 130.7). Public review requirements for Basin Plan Amendments are described in Chapter 1 of this document.

TMDL Components

TMDLs include the following technical components, which provide the analytical basis for the TMDLs.

- **Problem Statement**: A description of the waterbody/watershed setting, beneficial use impairments, and pollutants or stressors causing the impairment.
- **Numeric Targets**: For each stressor addressed in the TMDL, appropriate measurable indicators and associated numeric targets based on numeric or narrative water quality standards, which express the target or desired condition for the existing or potential beneficial uses.
- **Source Analysis**: An assessment of relative contributions of pollutant or stressor sources to the waterbody and the extent of needed discharge reductions or controls.
- **Loading Capacity/Seasonal Variations and Critical Conditions/Linkage Analysis**: The loading capacity is an estimate of the assimilative capacity of the waterbody for the pollutant of concern taking into account seasonal variations and critical conditions. The linkage analysis describes the analytical basis for concluding that the load allocations along with the margin of safety will not exceed the loading capacity of the waterbody.
- **Load Allocations/Margin of Safety**: The allocation of allowable loads or load reductions among different sources, providing an adequate margin of safety. These allocations are usually expressed as waste load allocations for point sources, load allocations for nonpoint sources, and contributions from natural sources. The margin of safety takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. Allocations can be expressed in terms of mass loads or other appropriate measures. The TMDL equals the sum of the above allocations and the margin of safety and cannot exceed the loading capacity for the waterbody.

In addition to these technical components, TMDLs must include a public participation component, an implementation plan, and a monitoring plan. Before approval by USEPA or incorporation into the Basin Plan, TMDLs must be subject to public review (40 CFR 130.7). Public review requirements for Basin Plan Amendments are described in Chapter 1 of this document. The implementation plan should include a description of best management practices, point source controls or other actions necessary to implement the TMDL as well as how and when the necessary controls will be accomplished and who is responsible for each measure. The monitoring plan is required to evaluate the effectiveness of the TMDL and should include a schedule for reviewing and revising, if necessary, the TMDL and associated implementation measures.

Organization of Chapter

As TMDLs are developed, this chapter (Chapter 7) of the Basin Plan will be amended to include summaries of each TMDL in chronological order of Board approval.

7-1 San Gabriel River East Fork Trash TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on October 28, 1999.

This TMDL was amended and adopted by:
The Regional Water Quality Control Board on May 25, 2000.

This TMDL was approved by:
The State Water Resources Control Board on June 15, 2000.
The Office of Administrative Law on September 8, 2000.
The U.S. Environmental Protection Agency on December 14, 2000.

The effective date of this TMDL is: April 17, 2001.

The following table includes all the elements of this TMDL.

Table 7-1 TMDL Summaries

Watershed	Reach	Pollutant
San Gabriel River	***East Fork***	***Trash***
Element	**Derivation of Numbers**	
Problem Statement	High recreational use of the river results in trash being deposited in and along the stream, posing a threat to water quality.	
Water Quality Objective	Waters shall not contain floating materials, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses. Water shall not contain suspended or settable material in concentrations that cause nuisance or adversely affect beneficial uses.	
Numeric Target	No trash in the river	
Source Analysis	Picnicking and camping are the primary sources of trash.	
Responsible Party	U.S. Forest Service	
Load Allocations	Zero trash discharged to the river.	
Margin of Safety	Implicit Margin of Safety based on conservative interpretation of narrative standard	
Seasonal Variations and Critical Conditions	Peak recreational usage is June through September based on Forest Service, Regional Board and Los Angeles County Department of Public Works field observations.	

Implementation Measures	The USFS shall submit a "TMDL Implementation Plan" within 60 days of the effective date of this amendment. The Plan shall include a detailed discussion of litter control measures to be implemented. The TMDL specifies that implementation and monitoring must begin by no later than 90 days after the effective date of this amendment. The USFS must demonstrate compliance with the TMDL (numeric target) by April 1, 2003. The Regional Board must approve any variations from this schedule.
Monitoring	The USFS must conduct monitoring downstream of each of the four informal picnic areas referenced in the TMDL once per month during the peak use season (June-September.) Monitoring of each of the four informal picnic areas may be conducted every other month during the rest of the year. Two short-term surveys shall be conducted each year. One survey shall be conducted during a summer holiday weekend by setting up trash collection nets in the river over a period of four days (Friday through Monday). A wet season survey using trash collection nets over four days shall also be conducted.

*The complete administrative record for the TMDL is available for review upon request.

7-2 Los Angeles River Watershed Trash TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on September 19, 2001.

This TMDL was approved by:
The State Water Resources Control Board on February 19, 2002.
The Office of Administrative Law on July 16, 2002
The U.S. Environmental Protection Agency on August 1, 2002.

This TMDL was set aside by:
The Regional Water Quality Control Board on June 8, 2006.

This TMDL was remanded by:
The State Water Resources Control Board on July 19, 2006.

This TMDL was adopted by:
The Regional Water Quality Control Board on August 9, 2007.

This TMDL was approved by:
The State Water Resources Control Board on April 15, 2008.
The Office of Administrative Law on July 1, 2008.
The U.S. Environmental Protection Agency on July 24, 2008.

The effective date of this TMDL is: September 23, 2008.

The following table includes all the elements of this TMDL.

Table 7-2.1. Los Angeles River Watershed Trash TMDL: Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Trash in the Los Angeles River is causing impairment of beneficial uses. The following designated beneficial uses are impacted by trash: water contact recreation (REC1); non-contact water recreation (REC2); warm freshwater habitat (WARM); wildlife habitat (WILD), estuarine habitat (EST); marine habitat (MAR); rare and threatened or endangered species (RARE); migration of aquatic organisms (MIGR); spawning, reproduction and early development of fish (SPWN); commercial and sport fishing (COMM); shellfish harvesting (SHELL); wetland habitat (WET); and cold freshwater habitat (COLD).
Numeric Target *(Interpretation of the numeric water quality objective, used to calculate the waste load allocations)*	Zero trash in all waterbodies.
Source Analysis	Stormwater discharge is the major source of trash in the river. Nonpoint sources, i.e., direct deposition of trash by people or wind into the water body, is a de minimus source of trash loading to the LA River.
Loading Capacity	Zero

Element	Key Findings and Regulatory Provisions
Waste Load Allocations	Baseline Waste Load Allocations for each city in the Los Angeles River Watershed are as provided in Table 7.2.2. The TMDL requires phased reductions over a period of 9 years, from existing baseline loads to zero (0). Phase II stormwater permittees (including educational institutions) also have a final wasteload allocation of zero. An implementation schedule for these permittees will be established once their stormwater permit has been developed.
Load Allocations	The load allocations for nonpoint source trash discharges to the LA River are zero.
Implementation	This TMDL will be implemented through stormwater permits and via the authority vested in the Executive Officer by section 13267 of the Porter-Cologne Water Quality Control Act: (Water Code section 13000 et seq.). Compliance with the final waste load allocation may be achieved through a full capture system. A full capture system is any device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the subdrainage area. The Rational Equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour, as determined per the rainfall isohyetal map in Figure A), and A= subdrainage area (acres). The isohyetal map may be updated annually by the Los Angeles County hydrologist to reflect additional rain data gathered during the previous year. Annual updates published by the Los Angeles County Department of Public Works are prospectively incorporated by reference into this TMDL and accompanying Basin Plan amendment. The Executive Officer has authority to certify, as full-capture, any trash reduction system that meets the operating and performance requirements as described above. To the extent nonpoint source implementation of load allocations is necessary, it will be accomplished, consistent with the Plan for Nonpoint Source Pollution Control Policy, with waste discharge requirements, waivers of waste discharge requirements, or any appropriate order, including a cleanup and abatement order, pursuant to e.g., sections 13263, 13269, and/or 13304. An implementation report, outlining how responsible agencies intend to comply with the TMDL, will be prepared six months after the effective date of the TMDL.
Margin of Safety	“Zero discharge” is a conservative standard which contains an implicit margin of safety.
Seasonal Variations and Critical Conditions	Discharge of trash from the storm drain occurs primarily during or shortly after a rain event of greater than 0.25 inches.

Figure A

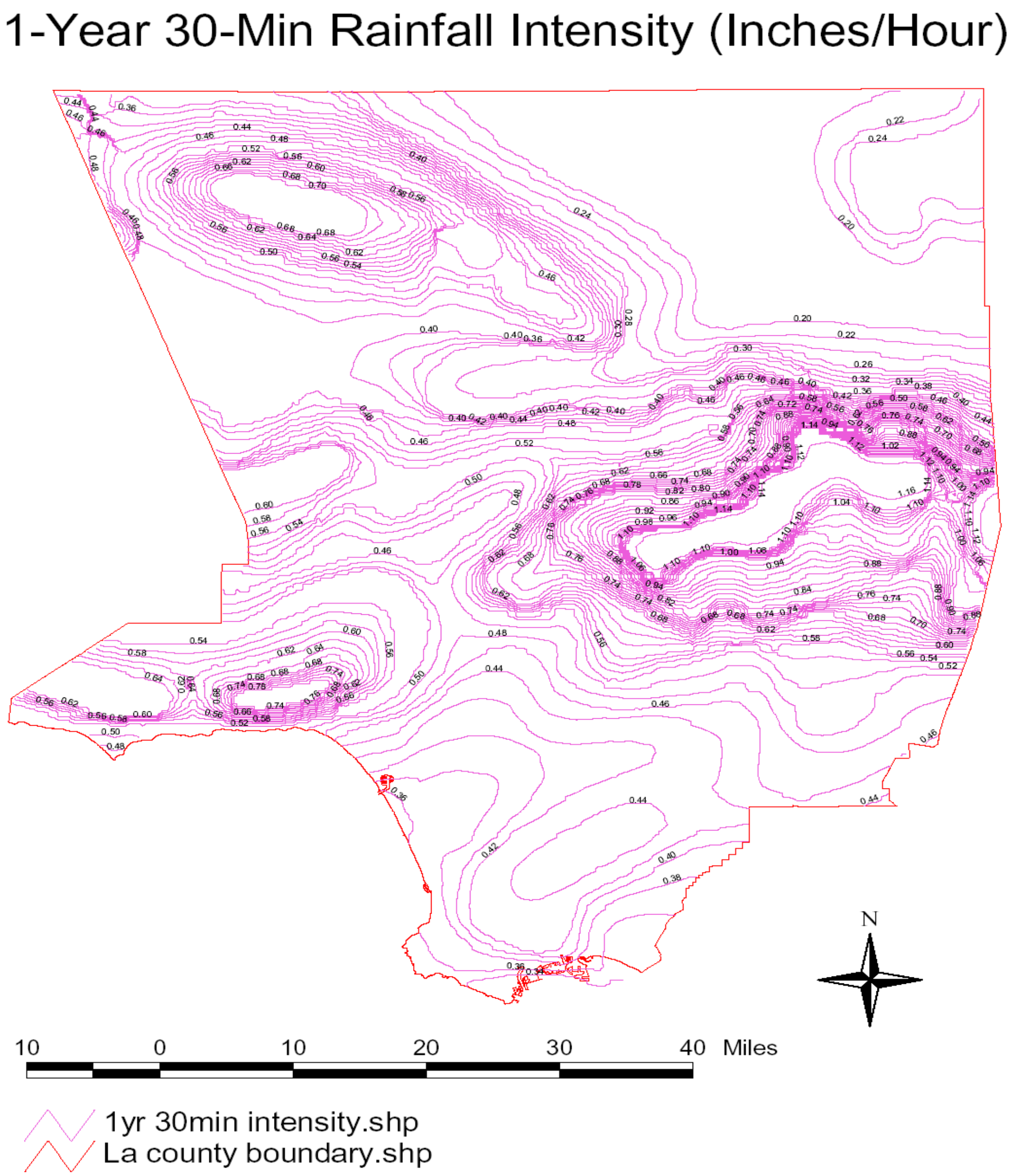

Figure A: Isohyethal Map of Rainfall Intensities in Portions of Los Angeles County

Table 7-2.2. Los Angeles River Trash TMDL Baseline Waste Load Allocations (gallons and lbs of trash).

City	WLA (gals)	WLA (lbs)
Alhambra	39903	68761
Arcadia	50108	93036
Bell*	16026	25337
Bell Gardens	13500	23371
Bradbury	4277	12160
Burbank*	92590	170389
Calabasas	22505	52230
Carson	6832	10208
Commerce	58733	85481
Compton*	53191	86356
Cudahy	5935	10061
Downey	39063	68507
Duarte	12210	23687
El Monte	42208	68267
Glendale*	140314	293498
Hidden Hills	3663	10821
Huntington Park	19159	30929
Irwindale	12352	17911
La Cañada Flintridge	33496	73747
Long Beach*	87135	149759
Los Angeles*	1374845	2572500
Los Angeles County*	310223	651806
Lynwood	28201	46467
Maywood	6129	10549
Monrovia	46687	100988
Montebello	50369	83707
Monterey Park	38899	70456
Paramount	27452	44490
Pasadena*	111998	207514
Pico Rivera	13953	22549
Rosemead	27305	47378
San Fernando	13947	23077
San Gabriel	20343	36437
San Marino	14391	29147
Santa Clarita	901	2326
Sierra Madre	11611	25192
Signal Hill	9434	14220
Simi Valley	137	344
South El Monte	15999	24319
South Gate	43904	72333
South Pasadena	14907	28357
Temple City	17572	31819
Vernon	47203	66814
Caltrans	59421	66566

*Military Installations were not included in calculation of Baseline WLA.

Table 7.2.3. Los Angeles River Trash TMDL: Implementation Schedule.[1]

(Required percent reductions based on initial baseline wasteload allocation of each city)

End of Storm Year	Implementation	Waste Load Allocation	Compliance Point
Sept 30, 2008	Implementation: Year 1	60% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 60% of the baseline load
Sept 30, 2009	Implementation: Year 2	50% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 55% of the baseline load calculated as a 2-year annual average
Sept 30, 2010	Implementation: Year 3[2]	40% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 50% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2011	Implementation: Year 4	30% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 40% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2012	Implementation: Year 5	20% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 30% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2013	Implementation: Year 6	10% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 20% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2014	Implementation: Year 7	0% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 10% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2015	Implementation: Year 8	0% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 3.3% of the baseline load calculated as a rolling 3-year annual average
Sept 30, 2016	Implementation: Year 9	0% of Baseline Waste Load Allocations for the Municipal permittees; and Caltrans	Compliance is 0% of the baseline load calculated as a rolling 3-year annual average

1 "Notwithstanding the zero trash target and the baseline waste load allocations shown in Table 5, a Permittee will be deemed in compliance with the Trash TMDL in areas served by a Full Capture System within the Los Angeles River Watershed."

2 As specified in Section VI.A., the Regional Board will review and reconsider the final Waste Load Allocations once a reduction of 50% has been achieved and sustained.

7-3 Ballona Creek Trash TMDL*

This TMDL was adopted by:
The Regional Water Quality Control Board on September 19, 2001.

This TMDL was approved by:
The State Water Resources Control Board on February 19, 2002.
The Office of Administrative Law on July 18, 2002.
The U.S. Environmental Protection Agency on August 1, 2002.

This TMDL was amended and adopted by:
The Regional Water Quality Control Board on March 4, 2004.

This amended TMDL was approved by:
The State Water Resources Control Board on September 30, 2004.
The Office of Administrative Law on February 8, 2005.
[U.S. Environmental Protection Agency approval not required for amendment to implementation plan]

The effective date of this TMDL is: August 11, 2005.

The following table presents the key elements of this TMDL.

Table 7-3.1 Ballona Creek: Trash TMDL Elements

Element	Derivation of Numbers
Problem Statement	Trash in Ballona Creek is causing impairment of beneficial uses. The following designated beneficial uses are impacted by trash: water contact recreation (REC1); non-contact water recreation (REC2); warm freshwater habitat (WARM); wildlife habitat (WILD), estuarine habitat (EST); marine habitat (MAR); rare and threatened or endangered species (RARE); migration of aquatic organisms (MIGR); spawning, reproduction and early development of fish (SPWN); commercial and sport fishing (COMM); shellfish harvesting (SHELL); wetland habitat (WET); and cold freshwater habitat (COLD).
Numeric Target *(Interpretation of the narrative water quality objective, used to calculate the load allocations)*	Zero trash in the river.
Source Analysis	Stormwater discharge is the major source of trash in the river.
Loading Capacity	Zero.
Waste Load Allocations	Phased reduction for a period of 10 years, from existing baseline load to zero.
Implementation	This TMDL will be implemented through stormwater permits and via the authority vested in the Executive Officer by section13267 of the Porter-Cologne Water Quality Control Act: Water Code section 13000 et seq. Compliance with the final waste load allocation may be achieved through a full capture system. A full capture system is any device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the subdrainage area.

Implementation (continued)	Rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour, as determined per the rainfall isohyetal map in Figure A), and A= subdrainage area (acres). The isohyetal map may be updated annually by the Los Angeles County hydrologist to reflect additional rain data gathered during the previous year. Annual updates published by the Los Angeles County Department of Public Works are prospectively incorporated by reference into this TMDL and accompanying Basin Plan amendment.
Margin of Safety	"Zero discharge" is a conservative standard which contains an implicit margin of safety.
Seasonal Variations and Critical Conditions	Discharge of trash from the storm drain occurs primarily during or shortly after a rain event of greater than 0.25 inches.

*The complete administrative record for the TMDL is available for review upon request.

Figure A

1-Year 30-Min Rainfall Intensity (Inches/Hour)

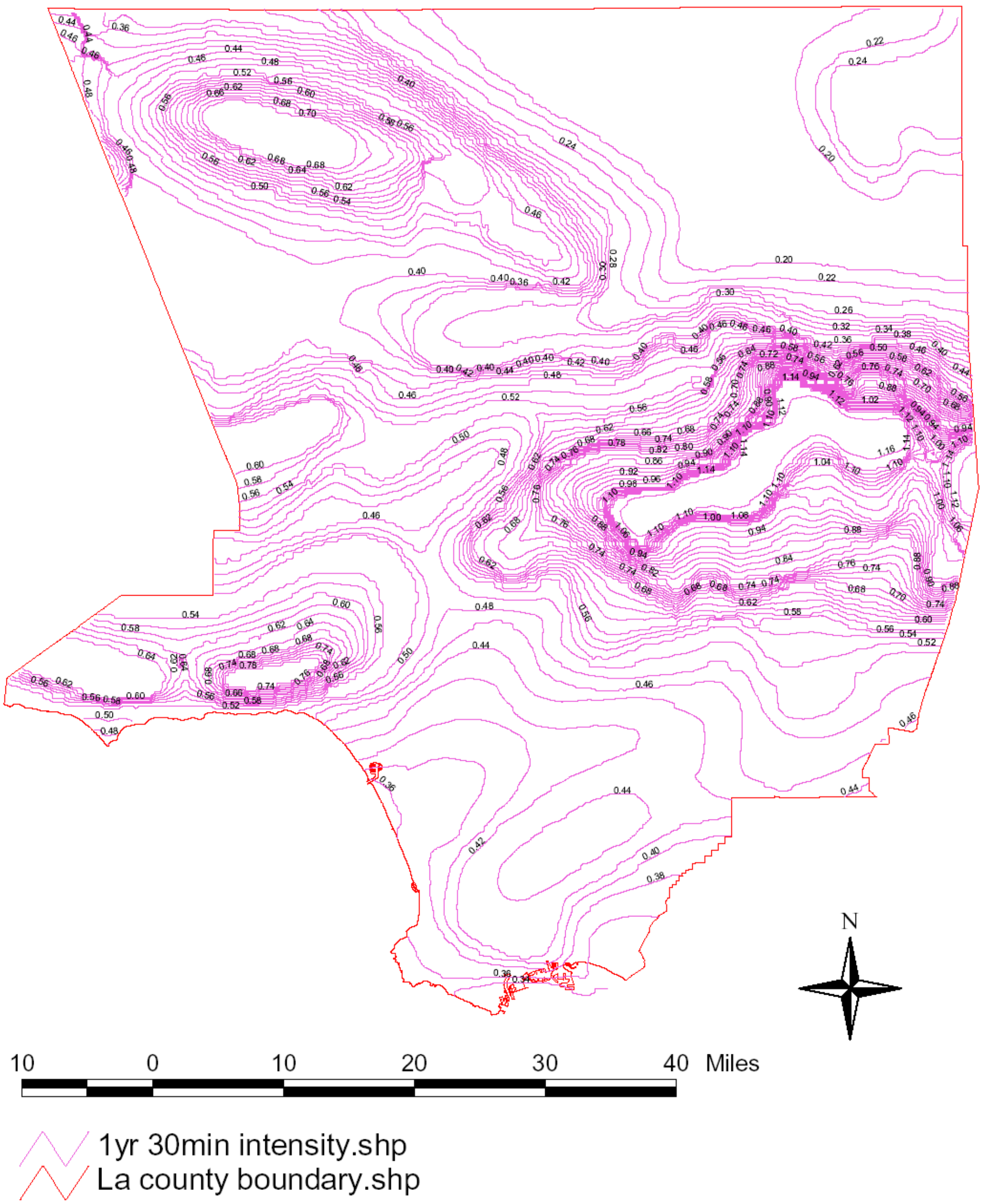

Table 7-3.2 Ballona Creek Trash TMDL: Implementation Schedule[1]
(Default waste load allocations expressed as cubic feet of uncompressed trash and % reduction)

Year	Baseline Monitoring/ Implementation	Waste Load Allocation	Compliance Point
1 10/1/01-- 9/30/02	Baseline Monitoring	No allocation specified. Trash will be reduced by levels collected during the baseline monitoring program.	Achieved through timely compliance with baseline monitoring program.
2 10/1/02-- 9/30/03	Baseline Monitoring	No allocation specified. Trash will be reduced by levels collected during the baseline monitoring program.	Achieved through timely compliance with baseline monitoring program.
3 10/1/03-- 9/30/04	Baseline Monitoring (optional)/ Implementation: Year 1	90% (9,985 for the Municipal permittees, 1,472 for Caltrans)	No compliance point (target of 90%)
4 10/1/04-- 9/30/05	Baseline Monitoring (optional)/ Implementation: Year 2	80% (8,875 for the Municipal permittees, 1,308 for Caltrans)	No compliance point (target of 80%)
5 10/1/05-- 9/30/06	Implementation: Year 3	70% (7,776 for the Municipal permittees; 1,146 for Caltrans)	Compliance is 80% of the baseline load calculated as a rolling 3-year annual average (8,875 for the Municipal permittees; 1,308 for Caltrans).
6 10/1/06-- 9/30/07	Implementation: Year 4	60% (6,656 for the Municipal permittees; 981 for Caltrans)	70% of the baseline load the baseline load calculated as a rolling 3-year annual average (7,776 for the Municipal permittees; 1,146 for Caltrans).
7 10/1/07-- 9/30/08	Implementation: Year 5[2]	50% (5,547 for the Municipal permittees; 818 for Caltrans)	60% of the baseline load calculated as a rolling 3-year annual average (6,656 for the Municipal permittees; 981 for Caltrans)
8 10/1/08-- 9/30/09	Implementation: Year 6	40% (4,438 for the Municipal permittees; 654 for Caltrans)	50% of the baseline load calculated as a rolling 3-year annual average (5,547 for the Municipal permittees; 818 for Caltrans).
9 10/1/09-- 9/30/10	Implementation: Year 7	30% (3,328 for the Municipal permittees; 491 for Caltrans)	40% of the baseline load calculated as a rolling 3-year annual average (4,438 for the Municipal permittees; 654 for Caltrans).
10 10/1/10-- 9/30/11	Implementation: Year 8	20% (2,218 for the Municipal permittees; 327 for Caltrans).	30% of the baseline load calculated as a rolling 3-year annual average (3,328 for the Municipal permittees; 491 for Caltrans).
11 10/1/11-- 9/30/12	Implementation: Year 9	10% (1,110 for the Municipal permittees; 164 for Caltrans).	20% of the baseline load calculated as a rolling 3-year annual average (2,220 for the Municipal permittees; 327 for Caltrans).
12 10/1/12-- 9/30/13	Implementation: Year 10	0 or 0 % of the baseline load.	10% of the baseline load calculated as a rolling 3-year annual average (1,110 for the Municipal permittees; 164 for Caltrans.

13 10/1/13-- 9/30/14	Implementation: Year 11	0 or 0 % of the baseline load.	3.3 % of the baseline load calculated as a rolling 3-year annual average (366 for the Municipal permittees, 54 for Caltrans).
14 10/1/14-- 9/30/15	Implementation: Year 12	0 or 0 % of the baseline.	0 or 0 % of the baseline load.

1 "Notwithstanding the zero trash target and the default waste load allocations shown in Table 7-3.2, a Permittee will be deemed in compliance with the Trash TMDL in areas served by a Full Capture System within the Ballona Creek and Estuary Watershed."

2 The Regional Board will review and reconsider the final Waste Load Allocations once a reduction of 50% has been achieved and sustained.

Table 7-3.3. Ballona Creek Trash TMDL: Significant Dates

30 days after receipt of the Executive Officer's request as authorized by Section 13267 of the Water Code.	Submit baseline monitoring plan(s).
120 days after receipt of the Executive Officer's request as authorized by Section 13267 of the Water Code.	List of facilities that are outside of the permittee's jurisdiction but drain to a portion of the permittee's storm drain system, which discharges to Ballona Creek.
Within the first 2 years after approval of this basin plan amendment; to be extended to 4 years at the option of the permittees	Collection of baseline data.
72 hours after each rain event	Clean out of and measurement of trash retained.
Every 3 months during dry weather	Clean out of and measurement of trash retained.

7-4 Santa Monica Bay Beaches Bacteria TMDL (Dry Weather Only)*

This TMDL was adopted by:
The Regional Water Quality Control Board on January 24, 2002.

This TMDL was approved by:
The State Water Resources Control Board on September 19, 2002.
The Office of Administrative Law on December 9, 2002.
The U.S. Environmental Protection Agency on June 19, 2003.

This TMDL was amended and adopted by:
The Regional Water Quality Control Board on December 12, 2002.

This amended TMDL was approved by:
The State Water Resources Control Board on March 19, 2003.
The Office of Administrative Law on May 20, 2003.
The U.S. Environmental Protection Agency on June 19, 2003.

The effective date of this TMDL is: July 15, 2003.

The following table summarizes the key elements of this TMDL.

Table 7-4.1. Santa Monica Bay Beaches Bacteria TMDL (Dry Weather Only): Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at many Santa Monica Bay (SMB) beaches. Swimming in waters with elevated bacterial indicator densities has long been associated with adverse health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine water to protect the water contact recreation use. These targets are the most appropriate indicators of public health risk in recreational waters. These bacteriological objectives are set forth in Chapter 3 of the Basin Plan, as amended by the Regional Board on October 25, 2001. The objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives are as follows: <u>1. Rolling 30-day Geometric Mean Limits</u> a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. c. Enterococcus density shall not exceed 35/100 ml. <u>2. Single Sample Limits</u> a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

Element	Key Findings and Regulatory Provisions
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	The targets apply throughout the year. The compliance point for the targets is the wave wash[1], where there is a freshwater outlet (i.e., storm drain or creek) to the beach, or at ankle depth at beaches without a freshwater outlet. The geometric mean targets may not be exceeded at any time. For the single sample targets, each existing shoreline monitoring site is assigned an allowable number of exceedance days for two time periods (summer dry weather and winter dry weather as defined in Table 7-4.2a). (A separate amendment will address the allowable number of wet weather exceedance days.) The allowable number of exceedance days is set such that (1) bacteriological water quality at any site is at least as good as at a designated reference site within the watershed and (2) there is no degradation of existing shoreline bacteriological water quality.
Source Analysis	With the exception of isolated sewage spills, dry weather urban runoff conveyed by storm drains and creeks is the primary source of elevated bacterial indicator densities to SMB beaches during dry weather. Limited natural runoff and groundwater may also potentially contribute to elevated bacterial indicator densities during winter dry weather. This is supported by the finding that historical monitoring data from the reference beach indicate no exceedances of the single sample targets during summer dry weather and on average only three percent exceedance during winter dry weather.
Loading Capacity	Studies show that bacterial degradation and dilution during transport from the watershed to the beach do not significantly affect bacterial indicator densities at SMB beaches. Therefore, the loading capacity is defined in terms of bacterial indicator densities, which is the most appropriate for addressing public health risk, and is equivalent to the numeric targets, listed above.
Waste Load Allocations	Waste load allocations are expressed as the number of sample days at a shoreline monitoring site that may exceed the single sample targets identified under "Numeric Target." Waste load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. For each shoreline monitoring site and corresponding subwatershed, the allowable number of exceedance days is set for two time periods. These two periods are: 1. summer dry weather (April 1 to October 31), and 2. winter dry weather (November 1 to March 31).

Element	Key Findings and Regulatory Provisions
Waste Load Allocations	The allowable number of exceedance days for a shoreline monitoring site for each time period is based on the lesser of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data at the monitoring site. This ensures that shoreline bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing shoreline bacteriological water quality.[2]All responsible jurisdictions and responsible agencies[3] within a subwatershed are jointly responsible for complying with the allowable number of exceedance days for each associated shoreline monitoring site identified in Table 7-4.2a below. The three Publicly Owned Treatment Works (POTWs)[4] discharging to Santa Monica Bay are each given individual WLAs of zero (0) days of exceedance during both summer dry weather and winter dry weather.
Implementation	This TMDL will be implemented in two phases over a 6-year period. The regulatory mechanisms used to implement the TMDL will include primarily the Los Angeles County Municipal Storm Water NPDES Permit, the Caltrans Storm Water Permit, the three NPDES permits for the POTWs, and the authority vested in the Executive Officer via 13267 of the Porter-Cologne Water Quality Control Act. Within 3 years of the effective date of the TMDL, summer dry-weather allowable exceedance days and the rolling 30-day geometric mean targets must be achieved. Within 6 years of the effective date, winter dry-weather allowable exceedance days and the rolling 30-day geometric mean targets must be achieved.
Margin of Safety	WLAs of zero days of exceedance during the summer include an implicit margin of safety. The WLAs of a maximum of three days of exceedance during winter dry weather include an implicit margin of safety because the maximum allowable days of exceedance are based on samples collected 50 yards downcurrent of the freshwater outlet at the reference beach. Findings from a bacterial dispersion study of selected freshwater outlets show that there is typically significant dilution between the freshwater outlet, the wave wash (the compliance point), and a point 50 yards downcurrent.

Element	Key Findings and Regulatory Provisions
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for two time periods (summer dry weather and winter dry weather) based on public health concerns and observed natural background levels of exceedance of bacterial indicators. The critical period for this dry weather bacteria TMDL is during winter months, when historic shoreline monitoring data for the reference beach indicate that the single sample bacteria objectives are exceeded on average 3% of the dry weather days sampled.

Note: The complete staff report for the TMDL is available for review upon request.

1 The wave wash is defined as the point at which the storm drain or creek empties and the effluent from the storm drain initially mixes with the receiving ocean water.

2 In order to fully protect public health, no exceedances are permitted at any shoreline monitoring location during summer dry weather (April 1 to October 31). In addition to being consistent with the two criteria, waste load allocations of zero (0) exceedance days are further supported by the fact that the California Department of Health Services has established minimum protective bacteriological standards – the same as the numeric targets in this TMDL – which, when exceeded during the period April 1 to October 31, result in posting a beach with a health hazard warning (California Code of Regulations, title 17, section 7958).

3 For the purposes of this TMDL, "responsible jurisdictions and responsible agencies" includes: (1) local agencies that are responsible for discharges from a publicly owned treatment works to the Santa Monica Bay watershed or directly to the Bay, (2) local agencies that are permittees or co-permittees on a municipal storm water permit, (3) local or state agencies that have jurisdiction over a beach adjacent to Santa Monica Bay, and (4) the California Department of Transportation pursuant to its storm water permit.

4 Hyperion Wastewater Treatment Plant, Joint Water Pollution Control Plant, and Tapia Wastewater Reclamation Facility.

Table 7-4.2a. Santa Monica Bay Beaches Bacteria TMDL Implementation Schedule (Dry Weather Only)
Allowable number of days that may exceed Any Single Sample Bacterial Indicator Target For Existing Shoreline Monitoring Stations

Compliance Deadline			3 years after effective date		6 years after effective date	
			Summer Dry Weather^		Winter Dry Weather^*	
			Apr. 1-Oct. 31		Nov. 1-Mar. 31	
Station ID	Location Name	Subwatershed	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)
City of Los Angeles, Environmental Monitoring Division Sites						
S1	Surfrider Beach (breach point) - daily	Malibu Canyon	0	0	3	1
S2	Topanga State Beach	Topanga Canyon	0	0	3	1
S3	Pulga Canyon storm drain - 50 yards east (Will Rogers)	Pulga Canyon	0	0	3	1
S4	Santa Monica Canyon, Will Rogers State Beach	Santa Monica Canyon	0	0	3	1
S5	Santa Monica Municipal Pier - 50 yards southeast	Santa Monica	0	0	3	1
S6	Santa Monica Beach at Pico/Kenter storm drain	Santa Monica	0	0	3	1
S7	Ashland Av. storm drain - 50 yards south (Venice)	Santa Monica	0	0	3	1
S8	Venice City Beach at Windward Av. - 50 yards north	Ballona	0	0	2	1
S10	Ballona Creek entrance - 50 yards south (Dockweiler)	Dockweiler	0	0	3	1
S11	Dockweiler State Beach at Culver Bl.	Dockweiler	0	0	3	1
S12	Imperial Highway storm drain - 50 yards north (Dockweiler)	Dockweiler	0	0	2	1
S13	Manhattan State Beach at 40th Street	Hermosa	0	0	1	1
S14	Manhattan Beach Pier - 50 yards south	Hermosa	0	0	1	1
S15	Hermosa Beach Pier - 50 yards south	Hermosa	0	0	2	1
S16	Redondo Municipal Pier - 50 yards south	Redondo	0	0	3	1
S17	Redondo State Beach at Avenue I	Redondo	0	0	3	1
S18	Malaga Cove, Palos Verdes Estates - daily	Palos Verdes	0	0	1	1
Los Angeles County Department of Health Services Sites						
DHS (010)	Leo Carillo Beach (REFERENCE BEACH)	Arroyo Sequit Canyon	0	0	3	1
DHS (009)	Nicholas Beach	Nicholas Canyon	0	0	0	0
DHS (010a)	Broad Beach	Trancas Canyon	0	0	3	1
DHS (008)	Trancas Beach entrance	Trancas Canyon	0	0	0	0
DHS (007)	Westward Beach, SE end	Zuma Canyon	0	0	0	0

Compliance Deadline			3 years after effective date		6 years after effective date	
			Summer Dry Weather^		Winter Dry Weather^*	
			Apr. 1-Oct. 31		Nov. 1-Mar. 31	
Station ID	Location Name	Subwatershed	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)
DHS (006)	Paradise Cove	Ramirez Canyon	0	0	3	1
DHS (005)	26610 Latigo Shore Drive	Latigo Canyon	0	0	3	1
DHS (005a)	Corral Beach	Latigo Canyon	0	0	3	1
DHS (004)	Puerco Beach	Corral Canyon	0	0	3	1
DHS (003)	Malibu Point, Malibu Colony Dr.	Malibu Canyon	0	0	3	1
DHS (003a)	Surfrider Beach, Malibu, 50 yds.	Malibu Canyon	0	0	3	1
DHS (002)	Malibu Pier	Malibu Canyon	0	0	3	1
DHS (001a)	Las Flores Beach	Las Flores Canyon	0	0	3	1
DHS (001)	Big Rock Beach	Piedra Gorda Canyon	0	0	3	1
DHS (101)	17200 Pacific Coast Hwy.	Santa Ynez Canyon	0	0	3	1
DHS (102)	Bel Air Bay Club, 16801 Pacific	Santa Ynez Canyon	0	0	3	1
DHS (103)	Temescal Storm Drain	Pulga Canyon	0	0	3	1
DHS (104a)	San Vicente Blvd. extended	Santa Monica	0	0	3	1
DHS (104)	Montana Ave. Storm Drain	Santa Monica	0	0	3	1
DHS (105)	Wilshire Blvd., Santa Monica	Santa Monica	0	0	3	1
DHS (106)	Strand Street extended	Santa Monica	0	0	3	1
DHS (106a)	Ashland Storm Drain	Santa Monica	0	0	3	1
DHS (107)	Venice City Beach at Brooks Av.	Ballona	0	0	3	1
DHS (108)	Venice Pier, Venice	Ballona	0	0	3	1
DHS (109)	Topsail Street extended	Ballona	0	0	3	1
DHS (110)	World Way extended	Dockweiler	0	0	3	1
DHS (111)	Opposite Hyperion Plant, 1 mile	Dockweiler	0	0	3	1
DHS (112)	Grand Avenue extended	Dockweiler	0	0	3	1

Compliance Deadline			3 years after effective date		6 years after effective date	
			Summer Dry Weather^		Winter Dry Weather^*	
			Apr. 1-Oct. 31		Nov. 1-Mar. 31	
Station ID	Location Name	Subwatershed	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)
DHS (113)	26th Street extended	Hermosa	0	0	0	0
DHS (114)	Herondo Street extended	Hermosa	0	0	3	1
DHS (115)	Topaz Street extended	Redondo	0	0	3	1
County Sanitation Districts of Los Angeles County Sites						
LACSD1	Long Point	Palos Verdes	0	0	1	1
LACSD2	Abalone Cove	Palos Verdes	0	0	0	0
LACSD3	Portuguese Bend Cove	Palos Verdes	0	0	1	1
LACSD5	Royal Palms	Palos Verdes	0	0	1	1
LACSD6	Wilder Annex	Palos Verdes	0	0	1	1
LACSD7	Cabrillo Beach, oceanside	Palos Verdes	0	0	1	1
LACS-DMC	Malaga Cove	Palos Verdes	0	0	1	1
LACSDBC	Bluff Cove	Palos Verdes	0	0	1	1

Notes: The allowable number of exceedance days during winter dry weather is calculated based on the 10th percentile year in terms of non-rain days at the LAX meteorological station.

The number of allowable exceedances during winter dry weather is based on the lesser of (1) the reference system or (2) existing levels of exceedance based on historical shoreline data.

^Dry weather days are defined as those with <0.1 inch of rain and those days not less than 3 days after a rain day. Rain days are defined as those with >=0.1 inch of rain.

* A re-opener is scheduled for four years after the effective date of the TMDL in order to re-evaluate the allowable exceedance days during winter dry weather based on additional monitoring data.

Table 7-4.2b. Santa Monica Bay Beaches Bacteria TMDL Implementation Schedule (Dry Weather Only) Required Reduction in Number of Days Exceeding Single Sample Bacterial Indicator Targets for Existing Shoreline Monitoring Stations

	Compliance Deadline		**3 years after effective date**	**6 years after effective date**
	Location Name	Subwatershed	Summer Dry Weather (Apr. 1-Oct. 31)	Winter Dry Weather (Nov. 1-Mar. 31)*
	City of Los Angeles, Environmental Monitoring Division Sites			
S1	Surfrider Beach (breach point) - daily	Malibu Canyon	48	31
S2	Topanga State Beach	Topanga Canyon	10	8
S3	Pulga Canyon storm drain - 50 yards east (Will Rogers)	Pulga Canyon	4	6
S4	Santa Monica Canyon, Will Rogers State Beach	Santa Monica Canyon	36	7
S5	Santa Monica Municipal Pier - 50 yards south-east (Santa Monica)	Santa Monica	54	22
S6	Santa Monica Beach at Pico/Kenter storm drain (Santa Monica)	Santa Monica	15	20
S7	Ashland Av. storm drain - 50 yards south (Ven-ice)	Santa Monica	16	6
S8	Venice City Beach at Windward Av. - 50 yards north	Ballona	3	0
S10	Ballona Creek entrance - 50 yards south (Dock-weiler)	Dockweiler	7	3
S11	Dockweiler State Beach at Culver Bl.	Dockweiler	6	1
S12	Imperial Highway storm drain - 50 yards north (Dockweiler)	Dockweiler	7	0
S13	Manhattan State Beach at 40th Street	Hermosa	1	0
S14	Manhattan Beach Pier - 50 yards south	Hermosa	1	0
S15	Hermosa Beach Pier - 50 yards south	Hermosa	2	0
S16	Redondo Municipal Pier - 50 yards south	Redondo	16	9
S17	Redondo State Beach at Avenue I	Redondo	2	0
S18	Malaga Cove, Palos Verdes Estates - daily	Palos Verdes	1	0
	Los Angeles County Department of Health Services Sites			
DHS (010)	Leo Carillo Beach (REFERENCE BEACH)	Arroyo Sequit Canyon	0	0
DHS (009)	Nicholas Beach	Nicholas Canyon	7	0
DHS (010a)	Broad Beach	Trancas Canyon	3	3
DHS (008)	Trancas Beach entrance	Trancas Canyon	5	0
DHS (007)	Westward Beach, SE end	Zuma Canyon	8	0

	Compliance Deadline		3 years after effective date	6 years after effective date
	Location Name	Subwatershed	Summer Dry Weather (Apr. 1-Oct. 31)	Winter Dry Weather (Nov. 1-Mar. 31)*
DHS (006)	Paradise Cove	Ramirez Canyon	16	9
DHS (005)	26610 Latigo Shore Drive	Latigo Canyon	11	13
DHS (005a)	Corral Beach	Latigo Canyon	3	5
DHS (004)	Puerco Beach	Corral Canyon	0	7
DHS (003)	Malibu Point, Malibu Colony Dr.	Malibu Canyon	23	6
DHS (003a)	Surfrider Beach, Malibu, 50 yds.	Malibu Canyon	58	25
DHS (002)	Malibu Pier	Malibu Canyon	42	14
DHS (001a)	Las Flores Beach	Las Flores Canyon	18	7
DHS (001)	Big Rock Beach	Piedra Gorda Canyon	32	20
DHS (101)	17200 Pacific Coast Hwy.	Santa Ynez Canyon	3	9
DHS (102)	Bel Air Bay Club, 16801 Pacific	Santa Ynez Canyon	14	5
DHS (103)	Temescal Storm Drain	Pulga Canyon	17	0
DHS (104a)	San Vicente Blvd. extended	Santa Monica	7	0
DHS (104)	Montana Ave. Storm Drain	Santa Monica	7	0
DHS (105)	Wilshire Blvd., Santa Monica	Santa Monica	15	4
DHS (106)	Strand Street extended	Santa Monica	8	6
DHS (106a)	Ashland Storm Drain	Santa Monica	24	2
DHS (107)	Venice City Beach at Brooks Av.	Ballona	3	10
DHS (108)	Venice Pier, Venice	Ballona	4	0

	Compliance Deadline		**3 years after effective date**	**6 years after effective date**
	Location Name	Subwatershed	Summer Dry Weather (Apr. 1-Oct. 31)	Winter Dry Weather (Nov. 1-Mar. 31)*
DHS (109)	Topsail Street extended	Ballona	11	0
DHS (110)	World Way extended	Dockweiler	5	1
DHS (111)	Opposite Hyperion Plant, 1 mile	Dockweiler	3	4
DHS (112)	Grand Avenue extended	Dockweiler	8	5
DHS (113)	26th Street extended	Hermosa	5	0
DHS (114)	Herondo Street extended	Hermosa	5	1
DHS (115)	Topaz Street extended	Redondo	8	12
	County Sanitation Districts of Los Angeles County Sites			
	Long Point	Palos Verdes	1	0
	Abalone Cove	Palos Verdes	1	0
	Portuguese Bend Cove	Palos Verdes	1	0
	Royal Palms	Palos Verdes	1	0
	Wilder Annex	Palos Verdes	1	0
	Cabrillo Beach, oceanside	Palos Verdes	1	0
	Malaga Cove	Palos Verdes	2	0
	Bluff Cove	Palos Verdes	0	0

* A re-opener is scheduled for four years after the effective date of the TMDL in order to re-evaluate the allowable exceedance days and necessary reductions during winter dry weather based on additional monitoring data.
** Required reductions are based on the assumption of daily sampling.

Table 7-4.3. Santa Monica Bay Beaches Bacteria TMDL (Dry Weather Only): Significant Dates

Date	Action
120 days after the effective date of the TMDL	Responsible jurisdictions and responsible agencies must submit coordinated shoreline monitoring plan(s), including a list of new sites or sites relocated to the wave wash at which time responsible jurisdictions and responsible agencies will select between daily and weekly shoreline sampling.
120 days after the effective date of the TMDL	Responsible jurisdictions and responsible agencies must identify and provide documentation on 342 potential discharges to Santa Monica Bay beaches listed in Appendix C of the TMDL Staff Report dated January 11, 2002. Documentation must include a Report of Waste Discharge (ROWD) where necessary. Responsible jurisdictions and responsible agencies must identify and provide documentation on potential discharges to the Area of Special Biological Significance (ASBS) in northern Santa Monica Bay from Latigo Point to the County line. Cessation of the discharges into the ASBS shall be required in conformance with the California Ocean Plan.
4 years after effective date of TMDL	Re-open TMDL to re-evaluate allowable winter dry weather exceedance days based on additional data on bacterial indicator densities in the wave wash, a re-evaluation of the reference system selected to set allowable exceedance levels, and a re-evaluation of the reference year used in the calculation of allowable exceedance days.
3 years after effective date of the TMDL	Achieve compliance with allowable exceedance days as set forth in Table 7-4.2a and rolling 30-day geometric mean targets during summer dry weather (April 1 to October 31).
6 years after effective date of the TMDL	Achieve compliance with allowable exceedance days as set forth in Table 7-4.2a and rolling 30-day geometric mean targets during winter dry weather (November 1 to March 31).

7-4 Santa Monica Bay Beaches Bacteria TMDL (Wet Weather Only)*

This TMDL was adopted by:
The Regional Water Quality Control Board on December 12, 2002.

This TMDL was approved by:
The State Water Resources Control Board on March 19, 2003.
The Office of Administrative Law on May 20, 2003.
The U.S. Environmental Protection Agency on June 19, 2003.

The effective date of this TMDL is: July 15, 2003.

The following table summarizes the key elements of this TMDL.

Table 7-4.4. Santa Monica Bay Beaches Bacteria TMDL (Wet Weather Only): Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at many Santa Monica Bay (SMB) beaches. Swimming in waters with elevated bacterial indicator densities has long been associated with adverse health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine water to protect the water contact recreation (REC-1) use. These targets are the most appropriate indicators of public health risk in recreational waters. These bacteriological objectives are set forth in Chapter 3 of the Basin Plan, as amended by the Regional Board on October 25, 2001. The objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives that serve as numeric targets for this TMDL are: <u>1. Rolling 30-day Geometric Mean Limits</u> a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. c. Enterococcus density shall not exceed 35/100 ml. <u>2. Single Sample Limits</u> a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

Element	Key Findings and Regulatory Provisions
Numeric Target (continued) (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	These objectives are generally based on an acceptable health risk for marine recreational waters of 19 illnesses per 1,000 exposed individuals as set by the US EPA (US EPA, 1986). The targets apply throughout the year. The final compliance point for the targets is the wave wash[1] where there is a freshwater outlet (i.e., publicly-owned storm drain or natural creek) to the beach, or at ankle depth at beaches without a freshwater outlet. Implementation of the above bacteria objectives and the associated TMDL numeric targets is achieved using a 'reference system/anti-degradation approach' rather than the alternative 'natural sources exclusion approach' or strict application of the single sample objectives. As required by the CWA and Porter-Cologne Water Quality Control Act, Basin Plans include beneficial uses of waters, water quality objectives to protect those uses, an anti-degradation policy, collectively referred to as water quality standards, and other plans and policies necessary to implement water quality standards. This TMDL and its associated waste load allocations, which shall be incorporated into relevant permits, are the vehicles for implementation of the Region's standards. The 'reference system/anti-degradation approach' means that on the basis of historical exceedance levels at existing shoreline monitoring locations, including a local reference beach within Santa Monica Bay, a certain number of daily exceedances of the single sample bacteria objectives are permitted. The allowable number of exceedance days is set such that (1) bacteriological water quality at any site is at least as good as at a designated reference site within the watershed and (2) there is no degradation of existing shoreline bacteriological water quality. This approach recognizes that there are natural sources of bacteria that may cause or contribute to exceedances of the single sample objectives and that it is not the intent of the Regional Board to require treatment or diversion of natural coastal creeks or to require treatment of natural sources of bacteria from undeveloped areas. The geometric mean targets may not be exceeded at any time. The rolling 30-day geometric means will be calculated on each day. If weekly sampling is conducted, the weekly sample result will be assigned to the remaining days of the week in order to calculate the daily rolling 30-day geometric mean. For the single sample targets, each existing shoreline monitoring site is assigned an allowable number of exceedance days during wet weather, defined as days with 0.1 inch of rain or greater and the three days following the rain event. (A separate amendment incorporating the Santa Monica Bay Beaches Dry-Weather Bacteria TMDL addressed the allowable number of summer and winter dry-weather exceedance days.)

Element	Key Findings and Regulatory Provisions
Source Analysis	With the exception of isolated sewage spills, storm water runoff conveyed by storm drains and creeks is the primary source of elevated bacterial indicator densities to SMB beaches during wet weather. Because the bacterial indicators used as targets in the TMDL are not specific to human sewage, storm water runoff from undeveloped areas may also be a source of elevated bacterial indicator densities. For example, storm water runoff from natural areas may convey fecal matter from wildlife and birds or bacteria from soil. This is supported by the finding that, at the reference beach, the probability of exceedance of the single sample targets during wet weather is 0.22.
Loading Capacity	Studies show that bacterial degradation and dilution during transport from the watershed to the beach do not significantly affect bacterial indicator densities at SMB beaches. Therefore, the loading capacity is defined in terms of bacterial indicator densities, which is the most appropriate for addressing public health risk, and is equivalent to the numeric targets, listed above. As the numeric targets must be met in the wave wash and throughout the day, no degradation allowance is provided.
Waste Load Allocations (for point sources)	Waste load allocations are expressed as the number of sample days at a shoreline monitoring site that may exceed the single sample targets identified under "Numeric Target." Waste load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. For each shoreline monitoring site and corresponding subwatershed, an allowable number of exceedance days is set for wet weather. The allowable number of exceedance days for a shoreline monitoring site for each time period is based on the lesser of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data at the monitoring site. This ensures that shoreline bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing shoreline bacteriological water quality. All responsible jurisdictions and responsible agencies[2] within a subwatershed are jointly responsible for complying with the allowable number of exceedance days for each associated shoreline monitoring site identified in Table 7-4.5 below. The three Publicly Owned Treatment Works (POTWs), the City of Los Angeles' Hyperion Wastewater Treatment Plant, Los Angeles County Sanitation Districts' Joint Water Pollution Control Plant, and the Las Virgenes Municipal Water Districts' Tapia Wastewater Reclamation Facility, discharging to Santa Monica Bay are each given individual WLAs of zero (0) days of exceedance during wet weather.

Element	Key Findings and Regulatory Provisions
Load Allocations (for nonpoint sources)	Because all storm water runoff to SMB beaches is regulated as a point source, load allocations of zero days of exceedance are set in this TMDL. If a nonpoint source is directly impacting shoreline bacteriological quality and causing an exceedance of the numeric target(s), the permittee(s) under the Municipal Storm Water NPDES Permits are not responsible through these permits. However, the jurisdiction or agency adjacent to the shoreline monitoring location may have further obligations as described under "Compliance Monitoring" below.
Implementation	The regulatory mechanisms used to implement the TMDL will include primarily the Los Angeles County Municipal Storm Water NPDES Permit (MS4 Permit), the Caltrans Storm Water Permit, the three NPDES permits for the POTWs, the authority contained in sections 13267 and 13263 of the Water Code, and regulations to be adopted pursuant to section 13291 of the Water Code. Each NPDES permit assigned a waste load allocation shall be reopened or amended at reissuance, in accordance with applicable laws, to incorporate the applicable waste load allocation(s) as a permit requirement. The implementation schedule will be determined on the basis of the implementation plan(s), which must be submitted to the Regional Board by responsible jurisdictions and agencies within two years of the effective date of the TMDL (see Table 7-4.7). After considering the implementation plan(s), the Regional Board shall amend the TMDL at a public hearing and, in doing so, will adopt an individual implementation schedule for each jurisdictional group (described in paragraph 3 below) that is as short as possible taking into account the implementation approach being undertaken. Responsible jurisdictions and agencies must clearly demonstrate in the above-mentioned plan whether they intend to pursue an integrated water resources approach.[3] If an integrated water resources approach is pursued, responsible jurisdictions and agencies may be allotted up to an 18-year implementation timeframe, based on a clear demonstration of the need for a longer schedule in the implementation plan, in recognition of the additional planning and time needed to achieve the multiple benefits of this approach. Otherwise, at most a 10-year implementation timeframe will be allotted, depending upon a clear demonstration of the time needed in the implementation plan. The subwatersheds associated with each beach monitoring location may include multiple responsible jurisdictions and responsible agencies. Therefore, a "primary jurisdiction," defined as the jurisdiction comprising greater than fifty percent of the subwatershed land area, is identified for each subwatershed (see Table 7-4.6).[4] Seven primary jurisdictions are identified within the Santa Monica Bay watershed, each with a group of associated subwatersheds and beach monitoring locations. These are identified as "jurisdictional groups" (see Table 7-4.6).

Element	Key Findings and Regulatory Provisions
Implementation (continued)	The primary jurisdiction of each "jurisdictional group" shall be responsible for submitting the implementation plan described above, which will determine the implementation timeframe for the subwatershed. A jurisdictional group may change its primary jurisdiction by submitting a joint, written request, submitted by the current primary jurisdiction and the proposed primary jurisdiction, to the Executive Officer requesting a reassignment of primary responsibility. Two jurisdictional groups may also choose to change the assignment of monitoring locations between the two groups by submitting a joint, written request, submitted by the current primary jurisdiction and the proposed primary jurisdiction, to the Executive Officer requesting a reassignment of the monitoring location. If an integrated water resources approach is pursued, the jurisdictional group(s) must achieve a 10% cumulative percentage reduction from the total exceedance-day reduction required for the group of beach monitoring locations within 6 years, a 25% reduction within 10 years, and a 50% reduction within 15 years of the effective date of the TMDL. These interim milestones for the jurisdictional group(s) will be re-evaluated, considering planning, engineering and construction tasks, based on the written implementation plan submitted to the Regional Board two years after the effective date of the TMDL (see Table 7-4.7). If an integrated water resources approach is not pursued, the jurisdictional group(s) must achieve a 25% cumulative percentage reduction from the total exceedance-day reduction required for the group of beach monitoring locations within 6 years, and a 50% reduction within 8 years of the effective date of the TMDL (see Table 7-4.7). For those beach monitoring locations subject to the antidegradation provision, there shall be no increase in exceedance days during the implementation period above that estimated for the beach monitoring location in the critical year as identified in Table 7-4.5. The final implementation targets in terms of allowable wet-weather exceedance days must be achieved at each individual beach location no later than 18 years after the TMDL's effective date if an integrated water resources approach is pursued, or no later than 10 years after the TMDL's effective date if an integrated water resources approach is not pursued. In addition, the geometric mean targets must be achieved for each individual beach location no later than 18 years or 10 years after the effective date, respectively, depending on whether a integrated water resources approach is pursued or not.

Element	Key Findings and Regulatory Provisions
Margin of Safety	The TMDL is set at levels that are exactly equivalent to the applicable water quality standards along with the proposed reference system/ antidegradation implementation procedure. An implicit margin of safety is included in the supporting water quality model by assuming no dilution between the storm drain and the wave wash, the point of compliance. This is a conservative assumption since studies have shown that there is a high degree of variability in the amount of dilution between the storm drain and wave wash temporally, spatially and among indicators, ranging from 100% to 0%.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for three time periods (wet weather, summer dry weather and winter dry weather) based on public health concerns and observed natural background levels of exceedance of bacterial indicators. (The two dry-weather periods are addressed in the Santa Monica Bay Beaches Dry-Weather Bacteria TMDL.) The critical condition for this bacteria TMDL is wet weather generally, when historic shoreline monitoring data for the reference beach indicate that the single sample bacteria objectives are exceeded on 22% of the wet-weather days sampled. To more specifically identify a critical condition within wet weather in order to set the allowable exceedance days shown in Tables 7-4.5 and 7-4.6, the 90th percentile 'storm year'[5] in terms of wet days is used as the reference year. Selecting the 90th percentile year avoids a situation where the reference beach is frequently out of compliance. It is expected that because responsible jurisdictions and agencies will be planning for this 'worst-case' scenario, there will be fewer exceedance days than the maximum allowed in drier years. Conversely, in the 10% of wetter years, it is expected that there may be more than the allowable number of exceedance days.
Compliance Monitoring	Responsible jurisdictions and agencies as defined in Footnote 2 shall conduct daily or systematic weekly sampling in the wave wash at all major drains[6] and creeks or at existing monitoring stations at beaches without storm drains or freshwater outlets to determine compliance.[7] At all locations, samples shall be taken at ankle depth and on an incoming wave. At locations where there is a freshwater outlet, during wet weather, samples should be taken as close as possible to the wave wash, and no further away than 10 meters down current of the storm drain or outlet.[8] At locations where there is a freshwater outlet, samples shall be taken when the freshwater outlet is flowing into the surf zone.

Element	Key Findings and Regulatory Provisions
Compliance Monitoring (continued)	If the number of exceedance days is greater than the allowable number of exceedance days for any jurisdictional group at the interim implementation milestones the responsible jurisdictions and agencies shall be considered out-of-compliance with the TMDL. If the number of exceedance days exceeds the allowable number of exceedance days for a target beach at the final implementation deadline, the responsible jurisdictions and agencies within the contributing subwatershed shall be considered out-of-compliance with the TMDL. Responsible jurisdictions or agencies shall not be deemed out of compliance with the TMDL if the investigation described in the paragraph below demonstrates that bacterial sources originating within the jurisdiction of the responsible agency have not caused or contributed to the exceedance. If a single sample shows the discharge or contributing area to be out of compliance, the Regional Board may require, through permit requirements or the authority contained in Water Code section 13267, daily sampling in the wave wash or at the existing open shoreline monitoring location (if it is not already) until all single sample events meet bacteria water quality objectives. Furthermore, if a beach location is out-of-compliance as determined in the previous paragraph, the Regional Board shall require responsible agencies to initiate an investigation, which at a minimum shall include daily sampling in the wave wash or at the existing open shoreline monitoring location until all single sample events meet bacteria water quality objectives. If bacteriological water quality objectives are exceeded in any three weeks of a four-week period when weekly sampling is performed, or, for areas where testing is done more than once a week, 75% of testing days produce an exceedence of bacteria water quality objectives, the responsible agencies shall conduct a source investigation of the subwatershed(s) pursuant to protocols established under Water Code 13178.

Element	Key Findings and Regulatory Provisions
Compliance Monitoring (continued)	If a beach location without a freshwater outlet is out-of-compliance or if the outlet is diverted or being treated, the adjacent municipality, County agency(s), or State or federal agency(s) shall be responsible for conducting the investigation and shall submit its findings to the Regional Board to facilitate the Regional Board exercising further authority to regulate the source of the exceedance in conformance with the Porter-Cologne Water Quality Control Act.

Note: The complete staff report for the TMDL is available for review upon request.

1 The wave wash is defined as the point at which the storm drain or creek empties and the effluent from the storm drain initially mixes with the receiving ocean water.
2 For the purposes of this TMDL, "responsible jurisdictions and responsible agencies" are defined as: (1) local agencies that are responsible for discharges from a publicly owned treatment works to the Santa Monica Bay watershed or directly to the Bay, (2) local agencies that are permittees or co-permittees on a municipal storm water permit, (3) local or state agencies that have jurisdiction over a beach adjacent to Santa Monica Bay, and (4) the California Department of Transportation pursuant to its storm water permit.
3 An integrated water resources approach is one that takes a holistic view of regional water resources management by integrating planning for future wastewater, storm water, recycled water, and potable water needs and systems; focuses on beneficial re-use of storm water, including groundwater infiltration, at multiple points throughout a watershed; and addresses multiple pollutants for which Santa Monica Bay or its watershed are listed on the CWA section 303(d) List as impaired. Because an integrated water resources approach will address multiple pollutants, responsible jurisdictions can recognize cost-savings because capital expenses for the integrated approach will implement several TMDLs that address pollutants in storm water. An integrated water resources approach shall not only provide water quality benefits to the people of the Los Angeles Region, but it is also anticipated that an integrated approach will incorporate and enhance other public goals. These may include, but are not limited to, water supply, recycling and storage; environmental justice; parks, greenways and open space; and active and passive recreational and environmental education opportunities.
4 Primary jurisdictions are not defined for the Ballona Creek subwatershed or the Malibu Creek subwatershed, since separate bacteria TMDLs are being developed for these subwatersheds.
5 For purposes of this TMDL, a 'storm year' means November 1 to October 31. The 90th percentile storm year was 1993 with 75 wet days at the LAX meteorological station.
6 Major drains are those that are publicly owned and have measurable flow to the beach during dry weather.
7 The frequency of sampling (i.e., daily versus weekly) will be at the discretion of the implementing agencies. However, the number of sample days that may exceed the objectives will be scaled accordingly.
8 Safety considerations during wet weather may preclude taking a sample in the wave wash.

Table 7-4.5. Final Allowable Wet-Weather Exceedance Days by Beach Location

Beach Monitoring Location	**Estimated no. of wet weather exceedance days in critical year (90th percentile)***	**Final allowable no. of wet weather exceedance days (daily sampling)***
DHS 010 - Leo Carrillo Beach, at 35000 PCH	17	17
DHS 009 - Nicholas Beach- 100 feet west of lifeguard tower	14	14
DHS 010a - Broad Beach	15	15
DHS 008 - Trancas Beach entrance, 50 yards east of Trancas Bridge	19	17
DHS 007 - Westward Beach, east of Zuma Creek	**17**	**17**
DHS 006 - Paradise Cove, adjacent to west side of Pier	**23**	**17**
DHS 005 - Latigo Canyon Creek entrance	**33**	**17**
DHS 005a - Corral State Beach	**17**	**17**
DHS 001a - Las Flores Beach	**29**	**17**
DHS 001 - Big Rock Beach, at 19900 PCH	**30**	**17**
DHS 003 - Malibu Point	**18**	**17**
DHS 003a - Surfrider Beach (second point)- weekly	**45**	**17**
S1 - Surfrider Beach (breach point)- daily	**47**	**17**
DHS 002 - Malibu Pier- 50 yards east	**45**	**17**
S2 - Topanga State Beach	**26**	**17**
DHS 101 - PCH and Sunset Bl.- 400 yards east	**25**	**17**
DHS 102 - 16801 Pacific Coast Highway, Bel Air Bay Club (chain fence)	**28**	**17**
S3 - Pulga Canyon storm drain- 50 yards east	**23**	**17**
DHS 103 - Will Rogers State Beach- Temescal Canyon (25 yrds. so. of drain)	**31**	**17**
S4 - Santa Monica Canyon, Will Rogers State Beach	**25**	**17**
DHS 104a - Santa Monica Beach at San Vicente Bl.	**34**	**17**
DHS 104 - Santa Monica at Montana Av. (25 yrds. so. of drain)	**31**	**17**
DHS 105 - Santa Monica at Arizona (in front of the drain)	**31**	**17**
S5 - Santa Monica Municipal Pier- 50 yards southeast	**35**	**17**
S6 - Santa Monica Beach at Pico/Kenter storm drain	**42**	**17**
DHS 106 - Santa Monica Beach at Strand St. (in front of the restrooms)	**36**	**17**
DHS 106a - Ashland Av. storm drain- 50 yards north	**39**	**17**
S7 - Ashland Av. storm drain- 50 yards south	**22**	**17**
DHS 107 - Venice City Beach at Brooks Av. (in front of the drain)	**40**	**17**
S8 - Venice City Beach at Windward Av.- 50 yards north	**13**	**13**
DHS 108 - Venice Fishing Pier- 50 yards south	**17**	**17**
DHS 109 - Venice City Beach at Topsail St.	**38**	**17**
S11 - Dockweiler State Beach at Culver Bl.	**23**	**17**
DHS 110 - Dockweiler State Beach- south of D&W jetty	**30**	**17**
S12 - Imperial HWY storm drain- 50 yards north	**17**	**17**
DHS 111 - Hyperion Treatment Plant One Mile Outfall	**18**	**17**
DHS 112 - Dockweiler State Beach at Grand Av. (in front of the drain)	**25**	**17**
S10 - Ballona Creek entrance- 50 yards south	**34**	**17**

Beach Monitoring Location	Estimated no. of wet weather exceedance days in critical year (90th percentile)*	Final allowable no. of wet weather exceedance days (daily sampling)*
S13 - Manhattan State Beach at 40th Street	4	4
S14 - Manhattan Beach Pier- 50 yards south	5	5
DHS 114 - Hermosa City Beach at 26th St.	12	12
S15 - Hermosa Beach Pier- 50 yards south	8	8
DHS 115 - Herondo Street storm drain- (in front of the drain)	19	17
S16 - Redondo Municipal Pier- 50 yards south	14	14
DHS 116 - Redondo State Beach at Topaz St. - north of jetty	19	17
S17 - Redondo State Beach at Avenue I	6	6
S18 - Malaga Cove, Palos Verdes Estates-daily	3	3
LACSDM - Malaga Cove, Palos Verdes Estates-weekly	14	14
LACSDB - Palos Verdes (Bluff) Cove, Palos Verdes Estates	0	0
LACSD1 - Long Point, Rancho Palos Verdes	5	5
LACSD2 - Abalone Cove Shoreline Park	1	1
LACSD3 - Portuguese Bend Cove, Rancho Palos Verdes	2	2
LACSD5 - Royal Palms State Beach	6	6
LACSD6 - Wilder Annex, San Pedro	2	2
LACSD7 - Cabrillo Beach, oceanside	3	3

Notes: * The compliance targets are based on existing shoreline monitoring data and assume daily sampling. If systematic weekly sampling is conducted, the compliance targets will be scaled accordingly. These are the compliance targets until additional shoreline monitoring data are collected prior to revision of the TMDL. Once additional shoreline monitoring data are available, the following will be re-evaluated when the TMDL is revised 1) estimated number of wet-weather exceedance days in the critical year at all beach locations, including the reference system(s) and 2) final allowable wet-weather exceedance days for each beach location.

Table 7-4.6. Interim Compliance Targets by Jurisdictional Group

Jurisdiction Group	Primary Jurisdiction	Additional Responsible Jurisdictions & Agencies	Subwatershed(s)	Monitoring Site(s)***	Interim Compliance Targets as Maximum Allowable Exceedance Days during Wet Weather*,**		
					10% Reduction Milestone	25% Reduction Milestone	50% Reduction Milestone
1	County of Los Angeles	Caltrans Malibu City of Los Angeles (Topanga only) Calabasas (Topanga only)	Arroyo Sequit	DHS 010	221	212	197
			Carbon Canyon	none			
			Corral Canyon	DHS 005a			
			Encinal Canyon	DHS 010a#			
			Escondido Canyon	none			
			Las Flores Canyon	DHS 001a			
			Latigo Canyon	DHS 005			
			Los Alisos Canyon	none			
			Pena Canyon	none			
			Piedra Gorda Canyon	DHS 001			
			Ramirez Canyon	DHS 006			
			Solstice Canyon	none			
			Topanga Canyon	S2			
			Trancas Canyon	DHS 008			
			Tuna Canyon	none			
			Zuma Canyon	DHS 007			

Jurisdiction Group	Primary Jurisdiction	Additional Responsible Jurisdictions & Agencies	Subwatershed(s)	Monitoring Site(s)***	Interim Compliance Targets as Maximum Allowable Exceedance Days during Wet Weather*,**		
					10% Reduction Milestone	**25% Reduction Milestone**	**50% Reduction Milestone**
2	City of Los Angeles	Caltrans County of Los Angeles El Segundo (DW only) Manhattan Beach (DW only) Culver City (MDR only) Santa Monica	Castlerock	none	342	324	294
			Dockweiler	S11, DHS 110, S12, DHS 111, DHS 112			
			Marina del Rey	DHS 107, S8#, DHS 108, DHS 109			
			Pulga Canyon	S3, DHS 103			
			Santa Monica Canyon	S4			
			Santa Ynez Canyon	DHS 101, DHS 102			
3	Santa Monica	Caltrans City of Los Angeles County of Los Angeles	Santa Monica	DHS 104a, DHS 104, DHS 105, S5, S6, DHS 106, DHS 106a, S7	257	237	203
4	Malibu	Caltrans County of Los Angeles	Nicholas Canyon	DHS 009#	14	14	14
5	Manhattan Beach	Caltrans El Segundo Hermosa Beach Redondo Beach	Hermosa	S13#, S14#, DHS 114#, S15#	29	29	29

Jurisdiction Group	Primary Jurisdiction	Additional Responsible Jurisdictions & Agencies	Subwatershed(s)	Monitoring Site(s)***	Interim Compliance Targets as Maximum Allowable Exceedance Days during Wet Weather*,**		
					10% Reduction Milestone	25% Reduction Milestone	50% Reduction Milestone
6	Redondo Beach	Caltrans Hermosa Beach Manhattan Beach Torrance County of Los Angeles	Redondo	DHS 115, S16#, DHS 116, S17#	58	57	56
7	Rancho Palos Verdes	Caltrans City of Los Angeles Palos Verdes Estates Redondo Beach Rolling Hills Rolling Hills Estates Torrance County of Los Angeles	Palos Verdes Peninsula	S18#, LACSDM#, LACSDB#, LACSD1#, LACSD2#, LACSD3#, LACSD5#, LACSD6#, LACSD7#	36	36	36

Notes: *Interim milestones will be re-calculated during the revision of the TMDL based on shoreline monitoring data collected from the wave wash and a re-evaluation of the most appropriate reference system and reference year. Furthermore, if an integrated water resources approach is pursued, as demonstrated by the implementation plans to be submitted to the Regional Board by the primary jurisdictions within two years of the effective date of the TMDL, the interim milestones will be re-evaluated on the basis of the implementation plan, considering planning, engineering and construction tasks. **Interim milestones for the Malibu and Ballona shoreline monitoring locations will be identified in subsequent bacteria TMDLs to be developed for these two watersheds. ***Monitoring sites are those locations currently monitored by the City of Los Angeles, County Sanitation Districts of Los Angeles County, and the Los Angeles County Department of Health Services at the time of adoption by the Regional Board. This list does not preclude the establishment of additional monitoring stations. For those subwatersheds without an existing shoreline monitoring site, responsible jurisdictions and agencies must establish a shoreline monitoring site if there is measurable flow from a creek or publicly owned storm drain to the beach during dry weather. # For those beach monitoring locations subject to the antidegradation provision, there shall be no increase in exceedance days during the implementation period above that estimated for the beach monitoring location in the critical year as identified in Table 7-4.5.

Table 7-4.7. Santa Monica Bay Beaches Bacteria TMDL (Wet Weather Only): Significant Dates

Date	Action
120 days after the effective date of the TMDL	Pursuant to a request from the Regional Board, responsible jurisdictions and responsible agencies must submit coordinated shoreline monitoring plan(s) to be approved by the Executive Officer, including a list of new sites* and/or sites relocated to the wave wash at which time responsible jurisdictions and responsible agencies shall select between daily or systematic weekly shoreline sampling.
20 months after the effective date of the TMDL	Responsible jurisdictions and agencies shall provide a draft written report to the Regional Board outlining how each intends to cooperatively (through Jurisdictional Groups) achieve compliance with the TMDL. The report shall include implementation methods, an implementation schedule, and proposed milestones.
Two years after effective date of TMDL	Responsible jurisdictions and agencies shall provide a written report to the Regional Board outlining how each intends to cooperatively (through Jurisdictional Groups) achieve compliance with the TMDL. The report shall include implementation methods, an implementation schedule, and proposed milestones. Under no circumstances shall final compliance dates exceed 10 years for non-integrated approaches or 18 years for integrated water resources approaches. Regional Board staff shall bring to the Regional Board the aforementioned plans as soon as practicable for consideration.
4 years after effective date of TMDL	The Regional Board shall reconsider the TMDL to: (1) refine allowable wet weather exceedance days based on additional data on bacterial indicator densities in the wave wash and an evaluation of site-specific variability in exceedance levels, (2) re-evaluate the reference system selected to set allowable exceedance levels, including a reconsideration of whether the allowable number of exceedance days should be adjusted annually dependent on the rainfall conditions and an evaluation of natural variability in exceedance levels in the reference system(s), (3) re-evaluate the reference year used in the calculation of allowable exceedance days, and (4) re-evaluate whether there is a need for further clarification or revision of the geometric mean implementation provision.

Date	Action
Significant Dates for Responsible Jurisdictions and Agencies *Not* Pursuing an Integrated Water Resources Approach	
6 years after effective date of the TMDL	Each defined jurisdictional group must achieve a 25% cumulative percentage reduction from the total exceedance-day reductions required for that jurisdictional group as identified in Table 7-4.6.
8 years after effective date of the TMDL	Each defined jurisdictional group must achieve a 50% cumulative percentage reduction from the total exceedance-day reductions required for that jurisdictional group as identified in Table 7-4.6.
10 years after effective date of the TMDL	Final implementation targets in terms of allowable wet-weather exceedance days must be achieved at each individual beach as identified in Table 7-4.5. In addition, the geometric mean targets must be achieved for each individual beach location.
Significant Dates for Responsible Jurisdictions and Agencies Pursuing an Integrated Water Resources Approach to Implementation	
6 years after effective date of the TMDL	Each defined jurisdictional group must achieve a 10% cumulative percentage reduction from the total exceedance-day reductions required for that jurisdictional group as identified in Table 7-4.6.
10 years after effective date of the TMDL	Each defined jurisdictional group must achieve a 25% cumulative percentage reduction from the total exceedance-day reductions required for that jurisdictional group as identified in Table 7-4.6.
15 years after effective date of the TMDL	Each defined jurisdictional group must achieve a 50% cumulative percentage reduction from the total exceedance-day reductions required for that jurisdictional group as identified in Table 7-4.6.
18 years after effective date of the TMDL	Final implementation targets in terms of allowable wet-weather exceedance days must be achieved at each individual beach as identified in Table 7-4.5. In addition, the geometric mean targets must be achieved for each individual beach location.

Notes: *For those subwatersheds without an existing shoreline monitoring site, responsible jurisdictions and agencies must establish a shoreline monitoring site if there is measurable flow from a creek or publicly owned storm drain to the beach during dry weather.

7-5 Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on August 7, 2003.

This TMDL was approved by:
The State Water Resources Control Board on November 19, 2003.
The Office of Administrative Law on January 30, 2004.
The U.S. Environmental Protection Agency on March 18, 2004.

The effective date of this TMDL is: March 18, 2004

The following table includes the elements of this TMDL.

Table 7-5.1. Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL: Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at Marina del Rey Harbor (MdRH) Mothers' Beach and back basins. Swimming in marine waters with elevated bacterial indicator densities has long been associated with adverse health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine water to protect the water contact recreation use. These targets are the most appropriate indicators of public health risk in recreational waters. These bacteriological objectives are set forth in Chapter 3 of the Basin Plan.[1] The objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives that serve as the numeric targets for this TMDL are: 1. Rolling 30-day Geometric Mean Limits a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. c. Enterococcus density shall not exceed 35/100 ml. 2. Single Sample Limits a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

Element	Key Findings and Regulatory Provisions
Numeric Target (continued) (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	These objectives are generally based on an acceptable health risk for marine recreational waters of 19 illnesses per 1,000 exposed individuals as set by the US EPA (US EPA, 1986). The targets apply throughout the year. The final compliance point for the targets is the point at which the effluent from a storm drain initially mixes with the receiving water where there is a freshwater outlet (i.e., publicly-owned storm drain) to the beach, or at ankle depth at beaches without a freshwater outlet, and at surface and depth throughout the Harbor. For Mothers' Beach the targets will apply at existing or new monitoring sites, with samples taken at ankle depth. For Basins D, E, and F the targets will also apply at existing or new monitoring sites with samples collected at surface and at depth. Implementation of the above bacteria objectives and the associated TMDL numeric targets is achieved using a 'reference system/anti-degradation approach' rather than the alternative 'natural sources exclusion approach subject to antidegradation policies' or strict application of the single sample objectives. As required by the CWA and Porter-Cologne Water Quality Control Act, Basin Plans include beneficial uses of waters, water quality objectives to protect those uses, an anti-degradation policy, collectively referred to as water quality standards, and other plans and policies necessary to implement water quality standards. This TMDL and its associated waste load allocations, which shall be incorporated into relevant permits, and load allocations are the vehicles for implementation of the Region's standards. The 'reference system/anti-degradation approach' means that on the basis of historical exceedance levels at existing monitoring locations, including a local reference beach within Santa Monica Bay, a certain number of daily exceedances of the single sample bacteria objectives are permitted. The allowable number of exceedance days is set such that (1) bacteriological water quality at any site is at least as good as at a designated reference site within the watershed and (2) there is no degradation of existing bacteriological water quality. This approach recognizes that there are natural sources of bacteria that may cause or contribute to exceedances of the single sample objectives and that it is not the intent of the Regional Board to require treatment or diversion of natural coastal creeks or to require treatment of natural sources of bacteria from undeveloped areas. The geometric mean targets may not be exceeded at any time. The rolling 30-day geometric means will be calculated on each day. If weekly sampling is conducted, the weekly sample result will be assigned to the remaining days of the week in order to calculate the daily rolling 30-day geometric mean. For the single sample targets, each existing monitoring site is assigned an allowable number of exceedance days for three time periods (1) summer dry-weather (April 1 to October 31), (2) winter dry-weather (November 1 to March 31), and (3) wet-weather (defined as days with 0.1 inch of rain or greater and the three days following the rain event.)

Element	Key Findings and Regulatory Provisions
Source Analysis	Dry-weather urban runoff and storm water conveyed by storm drains are the primary sources of elevated bacterial indicator densities to MdRH Mothers' Beach and back basins during dry and wet-weather. As of December 2002, there were seven dischargers located within the Marina del Rey watershed. These dischargers were issued general NPDES permits, general industrial and/or general construction storm water permits. The bacteria loads associated with these discharges are largely unknown, since most do not monitor for bacteria. However, these discharges are not expected to be a significant source of bacteria. Potential nonpoint sources of bacterial contamination at Mothers' Beach and the back basins of MdRH include marina activities such as waste disposal from boats, boat deck and slip washing, swimmer "wash-off", restaurant washouts and natural sources from birds, waterfowl and other wildlife. The bacteria loads associated with these nonpoint sources are unknown.
Loading Capacity	Studies show that bacterial degradation and dilution during transport from the watershed to the receiving water do not significantly affect bacterial indicator densities. Therefore, the loading capacity is defined in terms of bacterial indicator densities, which is the most appropriate for addressing public health risk, and is equivalent to the numeric targets, listed above. As the numeric targets must be met at the point where the effluent from storm drains initially mixes with the receiving water and back basins throughout the day, no degradation or dilution allowance is provided.
Waste Load Allocations (for point sources)	The Los Angeles County MS4 and CalTrans storm water permittees and co-permittees are assigned waste load allocations (WLAs) expressed as the number of daily or weekly sample days that may exceed the single sample targets identified under "Numeric Target" at a monitoring site. Waste load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. The allowable number of exceedance days for a monitoring site for each time period is based on the lesser of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data at the monitoring site. This ensures that bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing water quality. For each monitoring site, allowable exceedance days are set on an annual basis as well as for three time periods. These three periods are: 1. summer dry-weather (April 1 to October 31) 2. winter dry-weather (November 1 to March 31) 3. wet-weather days (defined as days of 0.1 inch of rain or more plus three days following the rain event).

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	The County of Los Angeles, City of Los Angeles, Culver City, and California Department of Transportation (CalTrans) are the responsible jurisdictions and responsible agencies[2] for the Marina del Rey Watershed. The County of Los Angeles is the primary jurisdiction because Marina del Rey Harbor is located in an unincorporated area of the County, the County is the lead Permittee in the Los Angeles County Municipal Storm Water NPDES Permit (MS4) stormwater permit, and the Marina is owned and operated by the County of Los Angeles. The responsible jurisdictions and responsible agencies within the Marina del Rey Watershed are jointly responsible for complying with the waste load allocation at monitoring locations impacted by MS4 stormwater discharges. All proposed WLAs for summer dry-weather are zero (0) days of allowable exceedances.[3] The proposed WLAs for winter dry-weather and wet-weather vary by monitoring location as identified in Table 7-5.2. The waste load allocation for the rolling 30-day geometric mean for the County of Los Angeles, City of Los Angeles, Culver City, and CalTrans is zero (0) days of allowable exceedances. As discussed in "Source Analysis", discharges from general NPDES permits, general industrial storm water permits and general construction storm water permits are not expected to be a significant source of bacteria. Therefore, the WLAs for these discharges are zero (0) days of allowable exceedances for all three time periods and for the single sample limits and the rolling 30-day geometric mean. Any future enrollees under a general NPDES permit, general industrial storm water permit or general construction storm water permit within the MdR Watershed will also be subject to a WLA of zero days of allowable exceedances.
Load Allocations (for nonpoint sources)	Load allocations are expressed as the number of daily or weekly sample days that may exceed the single sample targets identified under "Numeric Target" at a monitoring site. Load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. Since all storm water runoff to MdRH is regulated as a point source, load allocations of zero (0) days of allowable exceedances for nonpoint sources are set in this TMDL for each time period. The load allocation for the rolling 30-day geometric mean for nonpoint sources is zero (0) days of allowable exceedances. If a nonpoint source is directly impacting bacteriological quality and causing an exceedance of the numeric target(s), the permittee(s) under the Municipal Storm Water NPDES Permits are not responsible through these permits. However, the jurisdiction or agency adjacent to the monitoring location may have further obligations to identify such sources, as described under "Compliance Monitoring" below.

Element	Key Findings and Regulatory Provisions
Implementation	The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the CalTrans Storm Water Permit, general NPDES permits, general industrial storm water permits, general construction storm water permits, and the authority contained in Sections 13263 and 13267 of the Water Code. Each NPDES permit assigned a WLA shall be reopened or amended at reissuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. Load allocations for nonpoint sources will be implemented within the context of this TMDL. This TMDL will be implemented in three phases over a ten-year period (see Table 7-5.3), unless an Integrated Water Resources Approach is implemented (in which case compliance must be achieved in the shortest time possible but not to exceed 18 years from the effective date of the Santa Monica Bay Beaches Bacteria TMDL). Within three years of the effective date of the TMDL, there shall be no allowable exceedances of the single sample limits at any location during summer dry-weather (April 1 to October 31) or winter dry-weather (November 1 to March 31) and the rolling 30-day geometric mean targets must be achieved. The Executive Officer of the Regional Board may extend the compliance date no more than one year if he finds that there is insufficient capacity in the sewer line between Marina del Rey and the Hyperion Treatment Plant. Within ten years of the effective date of the TMDL, compliance with the allowable number of wet-weather exceedance days and rolling 30-day geometric mean targets must be achieved, unless an Integrated Water Resources Approach is implemented (in which case compliance must be achieved in the shortest time possible but not to exceed 18 years from the effective date of the Santa Monica Bay Beaches Bacteria TMDL). For those monitoring locations subject to the antidegradation provision, there shall be no increase in exceedance days during the implementation period above the estimated days for the monitoring location in the critical year as identified in Table 7-5.2. The responsible jurisdictions and the responsible agencies must submit a report to the Executive Officer by July 30, 2005 (see Table 7-5.3) describing how they intend to comply with the dry-weather and wet-weather WLAs. As the primary jurisdiction, the County of Los Angeles is responsible for submitting the implementation plan report described above. In addition, the County of Los Angeles Department of Beaches and Harbor must submit a report detailing its efforts to prohibit discharges from boats in the Harbor (see Table 7-5.3).

Element	Key Findings and Regulatory Provisions
Implementation (continued)	The Marina del Rey Harbor jurisdictional unit may change its primary jurisdiction by submitting a joint, written request, submitted by the current primary jurisdiction and the proposed primary jurisdiction, to the Executive Officer requesting reassignment of primary responsibility. The Regional Board intends to reconsider this TMDL, consistent with the scheduled reconsideraton of the Santa Monica Bay (SMB) beaches TMDLs. The SMB beaches TMDLs are scheduled to be reconsidered in four years to re-evaluate the allowable winter dry-weather and wet-weather exceedance days based on additional data on bacterial indicator densities in the wave wash; to re-evaluate the reference system selected to set allowable exceedance levels; to re-evaluate the reference year used in the calculation of allowable exceedance days, and to re-evaluate the need for revision of the geometric mean implementation provision. The Regional Board intends to conduct a similar review of this TMDL within 4 years after the effective date. In addition, if a suitable reference watershed that is representative of an enclosed harbor has not been found by this time, the Regional Board may consider implementing a 'natural source exclusion approach subject to antidegradation policies' to the Marina del Rey Harbor in lieu of the 'reference watershed/antidegradation approach'.
Margin of Safety	A margin of safety has been implicitly included through several conservative assumptions, such as the assumption that no dilution takes place between the storm drain and where the effluent initially mixes with the receiving water, and that bacterial degradation rates are not fast enough to affect bacteria densities in the receiving water. In addition, an explicit margin of safety has been incorporated, as the load allocations will allow exceedances of the single sample targets no more than 5% of the time on an annual basis, based on the cumulative allocations proposed for dry and wet weather. Currently, the Regional Board concludes that there is water quality impairment if more than 10% of samples at a site exceed the single sample bacteria objectives annually.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for three time periods (summer dry-weather, winter-dry weather, and wet-weather) based on public health concerns and observed natural background levels of exceedance of bacterial indicators. The critical condition for bacteria loading is during wet weather, when historic monitoring data for MdRH and the reference beach indicate greater exceedance probabilities of the single sample bacteria objectives then during dry-weather.

Element	Key Findings and Regulatory Provisions
Seasonal Variations and Critical Conditions (continued)	To more specifically identify a critical condition within wet-weather, in order to set the allowable exceedance days shown in Table 7-5.2, the 90th percentile 'storm year'[4] in terms of wet days[5] is used as the reference year. Selecting the 90th percentile year avoids a situation where the reference system is frequently out of compliance. It is expected that because responsible jurisdictions and agencies will be planning for this 'worst-case' scenario, there will be fewer exceedance days than the maximum allowed in drier years. Conversely, in the 10% of wetter years, it is expected that there may be more than the allowable number of exceedance days.
Compliance Monitoring	Responsible jurisdictions and agencies shall conduct daily or systematic weekly sampling at the initial point of mixing with the receiving water at all major drains[6], at existing monitoring stations and at other designated monitoring stations to determine compliance.[7] For Mothers' Beach the targets will also apply at existing or new monitoring sites, with samples taken at ankle depth. For Basins D, E, and F the targets will also apply at existing or new monitoring sites with samples collected at surface and at depth. Samples collected at ankle depth shall be taken on an incoming wave. At locations where there is a freshwater outlet, during wet weather, samples should be taken as close as possible to the initial point of mixing with the receiving water, and no further away than 10 meters down current of the storm drain or outlet.[8] At locations where there is a freshwater outlet, samples shall be taken when the freshwater outlet is flowing into the surf zone.[9] If the number of exceedance days is greater than the allowable number of exceedance days, the responsible jurisdictions and agencies shall be considered out of compliance with the TMDL. Responsible jurisdictions or agencies shall not be deemed out of compliance with the TMDL if the investigation described in the paragraph below demonstrates that bacterial sources originating within the jurisdiction of the responsible agency have not caused or contributed to the exceedance. If a single sample shows the discharge or contributing area to be out of compliance, the Regional Board may require, through permit requirements or the authority contained in Water Code Section 13267, daily sampling where the effluent from the storm drain initially mixes with the receiving water or at the existing monitoring location (if it is not already) until all single sample events meet bacteria water quality objectives. Furthermore, if a location is out-of-compliance as determined in the previous paragraph, the Regional Board shall require responsible agencies to initiate an investigation, which at a minimum shall include daily sampling where the effluent from the storm drain initially mixes with the receiving water or at the existing monitoring location until all single sample events meet bacteria water quality objectives.

Element	Key Findings and Regulatory Provisions
Compliance Monitoring (continued)	If bacteriological water quality objectives are exceeded in any three weeks of a four-week period when weekly sampling is performed, or, for areas where testing is done more than once a week, 75% of testing days produce an exceedance of bacteria water quality objectives, the responsible agencies shall conduct a source investigation of the subwatershed(s) pursuant to protocols established under Water Code Section 13178. Responsible jurisdictions may wish to conduct compliance monitoring at key jurisdictional boundaries as part of this effort. If a location without a freshwater outlet is out-of-compliance or if the outlet is diverted or being treated, the adjacent municipality, County agency(s), or State or federal agency(s) shall be responsible for conducting the investigation and shall submit its findings to the Regional Board to facilitate the Regional Board exercising further authority to regulate the source of the exceedance in conformance with the Water Code. In addition, the MdR responsible jurisdictions and responsible agencies are required to conduct a study to determine the relative bacterial loading from sources including but not limited to storm drains, boats, birds, and other nonpoint sources.. Once this study is completed in three years, the Regional Board will adjust the WLAs, if appropriate, based on the study, during the scheduled review of this TMDL.

Note: The complete staff report for the TMDL is available for review upon request.

1 The bacteriological objectives were revised by a Basin Plan amendment adopted by the Regional Board on October 25, 2001, and subsequently approved by the State Water Resources Control Board, the Office of Administrative Law and finally by U.S. EPA on September 25, 2002.
2 For the purposes of this TMDL, "responsible jurisdictions and responsible agencies" are defined as (1) local agencies that are permittees or co-permittees on a municipal storm water permit, (2) local or state agencies that have jurisdiction over Mothers' Beach or the back basins of MdRH, and (3) the California Department of Transportation pursuant to its storm water permit.
3 In order to fully protect public health, no exceedances are permitted at any monitoring location during summer dry-weather (April 1 to October 31). In addition to being consistent with the two criteria, waste load allocations of zero (0) days of allowable exceedances are further supported by the fact that the California Department of Health Services has established minimum protective bacteriological standards – the same as the numeric targets in this TMDL – which, when exceeded during the period April 1 to October 31, result in posting a beach with a health hazard warning (California Code of Regulations, Title 17, Section 7958).
4 For purposes of this TMDL, a 'storm year' means November 1 to October 31. The 90^{th} percentile storm year was 1993 with 75 wet days at the LAX meteorological station.
5 A wet day is defined as a day with rainfall of 0.1 inch or more plus the 3 days following the rain event.
6 Major drains are those that are publicly owned and have measurable flow to the beach during dry weather.
7 The frequency of sampling (i.e., daily versus weekly) will be at the discretion of the implementing agencies. However, the number of sample days that may exceed the objectives will be scaled by solving for the variable "X" in the following equation: (Number of wet-weather days or dry-weather days in 1993 / 365 days = X / 52 weeks), where the number of wet-weather days and dry-weather days are based on the historical rainfall record at the Los Angeles International Airport also known as "LAX".
8 Safety considerations during wet weather may preclude taking a sample at the initial point of mixing with the receiving water.
9 At some freshwater outlets and storm drains, during high tide conditions, the tide pushes the freshwater discharge back into the drain. As a result, sampling under these conditions is not representative of water quality conditions when the drain is flowing into the surf zone. The tide height at which this situation occurs will vary with the size, slope and configuration of the drain and the beach. Responsible agencies must ensure that samples are collected only when drains are flowing into the surf zone, not when the discharge is pushed back into the drain. Responsible agencies must submit a coordinated monitoring plan within 120 days of the effective date of the TMDL, in which this assurance should be included.

Table 7-5.2. Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL: Final Allowable Exceedance Days by Sampling Location

Compliance Deadline		3 years after effective date[1]		3 years after effective date[1]		10 years after effective date[2]	
		Summer Dry Weather ^		Winter Dry Weather ^*		Wet Weather ^*	
		April 1 - October 31		November 1 – March 31		November 1 - October 31	
Station ID	Location Name	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)
HYP (S9)	Mothers' Beach, at Lifeguard Tower	0	0	3	1	17	3
DHS (109a)	Mothers' Beach, at Playground Area	0	0	3	1	17	3
DHS (109b)	Mothers' Beach, between Lifeguard Tower and Boat Dock	0	0	3	1	17	3
DHS (109c)	Los Angeles County Fire Dock - end of main channel	0	0	3	1	17	3
DHB (MDR-8)	Mothers' Beach, near first slips outside swim area	0	0	3	1	17	3
DHB (MDR-18)	Mothers' Beach, 20 meters off of the wheel chair ramp	0	0	0	0	15	3
DHB (MDR-19)	Mothers' Beach, end of wheel chair ramp	0	0	3	1	17	3
DHB (MDR-9)	Basin F, innermost end	0	0	3	1	8	1
DHB (MDR-11)	End of Main Channel	0	0	3	1	17	3
DHB (MDR-10)	Basin E, near center of basin	0	0	3	1	17	3
DHB (MDR-20)	Basin E, in front of Tidegate from Oxford Basin	0	0	3	1	17	3

Notes: The number of allowable exceedances is based on the lesser of (1) the reference system or (2) existing levels of exceedance based on historical monitoring data.
The allowable number of exceedance days during winter dry-weather is calculated based on the 10th percentile storm year in terms of dry days at the LAX meteorological station
The allowable number of exceedance days during wet-weather is calculated based on the 90th percentile storm year in terms of wet days at the LAX meteorological station.
[1] The Executive Officer of the Regional Board may extend the compliance date by no more than one year if he finds that there is insufficient capacity in the existing sewer line from Marina del Rey to the Hyperion Treatment Plant.
[2] If an Integrated Water Resources Approach is implemented, the compliance period must be the shortest time possible but not to exceed 18 years from the effective date of the Santa Monica Bay Beaches Bacteria Wet-Weather TMDL.
^ A dry day is defined as a non-wet day. A wet day is defined as a day with a 0.1-inch or more of rain and the three days following the rain event.
* A revision of the TMDL is scheduled for four years after the effective date of the Santa Monica Bay Beaches TMDLs in order to re-evaluate the allowable exceedance days during winter dry-weather and wet-weather based on additional monitoring data and the results of the study of relative loading from sources including but not limited to storm drains, boats, birds and other nonpoint sources.

Table 7-5.3. Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL: Significant Dates

Date	Action
120 days after the effective date of the TMDL	Responsible jurisdictions and responsible agencies shall submit coordinated monitoring plan(s) to be approved by the Executive Officer. The monitoring plans shall including a list of new sites* and/or sites relocated to include the point where the effluent from the storm drain initially mixes with the receiving water, at least three locations off of Mothers' Beach, and at least one location in each of the other Marina del Rey Basins (i.e., Basins A, B, C, E, F, G, and H). The plan shall include the responsible jurisdictions' and responsible agencies' recommended sampling frequency at each location. The Los Angeles County Department of Beaches and Harbors shall provide a written report to the Regional Board detailing efforts to control discharges from boats, including but not limited to the number of live-aboards and the number of pump-outs per month. The responsible jurisdictions and the responsible agencies must identify and provide documentation on small drains discharging to Mothers' Beach and the Marina del Rey Harbor. Documentation must include a report of waste discharge where necessary.
March 30, 2005 (Draft Report) July 30, 2005 (Final Report)	Responsible jurisdictions and responsible agencies shall provide a written report to the Regional Board outlining how each intends to cooperatively achieve compliance with the dry-weather and wet-weather TMDL Waste Load Allocations. The report shall include implementation methods, an implementation schedule, and proposed milestones.
3 years after effective date of the TMDL	Responsible jurisdictions and responsible agencies shall provide to the Regional Board results of the study conducted to determine the relative bacterial loading from sources including but not limited to storm drains, boats, birds and other nonpoint sources at the Oxford Flood Control Basin, Mothers' Beach, and the Harbor
3 years after effective date of the TMDL	Achieve compliance with the allowable exceedance days as set forth in Table 7-5.2 and rolling 30-day geometric mean targets during summer dry-weather (April 1 to October 31) and winter dry weather (November 1 to March 31). The Executive Officer of the Regional Board may extend the compliance date by no more than one year if he finds that there is insufficient capacity in the existing sewer line from Marina del Rey to the Hyperion Treatment Plant.
4 years after effective date of the TMDL	The Regional Board shall reconsider this TMDL to: (1) refine allowable winter dry-weather and wet-weather exceedance days based on additional data on bacterial indicator densities, an evaluation of site-specific variability in exceedance levels, and the results of the study of relative bacterial loading from sources including but not limited to storm drains, boats, birds, and other nonpoint sources,

Date	Action
4 years after effective date of the TMDL (continued)	(2) re-evaluate the reference system selected to set allowable exceedance levels, including a reconsideration of whether the allowable number of exceedance days should be adjusted annually dependent on the rainfall conditions and an evaluation of natural variability in exceedance levels in the reference system(s), and if an appropriate reference system cannot be identified for this enclosed harbor, evaluate using the 'natural sources exclusion approach subject to antidegradation policies' rather than the 'reference system/antidegradation' approach, (3) re-evaluate the reference year used in the calculation of allowable exceedance days, and (4) re-evaluate whether there is a need for further clarification or revision of the geometric mean implementation provision.
10 years after effective date of the TMDL or, if an Integrated Water Resources Approach is implemented, in the shortest time possible but not to exceed 18 years from the effective date of the Santa Monica Bay Beaches Bacteria Wet-Weather TMDL	Achieve compliance with the allowable exceedance days as set forth in Table 7-5.2 and rolling 30-day geometric mean targets during wet-weather.

* For those areas of the marina without an existing monitoring site, responsible jurisdictions and responsible agencies must establish a monitoring site if there is measurable flow from a publicly owned storm drain to the basin during dry weather.

7-6 Upper Santa Clara River Chloride TMDL

This TMDL was adopted by: The Regional Water Quality Control Board on October 24, 2002.
This TMDL was remanded by: The State Water Resources Control Board on February 19, 2003
This TMDL was adopted by: The Regional Water Quality Control Board on July 10, 2003.

This TMDL was revised and adopted by:
The Regional Water Quality Control Board on May 6, 2004.
This TMDL was approved by:
The State Water Resource Control Board on July 22, 2004
The Office of Administrative Law on November 15, 2004
The U.S. Environmental Protection Agency on April 28, 2005

This TMDL was revised and adopted by:
The Regional Water Quality Control Board on August 3, 2006.
This TMDL was approved by:
The State Water Resource Control Board on May 22, 2007.
The Office of Administrative Law on July 3, 2007.

This TMDL was revised and adopted by:
The Regional Water Quality Control Board on December 11, 2008.
This TMDL was approved by:
The State Water Resource Control Board on October 20, 2009.
The Office of Administrative Law on January 26, 2010.
The U.S. Environmental Protection Agency on April 6, 2010.

The effective date of this TMDL is: April 6, 2010.

Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Problem Statement	Elevated chloride concentrations are causing impairments of the water quality objective in Reach 5 (EPA 303(d) list Reach 7) and Reach 6 (EPA 303(d) list Reach 8) of the Santa Clara River (SCR). These reaches are on the 1998 and 2002 Clean Water Act (CWA) 303(d) lists of impaired water bodies as impaired due to chloride. The objectives for these reaches were set to protect all beneficial uses; agricultural beneficial uses have been determined to be most sensitive, and not currently attained at the downstream end of Reach 5 (EPA 303(d) list Reach 7) and Reach 6 (EPA 303(d) list Reach 8) in the Upper Santa Clara River (USCR). Irrigation of salt sensitive crops such as avocados, strawberries, and nursery crops with water containing elevated levels of chloride results in reduced crop yields. Chloride levels in groundwater in Piru Basin underlying the reach downstream of Reach 5 are also rising.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the load allocations)	Numeric targets are equivalent to conditional site specific objectives (SSOs) that are based on technical studies regarding chloride levels which protect salt sensitive crops and endangered and threatened species, chloride source identification, and the magnitude of assimilative capacity in the upper reaches of the Santa Clara River and underlying groundwater basin. The TMDL special study, Literature Review Evaluation, shows that the most sensitive beneficial uses can be supported with rolling averaging periods as shown in the tables below.

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Numeric Target (continued) (Interpretation of the numeric water quality objective, used to calculate the load allocations)	1. Conditional Surface Water SSOs The conditional SSOs for chloride in the surface water of Reaches 4B, 5, and 6 shall apply and supersede the existing water quality objectives of 100 mg/L only when chloride load reductions and/or chloride export projects are in operation by the SCVSD according to the implementation section in Table 7-6.1. Conditional surface water SSOs for Reaches 4B, 5, and 6 of the Santa Clara River are listed as follows: <table><tr><th>Reach</th><th>Conditional SSO for Chloride (mg/L)</th><th>Rolling Averaging Period</th></tr><tr><td>6</td><td>150</td><td>12-month</td></tr><tr><td>5</td><td>150</td><td>12-month</td></tr><tr><td>4B</td><td>117</td><td>3-month</td></tr><tr><td>4B Critical Conditions</td><td>130[a]</td><td>3-month[b]</td></tr></table> a. The conditional SSO for chloride in Reach 4B under critical condition shall apply only if the following conditions and implementation requirements are met: 1. Water supply chloride concentrations measured in Castaic Lake are ≥ 80 mg/L. 2. The Santa Clarita Valley Sanitation District (SCVSD) shall provide supplemental water to salt-sensitive agricultural uses that are irrigated with surface water during periods when Reach 4B surface water exceeds 117 mg/L. 3. By May 4, 2020, the 10-year cumulative net chloride loading above 117 mg/L ($CNCl_{117}$)[i] to Reach 4B of the SCR, calculated annually, from the SCVSD Water Reclamation Plants (WRPs) shall be zero or less. [i] $CNCl_{117} = Cl_{(Above\ 117)} - Cl_{(Below\ 117)} - Cl_{(Export\ Ews)}$ Where: $Cl_{(Above\ 117)}$ = [WRP Cl Load[1]/Reach 4B Cl Load[2]] * [Reach 4B Cl $Load_{>117}$[3]] $Cl_{(Below\ 117)}$ = [WRP Cl Load[1]/Reach 4B Cl Load[2]] * [Reach 4B Cl $Load_{<=117}$[4]] $Cl_{(Export\ EWs)}$ = Cl Load Removed by Extraction Wells [1] WRP Cl Load is determined as the monthly average Cl concentration multiplied by the monthly average flow measured at the Valencia WRP. [2] Reach 4B Cl Load is determined as the monthly average Cl concentration at SCVSD Receiving Water Station RF multiplied by the monthly average flow measured at USGS Gauging Station 11109000 (Las Brisas Bridge). [3] Reach 4B Cl $Load_{>117}$ means the calculated Cl load to Reach 4B when monthly average Cl concentration in Reach 4B is above 117 mg/L. [4] Reach 4B Cl $Load_{<=117}$ means the calculated Cl load to Reach 4B when monthly average Cl concentration in Reach 4B is below or equal to 117 mg/L.

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Numeric Target (continued) (Interpretation of the numeric water quality objective, used to calculate the load allocations)	4. The chief engineer of the SCVSD signs under penalty of perjury and submits to the Los Angeles Regional Water Quality Control Board (Regional Board) a letter documenting the fulfillment of conditions 1, 2, and 3. b. The averaging period for the critical condition SSO may be reconsidered based on results of chloride trend monitoring after the conditional WLAs of this TMDL are implemented. 2. Conditional SSOs for Groundwater Conditional groundwater SSOs are listed as follows: <table><tr><th>Groundwater Basin</th><th>Conditional Groundwater SSO for Chloride (mg/L)</th><th>Rolling Averaging Period</th></tr><tr><td>Santa Clara--Bouquet & San Francisquito Canyons</td><td>150</td><td>12-month</td></tr><tr><td>Castaic Valley</td><td>150</td><td>12-month</td></tr><tr><td>Lower area east of Piru Creek [a]</td><td>150</td><td>12-month</td></tr></table> [a] This objective only applies to the San Pedro formation. Existing objective of 200 mg/L applies to shallow alluvium layer above San Pedro formation. The conditional SSOs for chloride in the groundwater in Santa Clara--Bouquet & San Francisquito Canyons, Castaic Valley and the lower area east of Piru Creek (San Pedro Formation) shall apply and supersede the existing groundwater quality objectives only when chloride load reductions and/or chloride export projects are in operation by the SCVSD according to the implementation section in Table 7-6.1.
Source Analysis	The principal source of chloride into Reaches 5 and 6 of the Santa Clara River is discharges from the Saugus WRP and Valencia WRP, which are estimated to contribute 70% of the chloride load in Reaches 5 and 6. These sources of chloride accumulate and degrade groundwater in the lower area east of Piru Creek in the basin.

<table>
<tr><th>Element</th><th>Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements
Santa Clara River Chloride</th></tr>
<tr><td>Linkage Analysis</td><td>
A groundwater-surface water interaction (GSWI) model was developed to assess the linkage between chloride sources and in-stream water quality and to quantify the assimilative capacity of Reaches 4A, 4B, 5, and 6 and the groundwater basins underlying those reaches. GSWI was then used to predict the effects of WRP discharges on chloride loading to surface water and groundwater under a variety of future hydrology, land use, and water use assumptions including future discharges from the Newhall Ranch WRP in order to determine appropriate wasteload allocations (WLAs) and load allocations (LAs).
The linkage analysis demonstrates that beneficial uses can be protected through a combination of SSOs for surface water and groundwater and reduction of chloride levels from the Valencia WRP effluent through advanced treatment.
</td></tr>
<tr><td>Waste Load Allocations (for point sources)</td><td>
The conditional WLAs for chloride for all point sources shall apply only when chloride load reductions and/or chloride export projects are in operation by the SCVSD according to the implementation section in Table 7-6.1. If these conditions are not met, WLAs shall be based on existing water quality objectives for chloride of 100 mg/L.
Conditional WLAs for chloride for discharges to Reach 4B by the Saugus and Valencia WRPs are as follows:
<table>
<tr><th>Reach</th><th>Concentration-based Conditional WLA for Chloride (mg/L)</th></tr>
<tr><td>4B</td><td>117 (3-month Average),
230 (Daily Maximum)</td></tr>
<tr><td>4B Critical Conditions</td><td>130[a] (3-month Average[b]),
230 (Daily Maximum)</td></tr>
</table>
a. The Conditional WLA under critical conditions shall apply only if the following conditions and implementation requirements are met:
1. Water supply chloride concentrations measured in Castaic Lake are ≥ 80 mg/L.
2. SCVSD shall provide supplemental water to salt-sensitive agricultural uses that are irrigated with surface water during periods when Reach 4B surface water exceeds 117 mg/L.
3. By May 4, 2020, the 10-year cumulative net chloride loading above 117 mg/L ($CNCl_{117}$) [i] to Reach 4B of the SCR, calculated annually, from the Saugus and Valencia WRPs shall be zero or less.
</td></tr>
</table>

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Waste Load Allocations (for point sources) (continued)	[i] $CNCl_{117} = Cl_{(Above\ 117)} - Cl_{(Below\ 117)} - Cl_{(Export\ Ews)}$ Where: $Cl_{(Above\ 117)}$ = [WRP Cl Load[1]/Reach 4B Cl Load[2]] * [Reach 4B Cl $Load_{>117}$[3]] $Cl_{(Below\ 117)}$ = [WRP Cl Load[1]/Reach 4B Cl Load[2]] * [Reach 4B Cl $Load_{<=117}$[4]] $Cl_{(Export\ EWs)}$ = Cl Load Removed by Extraction Wells [1] WRP Cl Load is determined as the monthly average Cl concentration multiplied by the monthly average flow measured at the Valencia WRP. [2] Reach 4B Cl Load is determined as the monthly average Cl concentration at SCVSD Receiving Water Station RF multiplied by the monthly average flow measured at USGS Gauging Station 11109000 (Las Brisas Bridge). [3] Reach 4B Cl $Load_{>117}$ means the calculated Cl load to Reach 4B when monthly average Cl concentration in Reach 4B is above 117 mg/L. [4] Reach 4B Cl $Load_{<=117}$ means the calculated Cl load to Reach 4B when monthly average Cl concentration in Reach 4B is below or equal to 117 mg/L. 4. The chief engineer of the SCVSD signs under penalty of perjury and submits to the Regional Board a letter documenting the fulfillment of conditions 1, 2, and 3. b. The averaging period for the critical condition WLA may be reconsidered based on results of chloride trend monitoring after the conditional WLAs of this TMDL are implemented. Discharges to Reaches 5 and 6 by the Saugus and Valencia WRPs will have final concentration-based and mass-based conditional WLAs for chloride based on conditional SSOs as follows:

WRP	Concentration-based Conditional WLA for Chloride (mg/L)	Mass-based Conditional WLA for Chloride (pounds/day)
Saugus	150 (12-month Average), 230 (Daily Maximum)	Q_{Design}*150 mg/L*8.34 (12-month Average)
Valencia	150 (12-month Average), 230 (Daily Maximum)	Q_{Design}*150 mg/L*8.34 – AF_{RO} (12-month Average)

Where Q_{design} is the design capacity of WRPs in units of million gallons per day (MGD), AF_{RO} is the chloride mass loading adjustment factor for operation of reverse osmosis (RO) facilities, where:

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Waste Load Allocations (for point sources) (continued)	If RO facilities are operated at ≥ 50% Capacity Factor[a] in preceding 12 months $AF_{RO} = 0$ If RO facilities are operated at < 50% Capacity Factor[b] in preceding 12 months AF_{RO} = (50% Capacity Factor – %RO Capacity) * *ChlorideLoadRO*[c] [a] Capacity Factor is based on 3 MGD of recycled water treated with RO, 90% of the time. [b] If operation of RO facilities at <50% rated capacity is the result of conditions that are outside the control of SCVSD, then under the discretion of the Executive Officer of the Regional Board, the AF_{RO} may be set to 0. [c] Chloride load reduction is based on operation of a RO treatment plant treating 3 MGD of recycled water with chloride concentration of 50 mg/L + Water Supply Chloride. Assumes operational capacity factor of 90% and RO membrane chloride rejection rate of 95%. Determination of chloride load based on the following: $ChlorideLoadRO = 90\% \text{ x } [(Q_{RO} \text{ x } C_{WRP} \text{ x } 8.34) \text{ x } r] \text{ x } (30\ Days/Month)$ Where: Q_{RO} = 3 MGD of recycled water treated with RO C_{WRP} = Chloride concentration in water supply + 50 mg/L r = % Reverse Osmosis chloride rejection (95% or 0.95) 8.34 = Conversion factor (ppd/(mg/L*MGD)) The final WLAs for TDS and sulfate are equal to existing surface water and groundwater quality objectives for TDS and sulfate in Tables 3-8 and 3-10 of the Basin Plan. The Regional Board may revise the final WLAs based on review of trend monitoring data as detailed in the monitoring section of this Basin Plan amendment. Other minor NPDES discharges (as defined in Table 4-1 of the Basin Plan) receive conditional WLAs. The conditional WLA for these point sources is as follows: **Reach** — **Concentration-based Conditional WLA for Chloride (mg/L)** 6 — 150 (12-month Average), 230 (Daily Maximum) 5 — 150 (12-month Average), 230 (Daily Maximum) 4B — 117 (3-month Average), 230 (Daily Maximum) Other major NPDES discharges (as defined in Table 4-1 of the Basin Plan) receive WLAs equal to 100 mg/L. The Regional Board may consider assigning conditional WLAs to other major dischargers based on an analysis of the downstream increase in net chloride loading to surface water and groundwater as a result of implementation of conditional WLAs.

<table>
<tr><th>Element</th><th>Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements
Santa Clara River Chloride</th></tr>
<tr><td>Load Allocation (for non point sources)</td><td>The source analysis indicates nonpoint sources are not a major source of chloride. The conditional LAs for these nonpoint sources are as below:

<table>
<tr><th>Reach</th><th>Concentration-based Conditional LA for Chloride (mg/L)</th></tr>
<tr><td>6</td><td>150 (12-month Average),
230 (Daily Maximum)</td></tr>
<tr><td>5</td><td>150 (12-month Average),
230 (Daily Maximum)</td></tr>
<tr><td>4B</td><td>117 (3-month Average),
230 (Daily Maximum)</td></tr>
</table>

The conditional LAs shall apply only when chloride load reductions and/or chloride export projects are in operation by the SCVSD according to the implementation section in Table 7-6.1. If these conditions are not met, LAs are based on existing water quality objectives of 100 mg/L.</td></tr>
<tr><td>Implementation</td><td>Refer to Table 7-6.2.

<u>Implementation of Upper Santa Clara River Conditional Site Specific Objectives for Chloride</u>

In accordance with Regional Board resolution 97-002, the Regional Board and stakeholders have developed an integrated watershed plan to address chloride impairments and protect beneficial uses of surface waters and groundwater basins underlying Reaches 4B, 5, and 6 of the Santa Clara River. The plan involves: 1) Reducing chloride loads and/or increasing chloride exports from the USCR watershed through implementation of advanced treatment (RO) of a portion of the effluent from the Valencia WRP. The advanced treated effluent will be discharged into Reach 4B or blended with extracted groundwater from the Piru Basin underlying Reach 4B and discharged into Reach 4A. The resultant brine from the advanced treatment process will be disposed in a legal and environmentally sound manner. 2) Implementing the conditional SSOs for chloride in surface waters and underlying groundwater basins of the USCR watershed provided in Chapter 3.</td></tr>
</table>

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Implementation *(continued)*	The watershed chloride reduction plan will be implemented through NPDES permits for the Valencia WRP and a new NPDES permit for discharge into Reach 4A. The conditional SSOs for chloride in the USCR watershed shall apply and supersede the regional water quality objectives only when chloride load reductions and/or chloride export projects are in operation and reduce chloride loading in accordance with the following table:

Water Supply Chloride[1]	Chloride Load Reductions[2]
40 mg/L	58,000 lbs per month
50 mg/L	64,000 lbs per month
60 mg/L	71,000 lbs per month
70 mg/L	77,000 lbs per month
80 mg/L	83,000 lbs per month
90 mg/L	90,000 lbs per month
100 mg/L	96,000 lbs per month

[1] Based on measured chloride of the State Water Project (SWP) water stored in Castaic Lake.
[2] Chloride load reduction is based on operation of a RO treatment plant treating 3 MGD of recycled water with chloride concentration of 50 mg/L + Water Supply Chloride. Assumes operational capacity factor of 90% and RO membrane chloride rejection rate of 95%. Determination of chloride load based on the following:

$$ChlorideLoad = 90\% \text{ x } [(Q_{RO} \text{ x } C_{WRP} \text{ x } 8.34) \text{ x } r] \text{ x } (30\ Days/Month)$$

where r = % chloride rejection (95%)
Q_{RO} = 3 MGD of recycled water treated with RO
C_{WRP} = SWP Cl + 50 mg/L

Conditional WLAs

Conditional WLAs for the Saugus and Valencia WRPs will be implemented through effluent limits, receiving water limits and monitoring requirements in NPDES permits. Conditional WLAs for Reach 4B will be implemented as receiving water limits. Conditional WLAs for Reaches 5 and 6 will be implemented as effluent limits.

The implementation plan proposes that during the period of TMDL implementation, compliance for the WRPs' effluent limits will be evaluated in accordance with interim WLAs.

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Implementation *(continued)*	<u>Saugus WRP:</u> The interim WLA for chloride is equal to the interim limit for chloride specified in order No. R4-04-004. The interim WLA for TDS is 1000 mg/L as an annual average. The interim WLA for sulfate is 450 mg/L as an annual average. These interim WLAs shall apply as interim end-of-pipe effluent limits, interim groundwater limits, and interim limits in the Non-NPDES WDR for recycled water uses from the Saugus WRP instead of existing water quality objectives. <u>Valencia WRP:</u> The interim WLA for chloride is equal to the interim limit for chloride specified in order No. R4-04-004. The interim WLA for TDS is 1000 mg/L as an annual average. The interim WLA for sulfate is 450 mg/L as an annual average. These interim WLAs shall apply as interim end-of-pipe effluent limits, interim groundwater limits, and interim limits in the Non-NPDES WDR for recycled water uses from the Valencia WRP instead of existing water quality objectives. <u>Other Major NPDES Permits (including Newhall Ranch WRP):</u> The Regional Board may consider assigning conditional WLAs for other major NPDES permits, including the Newhall Ranch WRP, pending implementation of a chloride mass removal quantity that is proportional to mass based chloride removal required for the Valencia WRP. <u>Supplemental Water released to Reach 6 of Santa Clara River:</u> In order to accommodate the discharge of supplemental water to Reach 6, interim WLAs are provided for sulfate of 450 mg/L and TDS of 1000 mg/L as annual averages. The final WLAs are equal to the existing water quality objectives for sulfate and TDS in Table 3-8 of the Basin Plan. The Regional Board may revise the final WLA based on review of trend monitoring data as detailed in the monitoring section of this Basin Plan amendment.
Monitoring	NPDES monitoring: NPDES Permittees will conduct chloride, TDS, and sulfate monitoring to ensure that water quality objectives are being met. Trend monitoring: The SCVSD will submit a monitoring plan to conduct chloride, TDS, and sulfate trend monitoring to ensure that the goal of chloride export in the watershed is being achieved, water quality objectives are being met, and downstream groundwater and surface water quality is not degraded due to implementation of compliance measures. The SCVSD monitoring plan shall include plans to monitor chloride, TDS, and sulfate in groundwater and identify representative wells to be approved by the Regional Board Executive Officer in the following locations: (a) Shallow alluvium layer in east Piru Basin, (b) San Pedro Formation in east Piru Basin, and (c) groundwater basins under Reaches 5 and 6, which shall be equivalent or greater than existing groundwater monitoring required by NPDES permits for Saugus and Valencia WRPs. The monitoring plan shall also include a plan for chloride, TDS, and sulfate trend monitoring for surface water for Reaches 4B, 5 and 6. The monitoring plan shall include plans to monitor chloride, TDS, and sulfate at a minimum of once per quarter for groundwater and at a minimum of once per month for surface water.

Element	Table 7-6.1. Upper Santa Clara River Chloride TMDL: Elements Santa Clara River Chloride
Monitoring *(continued)*	The plan should propose a monitoring schedule that extends beyond the completion date of this TMDL to evaluate impacts of compliance measures to downstream groundwater and surface water quality. This TMDL shall be reconsidered if chloride, TDS, and sulfate trend monitoring indicates degradation of groundwater or surface water due to implementation of compliance measures. Trend monitoring: The Reach 4A Permittee will submit a monitoring plan to conduct chloride, TDS, and sulfate trend monitoring to ensure that the goal of chloride export in the watershed is being achieved, water quality objectives are being met, and downstream groundwater and surface water quality is not degraded due to implementation of compliance measures. The Reach 4A permittee monitoring plan shall include plans to monitor chloride, TDS, and sulfate in groundwater and identify representative wells to be approved by the Regional Board Executive Officer in the following locations (a) Fillmore Basin, and (b) Santa Paula Basin. The monitoring plan shall also include a plan for chloride, TDS, and sulfate trend monitoring for surface water for Reaches 3 and 4A. The monitoring plan should include plans to monitor chloride, TDS, and sulfate at a minimum of once per quarter for groundwater and at a minimum of once per month for surface water. The plan should propose a monitoring schedule that shall extend beyond the completion date of this TMDL to evaluate impacts of compliance measures to downstream groundwater and surface water quality. This TMDL shall be reconsidered if chloride, TDS, and sulfate trend monitoring indicates degradation of groundwater or surface water due to implementation of compliance measures.
Margin of Safety	An implicit margin of safety is incorporated through conservative model assumptions and chloride mass balance analysis. The model is an integrated groundwater surface water model which shows that chloride discharged from the WRPs accumulates in the east Piru Basin. Further mass balance analysis shows that the chloride mass removed from the Piru Basin exceeds the chloride loaded into the Piru Basin from implementation of the conditional SSOs.
Seasonal Variations and Critical Conditions	During dry weather conditions, less surface flow is available to dilute effluent discharge, groundwater pumping rates for agricultural purposes are higher, groundwater discharge is lower, poorer quality groundwater may be drawn into the aquifer, and evapotranspiration effects are greater than in wet weather conditions. During drought, reduced surface flow and increased groundwater extraction continues through several seasons with greater impacts on groundwater resources and discharges. Dry and critically dry periods affecting the Sacramento and San Joaquin River Valleys reduce fresh-water flow into the Sacramento-San Joaquin Delta and result in higher than normal chloride concentrations in the State Water Project supply within the California aqueduct system. These increased chloride levels are transferred to the upper Santa Clara River. This critical condition is defined as when water supply concentrations measured in Castaic Lake are $\geq$ 80 mg/L. These critical conditions were included in the GSWI model to determine appropriate allocations and implementation scenarios for the TMDL.

Table 7-6.2. Upper Santa Clara River Chloride TMDL Implementation Implementation Tasks	Completion Date
1. Alternate Water Supply a) Should (1) the in-river concentration at Blue Cut, the Reach 4B boundary, exceed the conditional SSO of 117 mg/L, measured for the purposes of this TMDL as a rolling three-month average, (2) each agricultural diverter provide records of the diversion dates and amounts to the Regional Board and Santa Clarita Valley County Sanitation Districts of Los Angeles County (SCVSD) for at least 2 years after May 4, 2005 and (3) each agricultural diverter provides photographic evidence that diverted water is applied to avocado, strawberry or other chloride sensitive crop and evidence of a water right to divert, then the SCVSD will be responsible for providing an alternative water supply, negotiating the delivery of alternative water by a third party, or providing fiscal remediation to be quantified in negotiations between the SCVSD and the agricultural diverter at the direction of the Regional Water Quality Control Board until such time as the in-river chloride concentrations do not exceed the conditional SSO. b) Should the instream concentration exceed 230 mg/L more than two times in the three year period, the discharger identified by the Regional Board Executive Officer shall be required to submit, within ninety days of a request by the Regional Board Executive Officer, a workplan for an accelerated schedule to reduce chloride discharges.	05/04/2005
2. Progress reports will be submitted by the SCVSD to Regional Board staff on a semiannual basis from May 4, 2005 for tasks 4, 6, and 7, and on an annual basis for Tasks 5 and 11. Progress reports will be submitted by the Reach 4A Permittee to Regional Board staff on an annual basis for Task 12.	Semiannually and annually
3. Chloride Source Identification/Reduction, Pollution Prevention and Public Outreach Plan: Six months after May 4, 2005, the SCVSD will submit a plan to the Regional Board that addresses measures taken and planned to be taken to quantify and control sources of chloride, including, but not limited to: execute community-wide outreach programs, which were developed based on the pilot outreach efforts conducted by the SCVSD, assess potential incentive/disincentive programs for residential self-regenerating water softeners, and other measures that may be effective in controlling chloride. The SCVSD shall develop and implement the source reduction/pollution prevention and public outreach program, and report results annually thereafter to the Regional Board. Chloride sources from imported water supplies will be assessed. The assessment will include conditions of drought and low rainfall, and will analyze the alternatives for reducing this source.	11/04/2005

Table 7-6.2. Upper Santa Clara River Chloride TMDL Implementation Implementation Tasks	Completion Date
4. The SCVSD will convene a technical advisory committee or committees (TAC(s)) in cooperation with the Regional Board to review literature develop a methodology for assessment, and provide recommendations with detailed timelines and task descriptions to support any needed changes to the time schedule for evaluation of appropriate chloride threshold for Task 6. The Regional Board, at a public hearing will re-evaluate the schedule for Task 6 and subsequent linked tasks based on input from the TAC(s), along with Regional Board staff analysis and assessment consistent with state and federal law, as to the types of studies needed and the time needed to conduct the necessary scientific studies to determine the appropriate chloride threshold for the protection of salt sensitive agricultural uses, and will take action to amend the schedule if there is sufficient technical justification.	05/04/2006
5. Groundwater/Surface Water Interaction Model: The SCVSD will solicit proposals, collect data, develop a model in cooperation with the Regional Board, obtain peer review, and report results. The impact of source waters and reclaimed water plans on achieving the water quality objective and protecting beneficial uses, including impacts on underlying groundwater quality, will also be assessed and specific recommendations for management developed for Regional Board consideration. The purpose of the modeling and sampling effort is to determine the interaction between surface water and groundwater as it may affect the loading of chloride from groundwater and its linkage to surface water quality.	11/20/2007
6. Evaluation of Appropriate Chloride Threshold for the Protection of Sensitive Agricultural Supply Use and Endangered Species Protection: The SCVSD will prepare and submit a report on endangered species protection thresholds. The SCVSD will also prepare and submit a report presenting the results of the evaluation of chloride thresholds for salt sensitive agricultural uses, which shall consider the impact of drought and low rainfall conditions and the associated increase in imported water concentrations on downstream crops utilizing the result of Task 5.	11/20/2007
7. Develop SSO for Chloride for Sensitive Agriculture: The SCVSD will solicit proposals and develop technical analyses upon which the Regional Board may base a Basin Plan amendment. 8. Develop Anti-Degradation Analysis for Revision of Chloride Objective by SSO: The SCVSD will solicit proposals and develop draft anti-degradation analysis for Regional Board consideration. 9. Develop a pre-planning report on conceptual compliance measures to meet different hypothetical final conditional wasteload allocations. The SCVSD shall solicit proposals and develop and submit a report to the Regional Board that identifies potential chloride control measures and costs based on different hypothetical scenarios for chloride SSOs and final conditional wasteload allocations.	02/20/2008

Table 7-6.2. Upper Santa Clara River Chloride TMDL Implementation Implementation Tasks	Completion Date
10. a) Preparation and Consideration of a Basin Plan Amendment (BPA) to revise the chloride objective by the Regional Board. b) Evaluation of Alternative Water Supplies for Agricultural Beneficial Uses: The SCVSD will quantify water needs, identify alternative water supplies, evaluate necessary facilities, and report results, including the long-term application of this remedy. c) Analysis of Feasible Compliance Measures to Meet Final Conditional Wasteload Allocations for Proposed Chloride Objective. The SCVSD will assess and report on feasible implementation actions to meet the chloride objective established pursuant to Task 10a). d) Reconsideration of and action taken on the Chloride TMDL and Final Conditional Wasteload Allocations for the Upper Santa Clara River by the Regional Board.	12/11/2008
11. Trend monitoring: The SCVSD will submit a monitoring plan to conduct chloride, TDS, and sulfate trend monitoring to ensure that the goal of chloride export in the watershed is being achieved, water quality objectives are being met, and downstream groundwater and surface water quality is not degraded due to implementation of compliance measures. The SCVSD monitoring plan shall include plans to monitor chloride, TDS, and sulfate in groundwater and identify representative wells to be approved by the Regional Board Executive Officer, in the following locations: (a) Shallow alluvium layer in east Piru Basin, (b) San Pedro Formation in east Piru Basin, and (c) groundwater basins under Reaches 5 and 6, which shall be equivalent or greater than existing groundwater monitoring required by NPDES permits for Saugus and Valencia WRPs. The monitoring plan shall also include a plan for chloride, TDS, and sulfate trend monitoring for surface water for Reaches 4B, 5 and 6. The monitoring plan shall include plans to monitor chloride, TDS, and sulfate at a minimum of once per quarter for groundwater and at a minimum of once per month for surface water. The plan should propose a monitoring schedule that extends beyond the completion date of this TMDL to evaluate impacts of compliance measures to downstream groundwater and surface water quality. This TMDL shall be reconsidered if chloride, TDS, and sulfate trend monitoring indicates degradation of groundwater or surface water due to implementation of compliance measures.	05/04/2009

Table 7-6.2. Upper Santa Clara River Chloride TMDL Implementation Implementation Tasks	Completion Date
12. Trend monitoring: The Reach 4A Permittee will submit a monitoring plan to conduct chloride, TDS, and sulfate trend monitoring to ensure that the goal of chloride export in the watershed is being achieved, water quality objectives are being met, and downstream groundwater and surface water quality is not degraded due to implementation of compliance measures. The Reach 4A permittee monitoring plan shall include plans to monitor chloride, TDS, and sulfate in groundwater and identify representative wells to be approved by the Regional Board Executive Officer in the following locations (a) Fillmore Basin, and (b) Santa Paula Basin. The monitoring plan shall also include a plan for chloride, TDS, and sulfate trend monitoring for surface water for Reaches 3 and 4A. The monitoring plan should include plans to monitor chloride, TDS, and sulfate at a minimum of once per quarter for groundwater and at a minimum of once per month for surface water. The plan should propose a monitoring schedule that shall extend beyond the completion date of this TMDL to evaluate impacts of compliance measures to downstream groundwater and surface water quality. This TMDL shall be reconsidered if chloride, TDS, and sulfate trend monitoring indicates degradation of groundwater or surface water due to implementation of compliance measures.	Submitted with permit application
13. Begin monitoring per approved SVCSD monitoring plan completed in Task 11.	One year after Executive Officer approval of Task 11 monitoring plan for SCVSD
14. Begin monitoring per approved Reach 4A Permittee monitoring plan.	One year after Executive Officer approval of Task 12 monitoring plan for Reach 4A Permittee

Table 7-6.2. Upper Santa Clara River Chloride TMDL Implementation Implementation Tasks	Completion Date
15. a) Implementation of Compliance Measures, Planning: The SCVSD shall submit a report of planning activities which include but are not limited to: (1) identifying lead state/federal agencies; (2) administering a competitive bid process for the selection of EIR/EIS and Engineering Consultants; (3) Development of Preliminary Planning and Feasibility Analyses; (4) Submittal of Project Notice of Preparation/Notice of Intent; (5) Preparation of Draft Wastewater Facilities Plan and Programmatic EIR; (6) Administration of Public Review and Comment Periods; (7) Development of Final Wastewater Facilities Plan and Programmatic EIR and incorporation and response to comments; (8) Administration of final public review and certification process; and (9) Filing a Notice of Determination and Record of Decision. b) Implementation of Compliance Measures, Planning: The SCVSD shall provide a schedule of related tasks and subtasks related to Task 15a), and provide semi-annual progress reports on progress of planning activities, thereafter, until completion of Final Wastewater Facilities Plan and Programmatic EIR.	05/04/2010 05/04/2010
16. The Regional Board staff will re-evaluate the schedule to implement control measures needed to meet final conditional WLAs adopted pursuant to Task 10 d) and the schedule for Task 17. The Regional Board, at a public meeting will consider extending the completion date of Task 17 and reconsider the schedule to implement control measures to meet final conditional WLAs adopted pursuant to Task 10 d). The SCVSD will provide the justification for the need for an extension to the Regional Board Executive Officer at least 6 months in advance of the deadline for this task.	05/04/2011

Table 7-6.2. Upper Santa Clara River Chloride TMDL Implementation Implementation Tasks	Completion Date
17. a) Implementation of Compliance Measures, Complete Environmental Impact Report: The SCVSD shall complete a Wastewater Facilities Plan and Programmatic Environmental Impact Report for facilities to comply with final effluent permit limits for chloride. b) Implementation of Compliance Measures, Engineering Design: The SCVSD will begin the engineering design of the recommended project wastewater facilities. c) Implementation of Compliance Measures, Engineering Design: The SCVSD will provide a design schedule of related tasks and sub-tasks, and provide semi-annual progress reports on progress of design activities, thereafter, until completion of Final Design. In addition the SCVSD will provide a construction schedule of related tasks and sub-tasks, and provide semi-annual progress reports on progress of construction activities, thereafter, until completion of recommended project wastewater facilities. d) Implementation of Compliance Measures, Construction: The SCVSD shall have applied and received all appropriate permits and have completed construction of the recommended project wastewater facilities. e) Implementation of Compliance Measures, Start-Up: The SCVSD shall have completed start-up, testing and certification of the recommended project wastewater facilities.	05/04/2011 05/04/2011 05/04/2012 11/04/2014 05/04/2015
18. The Regional Board Executive Officer may consider conditional SSOs for TDS and sulfate for Reaches 4B, 5, and 6 based on results of groundwater-surface water interaction studies on accumulation of TDS and sulfate in groundwater, potential impacts to beneficial uses, and an anti-degradation analysis.	05/04/2012
19. The Regional Board staff will re-evaluate the schedule to implement control measures needed to meet final conditional WLAs adopted pursuant to Task 10 d) and the schedule for Task 17. The Regional Board, at a public meeting will consider extending the completion of Task 17 and reconsider the schedule to implement control measures to meet final conditional WLAs adopted for chloride pursuant to Task 10 d). The SCVSD will provide the justification for the need for an extension to the Regional Board Executive Officer at least 6 months in advance of the deadline for this task. The Regional Board will also consider conditional SSOs and final conditional WLAs for TDS and sulfate based on results of Task 18.	11/04/2014

Table 7-6.2. Upper Santa Clara River Chloride TMDL Implementation Implementation Tasks	Completion Date
20. The interim WLAs for chloride shall remain in effect for no more than 10 years after May 4, 2005. Conditional SSO for chloride in the USCR shall be achieved. Final conditional WLAs for chloride in Reaches 4B, 5, and 6 shall apply by May 5, 2015. The Regional Board may consider extending the completion date of this task as necessary to account for events beyond the control of the SCVSD.	05/04/2015
21. The interim WLAs for TDS and sulfate contained in this BPA (Resolution No. R4-2008-012) shall be implemented no sooner than May 4, 2005, and shall remain in effect until May 4, 2015. Final WLAs shall apply by May 5, 2015 unless conditional SSOs and final conditional WLAs for TDS and sulfate are adopted as described in Task 19.	05/04/2015

7-7 Calleguas Creek Nitrogen Compounds and Related Effects TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on October 24, 2002.

This TMDL was approved by:
The State Water Resources Control Board on March 19, 2003.
The Office of Administrative Law on June 5, 2003.
The U.S. Environmental Protection Agency on June 20, 2003.

This TMDL was revised and adopted by:
The Regional Water Quality Control Board on September 11, 2008.

This TMDL was re-approved by:
The State Water Resources Control Board on June 16, 2009.
The Office of Administrative Law on October 5, 2009.
The U.S. Environmental Protection Agency on October 15, 2009.

The effective date of this TMDL is: October 15, 2009.

The elements of the TMDL are presented in Table 7-7.1 and the Implementation Plan in Table 7-7.2

Table 7-7.1. Calleguas Creek Nitrogen Compounds and Related Effects TMDL: Elements

Element	Calleguas Creek Nitrogen Compound and Related Effects
Problem Statement	Elevated nitrogen concentrations (ammonia, nitrite and nitrate) are causing impairments of the warm water fish and wildlife habitat, and groundwater recharge beneficial uses of Calleguas Creek. Nitrite and nitrate contribute to eutrophic effects such as low dissolved oxygen and algae growth. Ammonia contributes to toxicity.

<table>
<tr><th>Element</th><th>Calleguas Creek Nitrogen Compound and Related Effects</th></tr>
<tr><td>Numeric Target (Interpretation of the numeric water quality objective, used to calculate the load allocations)</td><td>Numeric targets for this TMDL are listed as follows:

1. Total Ammonia as Nitrogen (NH_3-N)

<table>
<tr><th></th><th colspan="2">NH_3-N concentration (mg/L)</th></tr>
<tr><th>Reach</th><th>One-hour average</th><th>Thirty-day average</th></tr>
<tr><td>• Mugu Lagoon</td><td>8.1</td><td>2.9</td></tr>
<tr><td>• Calleguas Creek, South</td><td>5.5</td><td>2.4</td></tr>
<tr><td>• Calleguas Creek, North</td><td>8.4</td><td>3.0</td></tr>
<tr><td>• Revlon Slough</td><td>5.7</td><td>2.9</td></tr>
<tr><td>• Beardsley Channel</td><td>5.7</td><td>2.9</td></tr>
<tr><td>• Arroyo Las Posas</td><td>8.1</td><td>2.6</td></tr>
<tr><td>• Arroyo Simi</td><td>4.7</td><td>2.4</td></tr>
<tr><td>• Tapo Canyon</td><td>3.9</td><td>1.9</td></tr>
<tr><td>• Conejo Creek (Confluence with Calleguas Creek to Santa Rosa Rd.)</td><td>9.5</td><td>3.5</td></tr>
<tr><td>• Conejo Creek (Santa Rosa Road to Thousand Oaks City Limit)</td><td>8.4</td><td>3.4</td></tr>
<tr><td>• Conejo Creek, Hill Canyon Reach</td><td>8.4</td><td>3.1</td></tr>
<tr><td>• Conejo Creek, North Fork</td><td>3.2</td><td>1.7</td></tr>
<tr><td>• Arroyo Conejo (South Fork Conejo Creek)</td><td>5.1</td><td>3.4</td></tr>
<tr><td>• Arroyo Santa Rosa</td><td>5.7</td><td>2.4</td></tr>
</table>
2. Nitrate and nitrite as nitrogen (NO_3-N and NO_2-N)

<table>
<tr><th>Constituent</th><th>Concentration (mg/L)</th></tr>
<tr><td>• NO_3-N</td><td>10</td></tr>
<tr><td>• NO_2-N</td><td>1</td></tr>
<tr><td>• NO_3-N + NO_2-N</td><td>10</td></tr>
</table>
Numeric targets to address narrative objectives required to protect warm freshwater and wildlife habitat are intended to implement the narrative objectives and may be revised based on the results of monitoring and special studies conducted pursuant to the implementation plan.</td></tr>
<tr><td>Source Analysis</td><td>The principal sources of nitrogen into Calleguas Creek are discharges from the POTWs in the watershed and runoff from agricultural activities in the watershed.</td></tr>
<tr><td>Linkage Analysis</td><td>Linkage between nitrogen sources and the in-stream water quality was established through a mass continuity model based on an evaluation of recent hydrodynamic and water quality data.</td></tr>
</table>

Element	Calleguas Creek Nitrogen Compound and Related Effects
Waste Load Allocations (for point sources)	The waste load allocations (WLAs) are as follows:

POTWs	*NH_3-N*			*NO_3-N (mg/L)*	*NO_2-N (mg/L)*	*NO_3-N + NO_2-N (mg/L)*
	MDEL[1] (mg/L)	*AMEL[2] (mg/L)*	*Daily WLA[3] (lbs/day)*			
Hill Canyon WTP[4]	5.6	3.1	5.1xQ	9.0	0.9	9.0
Simi Valley WQCF[5]	3.3	2.4	2.9xQ	9.0	0.9	9.0
Moorpark WTP	6.4	2.6	5.7xQ	9.0	0.9	9.0
Camarillo WRP[6]	7.8	3.5	7.0xQ	9.0	0.9	9.0
Camrosa WRF[7]	7.2	3.0	6.5xQ	9.0	0.9	9.0

Element	Calleguas Creek Nitrogen Compound and Related Effects
Load Allocation (for non point sources)	The source analysis indicates that agricultural discharge is the major non-point source of oxidized nitrogen to Calleguas Creek and its tributaries. This source is particularly significant in Revolon Slough and other agricultural drains in the lower Calleguas watershed where there are no point sources of ammonia and oxidized nitrogen. Load allocations for non-point sources are:

Nonpoint Source	*NO_3-N + NO_2-N (mg/L)*
Agriculture	9.0
Other Nonpoint Source	9.0

Element	Calleguas Creek Nitrogen Compound and Related Effects
Implementation	1. Refer to Table 7-7.2 2. Several of the POTWs in the Calleguas Creek watershed will require additional time to meet the nitrogen (NO_3-N, NO_2-N, and NO_3-N + NO_2-N) waste load allocations. To allow time to meet the nitrogen waste load allocations, interim limits will be allowed for a period of four years from July 16, 2003 during which the POTWs will be required to meet the effluent limit for NO_3-N + NO_2-N only. Effluent limits for the individual compounds NO_3-N and NO_2-N are not required during the interim period.

Element	Calleguas Creek Nitrogen Compound and Related Effects
Implementation (continued)	*Interim Limits* for NO_3-N + NO_2-N* *POTWs* — *Monthly Average (mg/L)* — *Daily Maximum (mg/L)* • Hill Canyon WTP — 36.03 — 38.32 • Simi Valley WQCF — 31.60 — 32.17 • Moorpark WTP — 31.5 — 32.01 • Camarillo WRP — 36.23 — 37.75 *The monthly average and daily maximum interim limits are based on the 95th and 99th percentiles of effluent performance data reported in the Calleguas Creek Characterization Study 3. The waste load allocations for ammonia will be applicable on July 16, 2003. Interim limits for ammonia will be applicable for no more than 2 years starting from October 24, 2002 for POTWs that are not able to achieve immediate compliance with the assigned waste load allocations. The interim limits for ammonia may be established at the discretion of the Regional Board when a POTW's NPDES permit is reissued.
Margin of Safety	An implicit margin of safety is incorporated through conservative model assumptions and statistical analysis. In addition, an explicit margin of safety is incorporated by reserving 10% of the load, calculated on a concentration basis, from allocation to POTW effluent sources.
Seasonal Variations and Critical Conditions	A low flow critical condition is identified for this TMDL based on a review of flow data for the past twenty years. This flow condition was identified because less assimilative capacity is available to dilute effluent discharge.

1 Maximum daily effluent limitation
2 Average monthly effluent limitation
3 Q represents the POTW effluent flow at the time the water quality measurement is collected and a conversion factor to lb/day based on the units of measurement for the effluent flow.
4 Wastewater Treatment Plant
5 Water Quality Control Facility
6 Water Reclamation Plant
7 Water Reclamation Facility

Table 7-7.2. Calleguas Creek Nitrogen Compounds and Related Effects TMDL Implementation Schedule

IMPLEMENTATION TASKS, MILESTONES AND PROVISIONS*		COMPLETION DATE
1. 2. 3.	WLA for ammonia apply to POTWs. Interim Limits for NO_3-N + NO_2-N apply to POTWs. Formation of Nonpoint Source BMP Evaluation Committee.	July 16, 2003
4. 5.	Submittal of Non point Source Monitoring Workplan by Calleguas Creek Watershed Management Plan – Water Resources/Water Quality (CCWMP) Subcommittee. This monitoring is to evaluate nutrient loadings associated with agricultural drainage and other nonpoint sources. The monitoring program will include both dry and wet weather discharges from agricultural, urban and open space sources. In addition, groundwater discharge to Calleguas Creek will also be analyzed for nutrients to determine the magnitude of these loading and the need for load allocations. A key objective of these special studies will be to determine the effectiveness of agricultural BMPs in reducing nutrient loadings. Consequently, flow and analytical data for nutrients will be required to estimate loadings from nonpoint sources. Submittal of Watershed Monitoring Workplan by CCWMP Subcommittee. In addition to the analytical parameters and flow data requirements, the watershed monitoring program will establish sampling locations from which representative samples can be obtained, including all listed tributaries. Monitoring results will be compared to the numeric instream targets identified in this TMDL to determine the effectiveness of the TMDL. Data on the extent and distribution of algal mats, scum and odors will be included in the watershed monitoring program. The data will be used to provide further verification of the model and refine the TMDL to address nutrient effects as appropriate.	July 16, 2004

IMPLEMENTATION TASKS, MILESTONES AND PROVISIONS*		COMPLETION DATE
6. 7. 8. 9.	Submittal of Special Studies Workplan by CCWMP Subcommittee. These special studies include: Monitoring of minor point sources for nutrients to confirm assumptions that the loadings from these sources are minor; Monitoring of greenhouse discharges and runoff to assess loadings from these sources; Monitoring of groundwater extraction and discharges in the Arroyo Santa Rosa subwatershed and other areas that may add significant nutrient loadings to Calleguas Creek; and Additional studies of the type and extent of algae impairment in Calleguas Creek and Mugu Lagoon. Complete Special Studies for minor sources, greenhouses, and groundwater loadings. Completion of ammonia Water Effect Ratio (WER) studies. Complete planning and preparation for construction of TMDL remedies to reduce non-point source nitrogen loads.	July 16, 2004 July 16, 2006
10.	Interim Limits for NO_3-N + NO_2-N expire and WLAs for NO_3-N, NO_2-N, NO_3-N + NO_2-N apply to POTWs.	July 16, 2007
11.	Complete Special Studies for algae impairments of Calleguas Creek, its tributaries and Mugu Lagoon.	July 16, 2008
12.	Regional Board consideration of revised water quality objectives for nitrogen compounds based on monitoring data, special studies, and ammonia WER, if appropriate.	July 16, 2009
13.	Final achievement of ammonia and oxidized nitrogen standards.	July 16, 2010

* The CCWMP Subcommittee has offered to complete tasks 4 through 9 and 11. In the event the CCWMP Subcommittee fails to timely complete these tasks, the Regional Board will consider whether to amend this Implementation Plan to assign tasks to responsible dischargers in the regulatory approach. The Regional Board also reserves its right to take any other appropriate actions including, but not limited to, exercising its authorities under Water Code section 13267.

7-8 Los Angeles River Nitrogen Compounds and Related Effects TMDL

This TMDL was adopted by:
    The Regional Water Quality Control Board on July 10, 2003.

This TMDL was approved by:
    The State Water Resources Control Board on November 19, 2003.
    The Office of Administrative Law on February 27, 2004.
    The U.S. Environmental Protection Agency on March 18, 2004.

This TMDL was amended and adopted by:
    The Regional Water Quality Control Board on December 4, 2003.

This amended TMDL was approved by:
    The State Water Resources Control Board on March 24, 2004.
    The Office of Administrative Law on September 27, 2004.
    [U.S. Environmental Protection Agency approval not required for amendment to Implementation Plan]

The effective date of this TMDL is: September 27, 2004.

Table 7-8.1. Los Angeles River Nitrogen Compounds and Related Effects TMDL: Elements

Element	Los Angeles River Nitrogen Compounds and Related Effects TMDL
Problem Statement	Reaches of the Los Angeles River and its tributaries were listed as impaired for nitrogen compounds (ammonia, nitrate, and nitrate) and related effects such as algae, pH, odor, and scum on the 2002 303(d) list. These reaches were listed because numeric and narrative water quality objectives for nitrogen compounds and related effects were exceeded, thereby impairing warm, freshwater, and wildlife habitats, and recreation beneficial uses.

Element	Los Angeles River Nitrogen Compounds and Related Effects TMDL
Numeric Target *(Interpretation of the numeric water quality objective, used to calculate the load allocations)*	Numeric targets for this TMDL are listed as follows: a) Total ammonia as nitrogen (NH_3-N) Numeric targets are dependent on temperature and pH of receiving water. Based on the last three years of temperature and pH data, the ammonia numeric targets for receiving waters correspondent to major discharge points are provided below: ***Receiving water correspondent to major discharge point*** ***One-hour average*** ***Thirty-day average*** Los Angeles River Reach 5 (within Sepulveda Basin) - Donald C. Tillman WRP 4.7 mg/L 1.6 mg/L Los Angeles River Reach 3 (Riverside Dr. to Figueroa St.) - Los Angeles/ Glendale WRP 8.7 mg/L 2.4 mg/L Burbank Western Channel - Burbank WRP 10.1 mg/L 2.3 mg/L b) Nitrate-nitrogen and nitrite-nitrogen ***Constituent*** ***Thirty-day average*** Nitrate-nitrogen (NO_3-N) 8 mg/L Nitrite-nitrogen (NO_2-N) 1 mg/L Nitrate-nitrogen plus nitrite-nitrogen (NO_3-N + NO_2-N) 8 mg/L Numeric targets to address narrative objectives required to protect warm freshwater and wildlife habitats are intended to implement the narrative objectives and may be revised based on the results of monitoring and studies conducted pursuant to the implementation plan.
Source Analysis	The principal source of nitrogen compounds to the Los Angeles River is discharges from the Donald C. Tillman Water Reclamation Plant (WRP), the Los Angeles-Glendale WRP, and the Burbank WRP. During dry weather period, the major POTWs contribute 84.1% of the total dry weather nitrogen load. Urban runoff, stormwater, and groundwater discharge may also contribute nitrate loads. Further evaluation of these sources is set forth in the Implementation Plan.

Element	Los Angeles River Nitrogen Compounds and Related Effects TMDL
Linkage Analysis	Linkage between nutrient sources and the instream water quality was established through hydrodynamic and water quality models. The Environmental Fluid Dynamics Code 1-D was used to model the hydrodynamic characteristics of the Los Angeles River and the Water Quality Analysis Simulation Program was used to model water quality. Additional studies were conducted to develop the residence time and determine the nutrient uptake rates by algae.
Wasteload Allocations (for point sources)	1. Major point sources: a) Total ammonia as nitrogen (NH_3-N): ***POTW*** ***One-hour average WLA*** ***Thirty-day average WLA*** Donald C. Tillman WRP 4.2 mg/L 1.4 mg/L Los Angeles-Glendale WRP 7.8 mg/L 2.2 mg/L Burbank WRP 9.1 mg/L 2.1 mg/L b) Nitrate-nitrogen (NO_3-N), nitrite-nitrogen (NO_2-N), and Nitrate-nitrogen plus nitrite-nitrogen (NO_3-N + NO_2-N): ***Constituent*** ***Thirty-day average WLA**** NO_3-N 7.2 mg/L NO_2-N 0.9 mg/L NO_3-N + NO_2-N 7.2 mg/L *Receiving water monitoring is required on a weekly basis to ensure compliance with the water quality objective.

Element	Los Angeles River Nitrogen Compounds and Related Effects TMDL
Waste Load Allocations (for point sources) (continued)	2. Minor point sources: Waste loads are allocated to minor point sources enrolled under NPDES or WDR permits including but not limited to Tapia WRP, Whittier Narrows WRP, Los Angeles Zoo WRP, industrial and construction stormwater, and municipal storm water and urban runoff from municipal separate storm sewer systems (MS4s): a) Ammonia wasteload allocations (WLAs) for minor point sources are listed below by receiving waters: ***Water Body*** ***One-hour average WLA*** ***Thirty-day average WLA*** Los Angeles River above Los Angeles-Glendale WRP (LAG) 4.7 mg/L 1.6 mg/L Los Angeles River below LAG 8.7 mg/L 2.4 mg/L Los AngelesTributaries 10.1 mg/L 2.3 mg/L b) WLAs for nitrate-nitrogen, nitrite-nitrogen, and nitrate-nitrogen plus nitrite-nitrogen for minor discharges are listed below: ***Constituent*** ***Thirty-day average WLA*** NO_3-N 8.0 mg/L NO_2-N 1.0 mg/L NO_3-N + NO_2-N 8.0 mg/L
Load Allocation *(for nonpoint sources)*	The Source Assessment indicates that nitrogen loads from nonpoint sources are negligible compared to loading from point sources and their contribution is adequately accounted for in the margin of safety. Consequently, load allocations will not be developed unless it is determined they are necessary after load reductions are effected through implementation of the wasteload allocations. Additional monitoring is included in the implementation plan to verify the nitrogen nonpoint source contributions.

Element	Los Angeles River Nitrogen Compounds and Related Effects TMDL
Implementation	1. Refer to Table 7-8.2 2. The Implementation Plan includes upgrades to the WRPs discharging to Los Angeles River for removal of ammonia, nitrate, and nitrite. At the discretion of the Regional Board, the following interim limits for ammonia, and nitrate plus nitrite will be allowed for major point sources for a period not to exceed 3.5 years from March 23, 2004. Effluent limits for the individual compounds NO3-N, and NO2-N are not required during the interim period. ***<u>Interim Limits for NH3-N and NO3-N + NO2-N</u>*** ***Total ammonia as Nitrogen*** ***POTW*** ***Daily Maximum**** ***Monthly Average**** Donald C. Tillman WRP 24.7 mg/L 20.5 mg/L Los Angeles-Glendale WRP 24.2 mg/L 18.8 mg/L Burbank WRP 24.1 mg/L 22.7 mg/L *The monthly average and daily maximum interim limits are based on the 95th and 99th percentiles of effluent performance data reported by dischargers. ***Nitrite-nitrogen + Nitrate-nitrogen*** ***Monthly Average*** 8.0 mg/L The Implementation Plan also includes additional studies to evaluate the effectiveness of nitrogen reductions on related effects such as algae growth, odors and scum. Ammonia and nitrate reductions will be regulated through effluent limits prescribed in NPDES permits.
Margin of Safety	An explicit margin of safety of 10% of the ammonia, nitrate, nitrite and nitrate + nitrite loads is allocated to address uncertainty in the sources and linkage analyses. In addition, an implicit margin of safety is incorporated through conservative model assumptions and statistical analysis.
Seasonal Variations and Critical Conditions	The critical condition identified for this TMDL is based on low flow condition. The driest six months of the year are the most critical condition for nutrients because less surface flow is available to dilute effluent discharge.

Table 7-8.2. Los Angeles River Nitrogen Compounds and Related Effects TMDL: Implementation Schedule

Implementation Tasks	Completion Date
1. Apply interim limits for NH_3-N and NO_3-N + NO_2-N to major Publicly Owned Treatment Works (POTWs). 2. Apply Waste Load Allocations (WLAs) to minor point source dischargers and MS4 permittees. 3. Begin to include monitoring for nitrogen compounds in NPDES permits for minor NPDES dischargers above 0.1 mgd as permits are renewed.	03/23/2004
4. Submittal of a Monitoring Work Plan by MS4 permittees to estimate nitrogen loadings associated with runoff loads from the storm drain system for approval by the Executive Officer of the Regional Board. The Work Plan will include monitoring for ammonia, nitrate, and nitrite. The Work Plan may include a phased approach wherein the first phase is based on monitoring from the existing mass emission station in the Los Angeles River. The results will be used to calibrate the linkage analysis. The Work Plan will also contain protocol and a schedule for implementing additional monitoring if necessary. The Work Plan will also propose triggers for conducting source identification and implementing BMPs, if necessary. Source identification and BMPs will be in accordance with the requirements of MS4 permits.	03/23/2005
5. Submittal of a Workplan by major NPDES permittees to evaluate the effectiveness of nitrogen reductions on removing impairments from algae odors, scums, and pH for approval by the Executive Officer of the Regional Board. The monitoring program will include instream monitoring of algae, foam, scum, pH, and odors in the Los Angeles River. In addition, groundwater discharge to Los Angeles River will also be analyzed for nutrients to determine the magnitude of these loadings and the need for load allocations. The Workplan will include protocol and schedule for refining numeric targets for nitrogen compounds and related effects such as excessive algae in the Los Angeles River. The Workplan will also contain protocol and a schedule for identification of limiting nutrients.	03/23/2005
6. Submission of a special studies Workplan by the City of Los Angeles to evaluate site-specific objectives for ammonia, nitrate, and nitrite, including the following issues: pH and temperature distribution downstream of the D.C. Tillman WRP to determine the point of compliance for ammonia, establishment of ammonia WLAs based on seasonality.	03/23/2005
7. Submission of all results from Task 6, and results from water effects ratio study for ammonia which has been performed by the City of Los Angeles.	No later than 09/23/2006

Implementation Tasks	Completion Date
8. Regional Board considers site-specific objectives for ammonia, nitrate, nitrite and nitrite + nitrate and revision of wasteload allocations based on results from Tasks 6 and 7. The Regional Board will consider factors such as seasonal variation, averaging periods, and water effects ratios when determining whether it is appropriate to adopt site-specific objectives for ammonia. If a site specific objective is adopted by the Regional Board, and approved by relevant approving agencies, this TMDL will need to be revised, readopted, and reapproved to reflect the revised water quality objectives.	No later than 09/23/2007
9. Interim limits for ammonia and nitrate + nitrite expire and WLAs for ammonia, nitrate, nitrite, and nitrate + nitrite apply to major point sources.	09/23/2007
10. Complete evaluation of monitoring for nutrient effects and determine need for revising wasteload allocations, including but not limited to establishing new WLAs for other nutrient and related effects such as algal growth	03/23/2008
11. Regional Board considers results of Tasks 5 and 10 and revises or establishes WLAs as appropriate.	03/23/2009

7-9 Santa Clara River Nitrogen Compounds TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on August 7, 2003.

This TMDL was approved by:
The State Water Resources Control Board on November 19, 2003.
The Office of Administrative Law on February 27, 2004.
The U.S. Environmental Protection Agency on March 18, 2004.

The effective date of this TMDL is: March 23, 2004.

The following table describes the key elements of this TMDL.

Table 7-9.1. Santa Clara River Nitrogen Compounds TMDL: Elements

Element	**Santa Clara River Nitrogen Compounds TMDL**
Problem Statement	Discharge of wastes containing nitrite, nitrate and ammonia to the Santa Clara River causes exceedances of water quality objectives for ammonia, nitrate and nitrite established in the Basin Plan. The Santa Clara River is listed as impaired by ammonia in Reach 3 and by nitrate plus nitrite in Reach 7 on the 2002 303(d) list of impaired water bodies. Reach 8 of the Santa Clara River is included on the State Monitoring List for organic enrichment/dissolved oxygen, which may be caused by excessive nitrogen. Nitrate and nitrate are biostimulatory substances that can cause eutrophic effects such as low dissolved oxygen and algae growth. Excessive ammonia can cause aquatic life toxicity.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the load allocations)	• Total ammonia as nitrogen (NH_3-N) Reach / One-hour Average (mg/L) / Thirty-day Average (mg/L) Reach 8 / 14.8 / 3.2 Reach 7 above Valencia / 4.8 / 2.0 Reach 7 below Valencia / 5.5 / 2.0 Reach 7 at County Line / 3.4 / 1.2 Reach 3 above Santa Paula / 2.4 / 1.9 Reach 3 at Santa Paula / 2.4 / 1.9 Reach 3 below Santa Paula / 2.2 / 1.7 • Nitrate plus Nitrite as Nitrogen (NO_3-N + NO_2-N) Reach / Thirty-day Average (mg/L) Reach 3 / 4.5 Reach 7 / 4.5 Reach 8 / 9.0 Narrative objectives for biostimulatory substances and toxicity are based on the Basin Plan. The TMDL analysis indicates that the numeric targets will implement the narrative objectives. The Implementation Plan includes monitoring and special studies to verify that the TMDL will implement the narrative objectives.

Element	Santa Clara River Nitrogen Compounds TMDL
Source Analysis	The principal source of ammonia, nitrite, and nitrate to the Santa Clara River is discharges from the Saugus and Valencia Water Reclamation Plants (WRPs) and the Fillmore and Santa Paula Publicly Owned Treatment Works (POTWs). Agricultural runoff, stormwater discharge and groundwater discharge may also contribute nitrate loads. Further evaluation of these sources is set forth in the Implementation Plan.
Linkage Analysis	Linkage between nitrogen sources and the in-stream water quality was established through hydrodynamic and water quality models. The Watershed Analysis Risk Management Framework was used to model the hydrodynamic characteristics and water quality of the Santa Clara River. The analysis demonstrated that major point sources (WRPs and POTWs) were the primary contributors to in-stream ammonia and nitrate plus nitrite loads. Nonpoint sources and minor point sources contributed a much smaller fraction of these loads.
Wasteload Allocations (for point sources)	Major point sources: Concentration-based wasteloads are allocated to major point sources of ammonia and nitrate+nitrite in Reach 3, which include the Fillmore and Santa Paula POTWs; concentration-based wasteloads are allocated to major point sources of ammonia and nitrite+nitrate in Reaches 7 and 8, which include the Valencia and Saugus WRPs. • Total ammonia as nitrogen (NH_3-N) in mg/L: (see table A below) • Nitrate-nitrogen (NO_3-N), Nitrite-nitrogen (NO_2-N), and Nitrate plus Nitrite as nitrogen (NO2-N+NO3-N) in mg/L: (see table B below) *Receiving water monitoring is required on a weekly basis to ensure compliance with the water quality objectives for nitrite, nitrate, nitrite + nitrate, and dissolved oxygen.

POTW	One-hour average	Thirty-day average
Saugus WRP	5.6	2.0
Valencia WRP	5.2	1.75
Fillmore POTW	4.2	2.0
Santa Paula POTW	4.2	2.0

	Thirty-day average WLA*		
POTW	NO_2-N	NO_3-N	NO2-N+NO3-N
Saugus WRP	0.9	7.1	7.1
Valencia WRP	0.9	6.8	6.8
Fillmore POTW	0.9	8.0	8.0
Santa Paula POTW	0.9	8.0	8.0

Element	Santa Clara River Nitrogen Compounds TMDL
Wasteload Allocations (for point sources) (continued)	Minor Point Sources: Concentration-based wasteloads are allocated to minor discharges enrolled under NPDES or WDR permits. The allocations for minor point sources are based on the water quality objectives for ammonia, nitrite, nitrate and nitrite plus nitrate. For minor dischargers discharging into Reach 7, the thirty-day average WLA for ammonia as nitrogen is 1.75 mg/L, the one-hour WLA for ammonia as nitrogen is 5.2 mg/L, and the thirty-day average WLA for nitrate plus nitrite as nitrogen is 6.8 mg/L. For minor dischargers discharging into Reach 3, the thirty-day average WLA for ammonia as nitrogen is 2.0 mg/L and the one hour average WLA for ammonia as nitrogen is 4.2 mg/L, and the thirty-day average WLA for nitrate plus nitrite as nitrogen is 8.1 mg/L. MS4 and Stormwater Sources: Concentration-based wasteloads are allocated to municipal, industrial and construction stormwater sources regulated under NPDES permits. For stormwater permittees discharging into Reach 7, the thirty-day WLA for ammonia as nitrogen is 1.75 mg/L and the one-hour WLA for ammonia as nitrogen is 5.2 mg/L; the thirty-day average WLA for nitrate plus nitrite as nitrogen is 6.8 mg/L. For stormwater permittees discharging into Reach 3, the thirty-day WLA for ammonia as nitrogen is 2.0 mg/L and the one-hour WLA for ammonia as nitrogen is 4.2 mg/L; the thirty-day average WLA for nitrate plus nitrite nitrogen is 8.1 mg/L.
Load Allocation (for nonpoint sources)	Concentration-based loads for nitrogen compounds are allocated for nonpoint sources. For nonpoint sources discharging to Reach 7, the combined ammonia, nitrate, nitrite (NH_3-N + NO_2-N + NO_3-N) load as nitrogen is 8.5 mg/L. For non-point sources discharging into other reaches of the Santa Clara River, Mint Canyon Reach 1, Wheeler Canyon/Todd Barranca, and Brown Barranca/Long Canyon, the combined ammonia, nitrate, nitrite (NH_3-N + NO_2-N + NO_3-N) loads as nitrogen is 10 mg/L. Monitoring is established in the TMDL Implementation Plan to verify the nitrogen nonpoint source contributions from agricultural and urban runoff and groundwater discharge.

<table>
<tr><th>Element</th><th>Santa Clara River Nitrogen Compounds TMDL</th></tr>
<tr><td>Implementation</td><td>

- Ammonia, nitrite, and nitrate reductions will be regulated through effluent limits prescribed in POTW and minor point source NPDES Permits, Best Management Practices required in NPDES MS4 Permits, and SWRCB Management Measures for non point source discharges.
- At the Regional Board's discretion, the following interim effluent limits will be allowed for a period as short as possible, but not to exceed eight years from the effective date of the TMDL:

Interim Limits in mg/L for Nitrite, Nitrate, and Nitrite plus Nitrate as nitrogen

Thirty-day Average Interim Limits

POTW	NO_2-N	NO_3-N	NO_2-N + NO_3-N
Saugus WRP	1	10	10
Valencia WRP	1	10	10

Interim Limits in mg/L for combined Ammonia, Nitrate, and Nitrite as nitrogen

POTW	Thirty-day Average	Daily Maximum
Fillmore WRP	32.8	38.9
Santa Paula WRP	41.8	49.0

The Implementation Plan also includes special studies and monitoring for ammonia, nitrite, and nitrate to evaluate the effectiveness of nitrogen reductions.

The Implementation Plan also includes special studies to address issues regarding water quality standards and site-specific objectives and a reconsideration of waste load allocations based on monitoring data and special studies.</td></tr>
<tr><td>Margin of Safety</td><td>An explicit margin of safety of 10 percent of the nitrogen loads is allocated to address uncertainty in the source and linkage analyses. In addition, an implicit margin of safety is incorporated through conservative model assumptions and statistical analysis.</td></tr>
<tr><td>Future Growth</td><td>Urban growth in the upper watershed is predicted to require the expansion of the Valencia Water Reclamation Plan, construction of an additional water reclamation plant, and increased use of reclaimed water. Wasteload and load allocations will be developed for these new sources as required to implement appropriate water quality objectives for ammonia, nitrite, and nitrate.</td></tr>
<tr><td>Seasonal Variations and Critical Conditions</td><td>The critical condition identified for this TMDL is based on the low flow condition defined as the 7Q10. In addition, the driest six months of the year are identified as a more critical condition for nitrogen compounds because less surface flow is available to dilute effluent discharge. The model result also indicates a critical condition during the first major storm event after a dry period. The implementation plan includes monitoring to verify this potential critical condition.</td></tr>
</table>

Table 7-9.2. Santa Clara River Nitrogen Compounds TMDL: Implementation Schedule

Implementation Tasks, Milestones and Provisions	Responsible Party	Completion Date
1. Apply interim limits for ammonia, nitrite, and nitrate to Fillmore and Santa Paula POTWs. 2. Apply interim limits for Nitrate to Saugus and Valencia WRPs. 3. Apply WLAs to minor point source dischargers and MS4 permittees. 4. Include monitoring for nitrogen compounds in NPDES and WDR permits for minor dischargers as permits are renewed.	Fillmore and Santa Paula POTWs; NPDES and WDR permittees	Effective Date of TMDL
5. Submittal of a Work Plan by Los Angeles County and Ventura County MS4 permittees to estimate ammonia and nitrogen loadings associated with runoff loads from the storm drain system for approval by the Executive Officer of the Regional Board. The Work Plan will include monitoring for ammonia, nitrate, and nitrite. The Work Plan may include a phased approach wherein the first phase is based on monitoring from the existing mass emission station in the Santa Clara River. If the monitoring studies reflect a higher average concentration in stormwater than originally considered, then the linkage analysis would be refined to consider the increased loading. The Work Plan will also contain protocol and a schedule for implementing additional monitoring if necessary. The Work Plan will also propose triggers for conducting source identification and implementing BMPs, if necessary. Source identification and BMPs will be in accordance with the requirements of MS4 permits.	Los Angeles and Ventura Counties MS4 Permittees	1 year after the Effective Date of TMDL
6. Submittal of Work Plan by major NPDES permittees to asses and monitor the surface water quality, including, without limitation, monthly measurement of dissolved oxygen on an hourly basis, pH and instream denitrification processes, and groundwater where appropriate, for aquatic life impacts, macroinvertebrate diversity, algal mass, and nutrient species in the Santa Clara River for approval by the Regional Board's Executive Officer. The Work Plan will include evaluation of the effectiveness of the POTW in meeting WLAs. Submittal of a work plan that demonstrates compliance with final wasteload allocations or demonstrates a schedule for compliance with final wasteload allocations is as short as possible.	Cities of Fillmore and Santa Paula, and County Sanitation Districts of Los Angeles County	1 year after Effective Date of TMDL

Implementation Tasks, Milestones and Provisions	Responsible Party	Completion Date
7. Submittal of special studies Work Plan by County Sanitation Districts of Los Angeles County to evaluate site-specific objectives (SSOs) for nitrate for approval by the Regional Board's Executive Officer.	County Sanitation Districts of Los Angeles County	1 year after Effective Date of TMDL
8. Submittal of results from water effects ratio study for ammonia by County Sanitation Districts of Los Angeles County.	County Sanitation Districts of Los Angeles County	Effective Date of TMDL
9. Evaluation of feasibility of including stakeholders in the Upper Santa Clara River watershed in the Regional Board Septic Tank task force.	Regional Board	3.5 year after Effective Date of TMDL
10. Regional Board considers a Basin Plan Amendment for site-specific objectives for ammonia, nitrate and nitrite plus nitrate based on results of Tasks 7 and 8.	Regional Board	1 year after Effective Date of TMDL for ammonia; 4 years after the Effective Date of the TMDL for nitrate and nitrite plus nitrate
11. Based on the results Task 5-10 and NPDES Monitoring, complete implementation of advanced treatment or additional treatment modifications to achieve WLAs for POTWs, if necessary in as short a period of time as possible, as determined during NPDES permit issuance or modification, but not later than eight years after the effective date of the TMDL; if advanced treatment is not required, interim limits will expire in as short a period of time as possible, as determined during NPDES permit reissuance or modification, no later than five years after the effective date of the TMDL. The wasteload allocation compliance date will be synchronized with the expiration date of interim limits specified in Task 13.	POTW Permittees	8 years after Effective Date of TMDL

Implementation Tasks, Milestones and Provisions	Responsible Party	Completion Date
12. Interim limits for ammonia and nitrate expire and WLAs apply to WRPs and POTWs. The Regional Board will consider extending the duration of the remaining schedule and re-evaluating interim limits if WLAs for WRPs and POTWs are reduced after SSO considerations.	POTW Permittees; Regional Board	Based on results of Tasks 6 and 10: if additional modifications or advanced nitrification/denitrification facilities are required, interim limits will expire in as short a period of time as possible, as determined during NPDES permit issuance or modification interim limits, but not later than eight years after the effective date of the TMDL; if advanced treatment is not required, interim limits will expire in as short a period of time as possible, as determined during NPDES permit issuance or modification, but not later than 5 years after the Effective Date of the TMDL.
13. Annual progress reports on the Implementation Plan shall be provided to the Regional Board by the responsible parties or their representatives.	•NPDES permitees, •Board staff •MS-4 permittees. •Newhall Land and Farming •United Water Conservation District •Friends of the Santa Clara River • Ventura Coast Keeper and Heal the Bay.	Annually after Effective Date of TMDL.

7-10 Malibu Creek and Lagoon Bacteria TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on December 13, 2004.

This TMDL was approved by:

The State Water Resources Control Board on September 22, 2005.
The Office of Administrative Law on December 1, 2005.
The U.S. Environmental Protection Agency on January 10, 2006.

The effective date of this TMDL is: January 24, 2006.

The following table includes the elements of this TMDL.

Table 7-10.1. Malibu Creek and Lagoon Bacteria TMDL: Elements

TMDL Element	Key Findings and Regulatory Provisions
Problem Statement	Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at Malibu Creek, Lagoon, and adjacent beach. Swimming in waters with elevated bacterial indicator densities has long been associated with adverse health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine and fresh water to protect the water contact recreation use. These targets are the most appropriate indicators of public health risk in recreational waters. These bacteriological objectives are set forth in Chapter 3 of the Basin Plan.[1] The objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives that serve as the numeric targets for this TMDL are: In Marine Waters Designated for Water Contact Recreation (REC-1) <u>1. Geometric Mean Limits</u> a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. c. Enterococcus density shall not exceed 35/100 ml. <u>2. Single Sample Limits</u> a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

TMDL Element	Key Findings and Regulatory Provisions
Numeric Target (continued) (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	In Fresh Waters Designated for Water Contact Recreation (REC-1) 1. Geometric Mean Limits a. E. coli density shall not exceed 126/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. 2. Single Sample Limits a. E. coli density shall not exceed 235/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. These objectives are generally based on an acceptable health risk for marine recreational waters of 19 illnesses per 1,000 exposed individuals as set by the US EPA (US EPA, 1986). The targets apply throughout the year. The final compliance point for the targets is the point at which the effluent from a discharge initially mixes with the receiving water. Implementation of the above bacteria objectives and the associated TMDL numeric targets is achieved using a 'reference system/anti-degradation approach' rather than the alternative 'natural sources exclusion approach' or strict application of the single sample objectives. As required by the CWA and Porter-Cologne Water Quality Control Act, Basin Plans include beneficial uses of waters, water quality objectives to protect those uses, an anti-degradation policy, collectively referred to as water quality standards, and other plans and policies necessary to implement water quality standards. The 'reference system/anti-degradation approach' means that on the basis of historical exceedance levels at existing monitoring locations, including a local reference beach within Santa Monica Bay, a certain number of daily exceedances of the single sample bacteria objectives are permitted. The allowable number of exceedance days is set such that (1) bacteriological water quality at any site is at least as good as at a designated reference site within the watershed and (2) there is no degradation of existing bacteriological water quality. This approach recognizes that there are natural sources of bacteria that may cause or contribute to exceedances of the single sample objectives and that it is not the intent of the Regional Board to require treatment or diversion of natural coastal creeks or to require treatment of natural sources of bacteria from undeveloped areas. The geometric mean targets may not be exceeded at any time. The rolling 30-day geometric means will be calculated on each day. If weekly sampling is conducted, the weekly sample result will be assigned to the remaining days of the week in order to calculate the daily rolling 30-day geometric mean. For the single sample targets, each existing monitoring site is assigned an allowable number of exceedance days for three time periods (1) summer dry-weather (April 1 to October 31), (2) winter dry-weather (November 1 to March 31), and (3) wet-weather (defined as days with 0.1 inch of rain or greater and the three days following the rain event.)
Source Analysis	Fecal coliform bacteria may be introduced from a variety of sources including storm water runoff, dry-weather runoff, onsite wastewater treatment systems, and animal wastes. An inventory of possible point and nonpoint sources of fecal coliform bacteria to the waterbody was compiled, and both simple methods and computer modeling were used to estimate bacteria loads for those sources. Source inventories were used in the analysis to identify all potential sources within the Malibu Creek watershed, modeling was used to identify the potential delivery of pathogens into the creeks and the lagoon.

TMDL Element	Key Findings and Regulatory Provisions
Loading Capacity	The loading capacity is defined in terms of bacterial indicator densities, which is the most appropriate for addressing public health risk, and is equivalent to the numeric targets, listed above. As the numeric targets must be met at the point where the effluent from storm drains or other discharge initially mixes with the receiving water throughout the day, no degradation or dilution allowance is provided.
Waste Load Allocations (for point sources)	Waste Load Allocations (WLAs) are expressed as the number of daily or weekly sample days that may exceed the single sample limits or 30-day geometric mean limits as identified under "Numeric Target." WLAs are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. Zero days of exceedance are allowed for the 30-day geometric mean limits. The allowable days of exceedance for the single sample limits differ depending on season, dry weather or wet-weather, and by sampling locations as described in Table 7-10.2. The allowable number of exceedance days for a monitoring site for each time period is based on the lesser of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data at the monitoring site. This ensures that bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing water quality. However, existing data indicates that the number of exceedance days for all locations assessed in this TMDL were greater than the allowable exceedance days (i.e., number of exceedance days greater than the number at the reference sites). For each monitoring site, allowable exceedance days are set on an annual basis as well as for three time periods. These three periods are: 1. summer dry-weather (April 1 to October 31) 2. winter dry-weather (November 1 to March 31) 3. wet-weather (defined as days of 0.1 inch of rain or more plus three days following the rain event). The responsible jurisdictions and responsible agencies are the County of Los Angeles, County of Ventura, the cities of Malibu, Calabasas, Agoura Hills, Hidden Hills, Simi Valley, Westlake Village, and Thousand Oaks; Caltrans, and the California Department of Parks and Recreation.The responsible jurisdictions and responsible agencies include the permittees and co-permittees of the municipal storm water (MS4) permits for Los Angeles County and Ventura County, and Caltrans. The storm water permittees are individually responsible for the discharges from their municipal separate storm sewer systems to Malibu Creek, Malibu Lagoon or tributaries thereto.

TMDL Element	Key Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	The California Department of Parks and Recreation (State Parks), as the owner of the Malibu Lagoon and Malibu Creek State Park, is the responsible agency for these properties. However, since the reference watershed approach used in developing this TMDL is intended to make allowances for natural sources, State Parks is only responsible for: conducting a study of bacteria loadings from birds in the Malibu Lagoon, water quality monitoring, and compliance with load allocations applicable to anthropogenic sources on State Park property (e.g., onsite wastewater treatment systems). The Santa Monica Mountains Conservancy and the National Park Service as the owner of natural parkland also are responsible for water quality monitoring and compliance with load allocations resulting from anthropogenic sources (e.g.,onsite wastewater treatment systems) from lands under their jurisdiction. As discussed in "Source Analysis", discharges from Tapia WWRF and effluent irrigation, and general construction storm water permits are not expected to be a significant source of bacteria. Therefore, the WLAs for these discharges are zero (0) days of allowable exceedances for all three time periods and for the single sample limits and the rolling 30-day geometric mean.
Load Allocations (for nonpoint sources)	Load Allocations (LA) are expressed as the number of daily or weekly sample days that may exceed the single sample limits or 30-day geometric mean limits as identified under "Numeric Target." LAs are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. Zero days of exceedance are allowed for the 30-day geometric mean limits. The allowable days of exceedance for the single sample limits differ depending on season, dry weather or wet-weather, and by sampling locations as described in Table 7-10.2. The allowable number of exceedance days for a monitoring site for each time period is based on the lesser of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data at the monitoring site. This ensures that bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing water quality. However, existing data indicates that the number of exceedance days for all locations assessed in this TMDL were greater than the allowable exceedance days. For each monitoring site, allowable exceedance days are set on an annual basis as well as for three time periods. These three periods are: 1. summer dry-weather (April 1 to October 31) 2. winter dry-weather (November 1 to March 31) 3. wet-weather (defined as days of 0.1 inch of rain or more plus three days following the rain event). Onsite wastewater treatment systems were identified as the major nonpoint anthropogenic source within the watershed. The responsible agencies are the county and city health departments and/or other local agencies that oversee installation and operation of on-site wastewater treatment systems. However, owners of on-site wastewater treatment systems are responsible for actual discharges.

TMDL Element	Key Findings and Regulatory Provisions
Implementation	The regulatory mechanisms to implement the TMDL may include, but are not limited to the Los Angeles County Municipal Storm Water NPDES Permit (MS4), Ventura County Municipal Storm Water NPDES Permit, the Caltrans Storm Water Permit, waste discharge requirements (WDRs), MOUs, revised MOUs, general NPDES permits, general industrial storm water permits, general construction storm water permits, and the authority contained in Sections 13225, 13263 and 13267 of the Water Code. Each NPDES permit assigned a WLA shall be reopened or amended at reissuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. This TMDL will be implemented in three phases over a ten-year period as outlined in Table 7-10.3. Within three years of the effective date of the TMDL, compliance with the allowable number of summer dry-weather exceedance days and the rolling 30-day geometric mean targets must be achieved. In response to a written request from the responsible jurisdiction or responsible agency subject to conditions described in Table 7-10.3, the Executive Officer of the Regional Board may extend the compliance date for the summer dry-weather allocations from 3 to up to six years from the effective date of this TMDL Within six years of the effective date of the TMDL, compliance with the allowable number of winter dry-weather exceedance days and the rolling 30-day geometric mean targets must be achieved.Within ten years of the effective date of the TMDL, compliance with the allowable number of wet-weather exceedance days and rolling 30-day geometric mean targets must be achieved. To be consistent with the Santa Monica Bay (SMB) Beaches TMDLs, the Regional Board intends to reconsider this TMDL in coordination with the reconsideration of the SMB Beaches TMDLs. The SMB Beaches TMDLs are scheduled to be reviewed in July 2007 (four years from the effective date of the SMB Beaches TMDLs). The review will include a possible revision to the allowable winter dry-weather and wet-weather exceedance days based on additional data on bacterial indicator densities in the wave wash; to re-evaluate the reference system selected to set allowable exceedance levels; and to re-evaluate the reference year used in the calculation of allowable exceedance days. In addition, the method for applying the 30-day geometric mean limit also will be reviewed. The Malibu Creek Bacteria TMDL is scheduled to be reconsidered in three years from the effective date, which is expected to approximately coincide with the reassessment required under the SMB Beaches TMDLs.
Margin of Safety	A margin of safety has been implicitly included through the following conservative assumptions. • The watershed loadings were based on the 90th percentile year for rain (1993) based on the number of wet weather days. This should provide conservatively high runoff from different land uses for sources of storm water loads • The watershed loadings were also based on a very dry rain year (1994). This ensures compliance with the numeric target during low flows when septic systems and dry urban runoff loads are the major bacterial sources.

TMDL Element	Key Findings and Regulatory Provisions
Margin of Safety (continued)	• The TMDL was based on meeting the fecal 30-day geometric mean target of 200 MPN/ 100 ml, which for these watersheds was estimated to be more stringent level than the allowable exceedance of the single sample standard. This approach also provides assurance that the E. coli single sample standard will not be exceed. • The load reductions established in this TMDL were based on reduction required during the two different critical year conditions. A wet year when storm loads are high, and a more typical dry year when base flows and assimilative capacity is low. This adds a margin of safety for more typical years. In addition, an explicit margin of safety has been incorporated, as the load allocations will allow exceedances of the single sample targets no more than 5% of the time on an annual basis, based on the cumulative allocations proposed for dry and wet weather. Currently, the Regional Board concludes that there is water quality impairment if more than 10% of samples at a site exceed the single sample bacteria objectives annually.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for three time periods (summer dry-weather, winter-dry weather, and wet-weather) based on public health concerns and observed natural background levels of exceedance of bacterial indicators. To establish the critical condition for the wet days, we used rain data from 1993. Based on data from the Regional Board's Santa Monica Bay TMDL this represents the 90th percentile rain year based on rain data from 1947 to 2000. To further evaluate the critical conditions, we modeled a representative dry year. The dry-year critical condition was based on 1994, which was the 50th percentile year in terms of dry weather days for the period of 1947-2000.
Compliance Monitoring	Responsible jurisdictions and agencies shall submit a compliance monitoring plan to the Executive Officer of the Regional Board for approval. The compliance monitoring plan shall specify sampling frequency (daily or weekly) and sampling locations and that will serve as compliance points. This compliance monitoring program is to determine the effectiveness of the TMDL and not to determine compliance with individual load or wasteload allocations for purposes of enforcement. If the number of exceedance days is greater than the allowable number of exceedance days the water body segment shall be considered out-of-compliance with the TMDL. Responsible jurisdictions or agencies shall not be required to initiate an investigation detailed in the next paragraph if a demonstration is made that bacterial sources originating within the jurisdiction of the responsible agency have not caused or contributed to the exceedance. If a single sample shows the discharge or contributing area to be out of compliance, the Regional Board may require, through permit requirements or the authority contained in Water Code section 13267, daily sampling at the downstream location (if it is not already) until all single sample events meet bacteria water quality objectives. Furthermore, if a creek location is out of compliance as determined in the previous paragraph, the Regional Board shall require responsible agencies to initiate an investigation, which at a minimum shall include daily sampling in the target receiving waterbody reach or at the existing monitoring location until all single sample events meet bacteria water quality objectives.

TMDL Element	Key Findings and Regulatory Provisions
Compliance Monitoring (continued)	The County of Los Angeles, County of Ventura, and municipalities within the Malibu Creek watershed, Caltrans, and the California Department of Parks and Recreation are strongly encouraged to pool efforts and coordinate with other appropriate monitoring agencies in order to meet the challenges posed by this TMDL by developing cooperative compliance monitoring programs.

Note: The complete staff report for the TMDL is available for review upon request.

[1] The bacteriological objectives were revised by a Basin Plan amendment adopted by the Regional Board on October 25, 2001, and subsequently approved by the State Water Resources Control Board, the Office of Administrative Law and finally by U.S. EPA on September 25, 2002.

Table 7-10.2. Malibu Creek and Lagoon Bacteria TMDL: Final Annual Allowable Exceedance Days for Single Sample Limits by Sampling Location

Compliance Deadline		3* years after effective date		6 years after effective date		10 years after effective date	
		Summer Dry Weather ^		Winter Dry Weather ^**		Wet Weather ^**	
		April 1 – October 31		November 1 - March 31		November 1 - October 31	
Station ID	Location Name	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)
LA RWQCB	Triunfo Creek	0	0	3	1	17	3
LA RWQCB	Lower Las Virgenes Creek	0	0	3	1	17	3
LA RWQCB	Lower Medea Creek	0	0	3	1	17	3
LVMWD (R-9)	Upper Malibu Creek, above Las Virgenes Creek	0	0	3	1	17	3
LVMWD (R-2)	Middle Malibu Creek, below Tapia discharge 001	0	0	3	1	17	3
LVMWD (R-3)	Lower Malibu Creek, 3 mi below Tapia	0	0	3	1	17	3
LVMWD (R-4)	Malibu Lagoon, above PCH	0	0	3	1	17	3
LVMWD (R-11)	Malibu Lagoon, below PCH	0	0	3	1	17	3
------	Other sampling stations as identified in the Compliance Monitoring Plan as approved by the Executive Officer including at least one sampling station in each subwatershed, and areas where frequent REC-1 use is known to occur.	0	0	3	1	17	3

Notes: The number of allowable exceedances is based on the lesser of (1) the reference system or (2) existing levels of exceedance based on historical monitoring data.

The allowable number of exceedance days during winter dry-weather is calculated based on the 10th percentile storm year in terms of dry days at the LAX meteorological station

The allowable number of exceedance days during wet-weather is calculated based on the 90th percentile storm year in terms of wet days at the LAX meteorological station.

^ A dry day is defined as a non-wet day. A wet day is defined as a day with a 0.1-inch or more of rain and the three days following the rain event.

* The compliance date may be extended by the Executive Officer to up to 6 years from the effective date.

* *A revision of the TMDL is scheduled for four years after the effective date of the Santa Monica Bay Beaches TMDLs in order to re-evaluate the allowable exceedance days during winter dry-weather and wet-weather based on additional monitoring data and the results of the study of relative loading from storm drains versus birds.

Table 7-10.3. Malibu Creek and Lagoon Bacteria TMDL: Significant Dates

Date	Action
120 days after the effective date of this TMDL	Responsible jurisdictions and responsible agencies must submit a comprehensive bacteria water quality monitoring plan for the Malibu Creek Watershed to the Executive Officer of the Regional Board. The plan must be approved by the Executive Officer before the monitoring data can be considered during the implementation of the TMDL. In developing the 13267 order, the EO will consider costs in relation to the need for data. With respect to benefits to be gained, the TMDL staff report demonstrates the significant impairment and bacteria loading. Further documenting success or failure in achieving waste load allocations will benefit the responsible agencies and all recreational water users. The purpose of the plan is to better characterize existing water quality as compared to water quality at the reference watershed,-and ultimately, to serve as a compliance monitoring plan. The plan must provide for analyses of all applicable bacteria indicators for which the Basin Plan has established objectives including E. coli. For fresh water and enterococcus for marine water. The plan must also include sampling locations that are specified in Table 7-10.2, at least one location in each subwatershed, and areas where frequent REC-1 use is known to occur. However, this is not to imply that a mixing zone has been applied; water quality objectives apply throughout the watershed—not just at the sampling locations.
1 year after effective date of this TMDL	1. Responsible jurisdictions and responsible agencies shall provide a written report to the Regional Board outlining how each intends to cooperatively achieve compliance with the TMDL. The report shall include implementation methods, an implementation schedule, and proposed milestones. Specifically, the plan must include a comprehensive description of all steps to be taken to meet the 3-year summer dry weather compliance schedule, including but not limited to a detailed timeline for all category of bacteria sources under their jurisdictions including but not limited to nuisance flows, urban stormwater, on-site wastewater treatment systems, runoff from homeless encampments, horse facilities, and agricultural runoff.

Date	Action
1 year after effective date of this TMDL (continued)	2. If the responsible jurisdiction or agency is requesting an extension of the summer dry-weather compliance schedule, the plan must include a description of all local ordinances necessary to implement the detailed workplan and assurances that such ordinances have been adopted before the request for an extension is granted. 3. Local agencies regulating on-site wastewater treatment systems shall provide a written report to the Regional Board's Executive Officer detailing the rationale and criteria used to identify high-risk areas where on-site systems have a potential to impact surface waters in the Malibu Creek watershed. Local agencies may use the approaches outlined below in (a) and (b), or an alternative approach as approved by the Executive Officer. (a) Responsible agencies may screen for high-risk areas by establishing a monitoring program to determine if discharges from OWTS have impacted or are impacting water quality in Malibu Creek and/or its tributaries. A surface water monitoring program demonstration must include monitoring locations upstream and downstream of the discharge, as well as a location at mid-stream (or at the approximate point of discharge to the surface water) of single or clustered OWTS. Surface water sampling frequency will be weekly for bacteria indicators and monthly for nutrients. A successful demonstration will show no statistically significant increase in bacteria levels in the downstream sampling location(s). (b) Responsible agencies may define the boundaries of high-risk or contributing areas or identify individual OWTS that are contributing to bacteria water quality impairments through groundwater monitoring or through hydrogeologic modeling as described below: (1) Groundwater monitoring must include monitoring in a well no greater than 50-feet hydraulically downgradient from the furthermost extent of the disposal area, or property line of the discharger, whichever is less. At a minimum, sampling frequency for

Date	Action
1 year after effective date of this TMDL (continued)	groundwater monitoring will be quarterly. The number, location and construction details of all monitoring wells are subject to approval of the Executive Officer. (2) Responsible agencies may use a risk assessment approach, which uses hydrogeologic modeling to define the boundaries of the high-risk and contributing areas. A workplan for the risk assessment study must be approved by the Executive Officer of the Regional Board. 4. OWTS located in high-risk areas are subject to system upgrades as necessary to demonstrate compliance with applicable effluent limits and/or receiving water objectives. 5. If a responsible jurisdiction or agency is requesting an extension to the wet-weather compliance schedule, the plan must include a description of the integrated water resources (IRP) approach to be implemented, identification of potential markets for water re-use, an estimate of the percentage of collected stormwater that can be re-used, identification of new local ordinances that will be required, a description of new infrastructure required, a list of potential adverse environmental impacts that may result from the IRP, and a workplan and schedule with significant milestones identified. Compliance with the wet-weather allocations shall be as soon as possible but under no circumstances shall it exceed 10 years for non-integrated approaches or extend beyond July 15, 2021 for an integrated approach. The Regional Board staff will bring to the Regional Board the aforementioned plans for consideration of extension of the wet-weather compliance date as soon as possible.
2 years after the effective date of this TMDL	The California Department of Parks and Recreation shall provide the Regional Board Executive Officer, a report quantifying the bacteria loading from birds to the Malibu Lagoon. The Regional Board's Executive Officer shall require the responsible jurisdictions and responsible agencies to provide the Regional Board with a reference watershed study. The study shall be designed to collect sufficient information to establish a defensible reference condition for the Malibu Creek and Lagoon watershed.

Date	Action
3 years after effective date of this TMDL** ** May be extended to up to 6 years from the effective date of this TMDL	Achieve compliance with the applicable Load Allocations and Waste Load Allocations, as expressed in terms of allowable days of exceedances of the single sample bacteria limits and the 30-day geometric mean limit during summer dry-weather (April 1 to October 31). In response to a written request from a responsible jurisdiction or responsible agency, the Executive Officer of the Regional Board may extend the compliance date for the summer dry-weather allocations from 3 years to up to 6 years from the effective date of this TMDL. The Executive Officer's decision to extend the summer dry-weather compliance date must be based on supporting documentation to justify the extension, including a detailed work plan, budget and contractual or other commitments by the responsible jurisdiction or responsible agency.
3 years after effective date of this TMDL	The Regional Board shall reconsider this TMDL to: (1) Consider a natural source exclusion for bacteria loadings from birds in the Malibu Lagoon if all anthropogenic sources to the Lagoon have been controlled. (2) Reassess the allowable winter dry-weather and wet-weather exceedances days based on additional data on bacterial indicator densities, and an evaluation of site-specific variability in exceedance levels to determine whether existing water quality is better than water quality at the reference watershed, (3) Reassess the allowable winter dry-weather and wet-weather exceedance days based on a re-evaluation of the selected reference watershed and consideration of other reference watersheds that may better represent reaches of the Malibu Creek and Lagoon. (4) Consider whether the allowable winter dry-weather and wet-weather exceedance days should be adjusted annually dependent on the rainfall conditions and an evaluation of natural variability in exceedance levels in the reference system(s), (5) Re-evaluate the reference year used in the calculation of allowable exceedance days, and (6) Re-evaluate whether there is a need for further clarification or revision of the geometric mean implementation provision.
6 years after the effective date of this TMDL	Achieve compliance with the applicable Load Allocations and Waste Load Allocations, expressed as allowable exceedance days during winter dry weather (November 1-March 31) single sample limits and the rolling 30-day geometric mean limit.

Date	Action
10 years after the effective date of this TMDL ** May be extended up to July 15, 2021.	Achieve compliance with the wet-weather Load Allocations and Waste Load Allocations (expressed as allowable exceedance days for wet weather and compliance with the rolling 30-day geometric mean limit.) The Regional Board may extend the wet-weather compliance date up to July 15, 2021 at the Regional Board's discretion, by adopting a subsequent Basin Plan amendment that complies with applicable law.

7-11 Los Angeles Harbor Bacteria TMDL - Inner Cabrillo Beach and Main Ship Channel

This TMDL was adopted by:
The Regional Water Quality Control Board on July 1, 2004.

This TMDL was approved by:
The State Water Resources Control Board on October 21, 2004.
The Office of Administrative Law on January 5, 2005.
The U.S. Environmental Protection Agency on March 1, 2005.

The effective date of this TMDL is: March 10, 2005.

The following table includes the elements of this TMDL.

Table 7-11.1. Los Angeles Harbor Bacteria TMDL (Inner Cabrillo Beach and Main Ship Channel): Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use of Inner Cabrillo Beach and the potential REC-1 uses of the Main Ship Channel in the Los Angeles Harbor. Swimming in marine waters with elevated bacterial indicator densities has long been associated with adverse health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine waters to protect the water contact recreation use. These targets are the most appropriate indicators of public health risk in recreational waters. These bacteriological objectives are set forth in Chapter 3 of the Basin Plan.[1] The objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives that serve as the numeric targets for this TMDL are: <u>1. Rolling 30-day Geometric Mean Limits</u> a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. c. Enterococcus density shall not exceed 35/100 ml. <u>2. Single Sample Limits</u> a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

Element	Key Findings and Regulatory Provisions
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations) (continued)	These objectives are generally based on an acceptable health risk for marine recreational waters of 19 illnesses per 1,000 exposed individuals as set by the US EPA. For Cabrillo Beach, the targets will apply at existing monitoring sites, with samples taken at ankle depth as they are now. For the Main Ship Channel, the targets will apply at existing or new monitoring sites with samples collected at the surface. Any new monitoring sites must be approved by the Executive Officer. These targets apply during both dry and wet weather, since there is water contact recreation throughout the year, including during wet weather. Implementation of the above bacteria objectives and the associated TMDL numeric targets is achieved using a 'reference system/anti-degradation approach' rather than the alternative 'natural sources exclusion approach subject to antidegradation policies' or strict application of the single sample objectives. As required by the CWA and Porter-Cologne Water Quality Control Act, Basin Plans include beneficial uses of waters, water quality objectives to protect those uses, and an anti-degradation policy, collectively referred to as water quality standards, and other plans and policies necessary to implement water quality standards. This TMDL and its associated waste load allocations, which shall be incorporated into relevant permits, and load allocations are the vehicles for implementation of the Region's standards. The 'reference system/anti-degradation approach' means that on the basis of historical exceedance levels at existing monitoring locations, including a local reference beach within Santa Monica Bay, a certain number of daily exceedances of the single sample bacteria objectives are permitted. The allowable number of exceedance days is set such that (1) bacteriological water quality at any site is at least as good as at a designated reference site within the watershed and (2) there is no degradation of existing bacteriological water quality. This approach recognizes that there are natural sources of bacteria that may cause or contribute to exceedances of the single sample objectives and that it is not the intent of the Regional Board to require treatment or diversion of natural coastal creeks or to require treatment of natural sources of bacteria from undeveloped areas. The geometric mean targets may not be exceeded at any time. The rolling 30-day geometric means will be calculated on each day. For the single sample targets, each existing monitoring site is assigned an allowable number of exceedance days for three time periods (1) summer dry-weather (April 1 to October 31), (2) winter dry-weather (November 1 to March 31), and (3) wet-weather (defined as days with 0.1 inch of rain or greater and the three days following the rain event.)

Element	Key Findings and Regulatory Provisions
Source Analysis	Dry-weather urban runoff and storm water conveyed by storm drains are major sources of elevated bacterial indicator densities to Inner Cabrillo Beach and the Main Ship Channel during dry and wet-weather. As of March 2004, there are 15 active individual and 15 active general, NPDES permits for discharges to the Inner or Outer Los Angeles Harbor including the Terminal Island Treatment Plant. While the fecal coliform counts in the wastewater field indicate a contribution of bacteria to the Harbor by the Terminal Treatment Plant, the wastewater field is sufficiently diluted and the bacterial densities are so much lower in the Harbor than the high bacterial densities and exceedences at the sites at Cabrillo Beach and in the Main Ship Channel that it appears that the Treatment Plant is not a significant source of bacteria to the Beach or to the Ship Channel. Potential nonpoint sources of bacterial contamination at Inner Cabrillo Beach and Main Ship Channel include marina activities such as waste disposal from boats, boat deck and slip washing, swimmer "wash-off", restaurant washouts and natural sources from birds, waterfowl and other wildlife. The bacteria loads associated with these nonpoint sources are not well quantified. However, bacterial contamination at the beach is concentrated in the shallow (ankle depth) waters more than even waters a few feet away (at knee or chest depth). This supports the contention that high bacterial densities may be largely from the beach, itself.
Loading Capacity	Studies (for example, Haile, R.W., Witte, J.S. 1997. Addendum to "An epidemiological study of possible adverse health effects of swimming in Santa Monica Bay." Santa Monica Bay Restoration Project) show that bacterial degradation and dilution during transport from the watershed to the receiving water do not significantly affect bacterial indicator densities. Therefore, the loading capacity is defined in terms of bacterial indicator densities, which is the most appropriate for addressing public health risk, and is equivalent to the numeric targets, listed above. As the numeric targets must be met at the point where the effluent from storm drains or other sources initially mix with the receiving water throughout the day, no degradation or dilution allowance is provided.
Waste Load Allocations (for point sources)	Waste load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. The allowable number of exceedance days for a monitoring site for each time period is based on the lesser of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data at the monitoring site. This ensures that bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing water quality. For each monitoring site, allowable exceedance days are set on an annual basis as well as for three time periods. These three periods are:

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	1. summer dry-weather (April 1 to October 31) 2. winter dry-weather (November 1 to March 31) 3. wet-weather days (defined as days of 0.1 inch of rain or more plus three days following the rain event). For the MSC and the Inner Harbor, the City of Los Angeles and the County of Los Angeles are the responsible agencies[2]. The City of Los Angeles is the primary jurisdiction because Inner Cabrillo Beach and Main Ship Channel are located entirely in the City of Los Angeles. The Los Angeles Harbor is owned and operated by the City. All proposed WLAs for summer, dry-weather, single sample bacterial densities in the MSC or the Inner Harbor are zero (0) days of allowable exceedances.[3] The proposed WLAs for single sample winter dry-weather and wet-weather for the monitoring location HW07 is as shown in Table 7-11.2. WLAs for storm drains in the Inner Harbor for summer, dry-weather, single sample bacterial densities are also zero (0) days of allowable exceedances. The waste load allocation for the rolling 30-day geometric mean during any time period or monitoring site in MSC or the Inner Harbor is zero (0) days of allowable exceedances. Discharges from general NPDES permits, general industrial storm water permits and general construction storm water permits are not expected to be a significant source of bacteria. Therefore, the WLAs for these discharges are zero (0) days of allowable exceedances for all three time periods and for the single sample limits and the rolling 30-day geometric mean. Any future enrollees under a general NPDES permit, general industrial storm water permit or general construction storm water permit within the Watershed will also be subject to a WLA of zero days of allowable exceedances. For Inner Cabrillo Beach, the City of Los Angeles is the responsible agency. For the Southern area of Inner Cabrillo Beach, the proposed WLAs for summer, dry-weather, winter dry-weather and wet-weather single sample bacterial densities at the ICB swimming beach are zero (0) days of allowable exceedances. Further study of the storm drains on the north part of ICB may lead to the establishment of WLAs for single sample winter dry-weather and wet-weather for these storm drains. The waste load allocation for the rolling 30-day geometric mean during any time period or monitoring site at ICB is zero (0) days of allowable exceedances.

Element	Key Findings and Regulatory Provisions
Load Allocations (for nonpoint sources)	Load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. All proposed LAs for summer, dry-weather, winter dry-weather and wet-weather, single sample bacterial densities in the MSC are zero (0) days of allowable exceedances The load allocation for the rolling 30-day geometric mean during any time period or monitoring site in MSC or the Inner Harbor is zero (0) days of allowable exceedances. All proposed LAs for summer, dry-weather, single sample bacterial densities at the ICB swimming beach are zero (0) days of allowable exceedances. The proposed LAs for single sample winter dry-weather and wet-weather for the monitoring locations CB1 and CB2 are as shown in Table 7-11.2. Further study of the the north part of ICB may lead to the establishment of LAs for this area. The waste load allocation for the rolling 30-day geometric mean during any time period or monitoring site at ICB is zero (0) days of allowable exceedances.
Implementation	The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), general and individual NPDES permits, general industrial storm water permits, general construction storm water permits, and the authority contained in Sections 13263 and 13267 of the Water Code. Each NPDES permit assigned a WLA shall be reopened or amended at reissuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. Load allocations for nonpoint sources will be implemented within the context of this TMDL. This TMDL will be implemented in three phases over a five-year period (see Table 7-11.3. Within five years of the effective date of the TMDL, there shall be no allowable exceedances of the single sample limits at any location during summer dry-weather (April 1 to October 31) or winter dry-weather s (November 1 to March 31) and the rolling 30-day geometric mean targets must be achieved. Within five years of the effective date of the TMDL, compliance with the allowable number of wet-weather exceedance days and rolling 30-day geometric mean targets must be achieved.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	For those monitoring locations subject to the antidegradation provision (HW07, wet weather), there shall be no increase in exceedance days during the implementation period above the estimated days for the monitoring location in the critical year as identified in Table 7-11.2. The Regional Board intends to reconsider this TMDL, consistent with the scheduled reconsideraton of the Santa Monica Bay (SMB) beaches TMDLs. The SMB beaches TMDLs are scheduled to be reconsidered in four years to re-evaluate the allowable winter dry-weather and wet-weather exceedance days based on additional data on bacterial indicator densities in the wave wash; to re-evaluate the reference system selected to set allowable exceedance levels; to re-evaluate the reference year used in the calculation of allowable exceedance days, and to re-evaluate the need for revision of the geometric mean implementation provision. The Regional Board intends to conduct a similar review of this TMDL within 4 years after the effective date. In addition, if a suitable reference watershed that is representative of an enclosed harbor has not been found by this time, the Regional Board may consider implementing a 'natural source exclusion approach subject to antidegradation policies' to the Los Angeles Harbor in lieu of the 'reference watershed/antidegradation approach'.
Margin of Safety	A margin of safety has been implicitly included through several conservative assumptions, such as the assumption that no dilution takes place between the on-shore sources and where the effluent initially mixes with the receiving water, and that bacterial degradation rates are not fast enough to affect bacteria densities in the receiving water. In addition, an explicit margin of safety has been incorporated, as the load allocations will allow exceedances of the single sample targets no more than 5% of the time on an annual basis, based on the cumulative allocations proposed for dry and wet weather. Currently, the Regional Board concludes that there is water quality impairment if more than 10% of samples at a site exceed the single sample bacteria objectives annually.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for three time periods (summer dry-weather, winter-dry weather, and wet-weather) based on public health concerns and observed natural background levels of exceedance of bacterial indicators. The critical condition for bacteria loading is during wet weather, when historic monitoring data for Los Angeles Habor and the reference beach indicate greater exceedance probabilities of the single sample bacteria objectives then during dry-weather. To more specifically identify a critical condition within wet-weather, in order to set the allowable exceedance days shown in Table 7-11.2, the 90th percentile 'storm year'[4] in terms of wet days[5] is used as the reference year.

Element	Key Findings and Regulatory Provisions
Seasonal Variations and Critical Conditions (continued)	Selecting the 90th percentile year avoids a situation where the reference system is frequently out of compliance. It is expected that because responsible jurisdictions and agencies will be planning for this 'worst-case' scenario, there will be fewer exceedance days than the maximum allowed in drier years. Conversely, in the 10% of wetter years, it is expected that there may be more than the allowable number of exceedance days.
Compliance Monitoring	The City of Los Angeles will continue to monitor at sites CB1, CB2 and HW07 as required by Terminal Island Treatment Plant NPDES Permit. This permit is scheduled to be revised in 2004 and will consider this TMDL. Additional monitoring sites may be added by responsible parties as necessary and the compliance monitoring requirment may be moved to another permit if determined to be more appropriate by the Regional Board. A special study shall be conducted by the City of Los Angles in the North area of Inner Cabrillo Beach to assess water quality and compliance with the standards in this TMDL. The special study of the North portion of Inner Cabrillo Beach can include details to support development of a Natural Sources Exclusion in this area if it is found that natural sources such as birds are the sources of bacterial impairment of the northern area of Inner Cabrillo Beach. Beach monitoring sites will be taken in compliance with AB411 and the Southern California Beach Water Quality Working Group procedures. Open water sampling sites will be taken at the surface. A special study shall be conducted by the County of Los Angeles and City of Los Angeles to assess water quality and compliance with the standards in this TMDL in the MSC. The schedules for special studies are shown in Table 7-11.3.

Note: The complete staff report for the TMDL is available for review upon request.

1 The bacteriological objectives were revised by a Basin Plan amendment adopted by the Regional Board on October 25, 2001, and subsequently approved by the State Water Resources Control Board, the Office of Administrative Law and finally by U.S. EPA on September 25, 2002.

2 For the purposes of this TMDL, "responsible jurisdictions and responsible agencies" are defined as (1) local or state agencies that have jurisdiction over Los Angeles Harbor including Inner Cabrillo Beach and Main Ship Channel, (2) local agencies that are permittees or co-permittees on a municipal storm water permit.

3 In order to fully protect public health, no exceedances are permitted at any monitoring location during summer dry-weather (April 1 to October 31). In addition to being consistent with the two criteria, waste load allocations of zero (0) days of allowable exceedances are further supported by the fact that the California Department of Health Services has established minimum protective bacteriological standards – the same as the numeric targets in this TMDL – which, when exceeded during the period April 1 to October 31, result in posting a beach with a health hazard warning (California Code of Regulations, Title 17, Section 7958).

4 For purposes of this TMDL, a 'storm year' means November 1 to October 31. The 90th percentile storm year was 1993 with 75 wet days at the LAX meteorological station.

5 A wet day is defined as a day with rainfall of 0.1 inch or more plus the 3 days following the rain event.

Table 7-11.2 Los Angeles Harbor Bacteria TMDL: Final Allowable Exceedance Days by Sampling Location

Compliance Deadline		5 years after effective date		5years after effective date		5 years after effective date[2]	
		Summer Dry Weather ^		Winter Dry Weather ^*		Wet Weather ^*	
		April 1 - October 31		November 1 – March 31		November 1 - October 31	
Station ID	Location Name	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)
CB1; CB2	Inner Cabrillo Beach	0	0	3 (LA)	1 (LA)	17 (LA)	3 (LA)
HW07	Main Ship Channel	0	0	3 (WLA)	1 (WLA)	15** (WLA)	3** (WLA)

Notes: The number of allowable exceedances is based on the lesser of (1) the reference system or (2) existing levels of exceedance based on historical monitoring data.
The allowable number of exceedance days during winter dry-weather is calculated based on the 10th percentile storm year in terms of dry days at the LAX meteorological station
The allowable number of exceedance days during wet-weather is calculated based on the 90th percentile storm year in terms of wet days at the LAX meteorological station.
^ A dry day is defined as a non-wet day. A wet day is defined as a day with a 0.1-inch or more of rain and the three days following the rain event.
*A revision of the TMDL is scheduled for four years after the effective date of the Los Angeles Harbor TMDL in order to re-evaluate the allowable exceedance days during winter dry-weather and wet-weather based on additional monitoring data and the results of the study of relative loading from sources including but not limited to storm drains, boats, birds and other nonpoint sources.
**The Main Ship Channel (HW07) is already meeting the allowable exceedance days for wet weather and is subject to the antidegradation provision; there shall be no increase in exceedance days during the implementation period above that estimated for the monitoring location in the critical year (15 days/daily sampling, 3 days/weekly sampling).

Table 7-11.3 Los Angeles Harbor Bacteria TMDL (Inner Cabrillo Beach & Main Ship Channel): Significant Dates

Implementation Action	Responsible Party	Date
Implementation (ICB): Implement additional simple Best Management Practices at ICB including additional trash pickup and educational signage. (Tier 1)	• City of Los Angeles	Six months after Effective Date of TMDL.
Implementation (ICB): Submit Work Plan to Implement Best Management Practices and Source Control at ICB for Executive Officer Approval including, but not limited to storm drain repair and reroute; inspect and repair gravity sewer line; implement sand cleaning; repair bird exclusion structure; additional education and signage. (Tier 1)	• City of Los Angeles	Six months after Effective Date of TMDL
Special Studies (ICB): Submit work plan to assess water quality in the northern area of Inner Cabrillo Beach for Executive Officer approval including a plan to monitor northern ICB and assess the discharge from storm drains into the Saltwater Marsh (Tier 2).	• City of Los Angeles	Six months after Effective Date of TMDL.
Special Studies (MSC): Submit work plan to assess water quality in the Inner Harbor for Executive Officer approval including a plan to monitor in proximity to selected storm drains. (Tier 2).	• City of Los Angeles • County of Los Angeles	Six months after Effective Date of TMDL.
Implementation (ICB): Submit work plan for Tier 2 BMPs for Executive Officer approval, including but not limited to alteration of bird exclusion structure, control of sources from cat population, and sand management. (Tier 2)	• City of Los Angeles	Six months after Effective Date of TMDL
Implementation (ICB): Complete implementation of Source Control and BMPs at ICB as identified in work plan including, but not limited to storm drain repair and reroute; inspection and repair gravity sewer line; trash disposal, sand cleanup; and repair bird exclusion structure. (Tier 1)	• City of Los Angeles	Twelve months after Effective Date of TMDL
Compliance (ICB): After implementation of Tier 1 and 2 actions, submit results of monitoring to determine degree of compliance with allowable exceedance days. (Tier 3)	• City of Los Angeles	Two years after Effective Date of TMDL
Implementation (MSC): Based on the results of the MSC special studies and compliance evaluation, submit Work Plan for Executive Officer approval for source control or diversion of storm drains that are found to be sources of bacterial loading to the MSC.	• City of Los Angeles • County of Los Angeles	Two-1/2 years after Effective Date of TMDL
Implementation (ICB): If compliance is not achieved at the southern portion of Inner Cabrillo Beach, provide report to be approved by the Executive Officer of Tier III actions, to include but not be limited to, nearshore circulation or treatment of shallow water improvements, with a time schedule to attain water quality objectives. (Tier 3)	• City of Los Angeles	Three years after Effective Date of TMDL

Regional Board shall reconsider this TMDL to: a) refine allowable exceedance days based on additional data on bacterial indicator densities b) re-evaluate the reference system selected to set allowable exceedance levels, including a reconsideration of whether the allowable number of exceedance days should be adjusted annually dependant on the rainfall conditions and an evaluation of natural variability in the reference system(s), and if an appropriate reference system cannot be identified for this enclosed harbor, evaluate using the ‘natural sources exclusion approach subject to antidegradation policies’ rather than the ‘reference system/antidegradation’ approach, c) re-evaluate the reference year used in the calculation of allowable exceedance days, and d) Re-evaluate whether there is a need for further clarification or revision of the geometric mean implementation provision. e) Evaluate the feasibility of a natural sources exclusion for the non-swimming portion of ICB f) Re-evaluate the implementation schedule.	• Regional Board	Four years after Effective Date of TMDL, or at the time of reconsideration of the Santa Monica Beaches Bacteria
Final Compliance (MSC): Within five years of the effective date of the TMDL, there shall be no exceedances in excess of the numbers in Table 6-3 and 6-4 of the single sample limits at any location during summer dry-weather (April 1 to October 31) or winter dry-weather (November 1 to March 31) and the rolling 30-day geometric mean targets must be achieved.	• City of Los Angeles • County of Los Angeles	Five years after Effective Date of TMDL
Implementation (ICB): All tier 3 remedies to be completed within five years of the Effective Date of the TMDL. (Tier 3)	• City of Los Angeles	Five years after Effective Date of TMDL
Final Compliance (ICB): Within five years of the effective date of the TMDL, there shall be no allowable exceedances of the single sample limits at any location during any of the periods (Tables 6-3, 6-4 and 6-5) and the rolling 30-day geometric mean targets must be achieved.	• City of Los Angeles	Five years after the Effective Date of the TMDL

7-12 Ballona Creek Metals TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on July 7, 2005

This TMDL was approved by:
The State Water Resources Control Board on October 20, 2005.
The Office of Administrative Law on December 9, 2005.
The U.S. Environmental Protection Agency on December 22, 2005.

This TMDL was voided and set aside on: May 6, 2009.

This TMDL was re-adopted by:
The Regional Water Quality Control Board on September 6, 2007.

This amended TMDL was approved by:
The State Water Resources Control Board on June 17, 2008.
The Office of Administrative Law on October 6, 2008.
The U.S. Environmental Protection Agency on October 29, 2008.

The effective date of this TMDL is: October 29, 2008.

The following tables include the elements of this TMDL.

Table 7-12.1. Ballona Creek Metals TMDL: Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Ballona Creek is on Clean Water Act Section 303(d) list of impaired waterbodies for dissolved copper, dissolved lead, total selenium, and dissolved zinc and Sepulveda Canyon Channel is 303(d) listed for lead. The metals subject to this TMDL are toxic pollutants, and the existing water quality objectives for the metals reflect national policy that the discharge of toxic pollutants in toxic amounts be prohibited. When one of the metals subject to this TMDL is present at levels exceeding the existing numeric objectives, then the receiving water is toxic. The following designated beneficial uses are impaired by these metals: water contact recreation (REC1); non-contact water recreation (REC2); warm freshwater habitat (WARM); estuarine habitat (EST); marine habitat (MAR); wildlife habitat (WILD); rare and threatened or endangered species (RARE); migration of aquatic organisms (MIGR); reproduction and early development of fish (SPWN); commercial and sport fishing (COMM); and shellfish harvesting (SHELL). TMDLs are developed for reaches on the 303(d) list and metal allocations are developed for tributaries that drain to impaired reaches. This TMDL address dry- and wet-weather discharges of copper, lead, selenium and zinc in Ballona Creek and Sepulveda Canyon Channel.
Numeric Target (Interpretation of the narrative and numeric water quality objective, used to calculate the load allocations)	Numeric water quality targets are based on the numeric water quality standards established for metals by the California Toxics Rule (CTR). The targets are expressed in terms of total recoverable metals. There are separate numeric targets for dry and wet weather because hardness values and flow conditions in Ballona Creek and Sepulveda Canyon Channel vary between dry and wet weather. The dry-weather targets apply to days when the maximum daily flow in Ballona Creek is less than 40 cubic feet per second (cfs). The wet-weather targets apply to days when the maximum daily flow in Ballona Creek is equal to or greater than 40 cfs.

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Numeric Target (Interpretation of the narrative and numeric water quality objective, used to calculate the load allocations) (continued)</td><td>

Dry Weather

The dry-weather targets are based on the chronic CTR criteria. The copper, lead and zinc targets are dependent on hardness to adjust for site-specific conditions and require conversion factors to convert between dissolved and total recoverable metals. These targets are based on the 50th percentile hardness value of 300 mg/L and the CTR default conversion factors. The conversion factor for lead is hardness dependent, which is also based on a hardness of 300 mg/L. The dry-weather target for selenium is independent of hardness and expressed as total recoverable metals.

<table>
<tr><th colspan="4"><u>Dry-weather numeric targets (µg total recoverable metals/L)</u></th></tr>
<tr><th></th><th>Dissolved</th><th>Conversion Factor</th><th>Total Recoverable</th></tr>
<tr><td>Copper</td><td>23</td><td>0.96</td><td>24</td></tr>
<tr><td>Lead</td><td>8.1</td><td>0.631</td><td>13</td></tr>
<tr><td>Selenium</td><td></td><td></td><td>5</td></tr>
<tr><td>Zinc</td><td>300</td><td>0.986</td><td>304</td></tr>
</table>

Wet Weather

The wet-weather targets for copper, lead and zinc are based on the acute CTR criteria and the 50th percentile hardness value of 77 mg/L for storm water collected at Sawtelle Boulevard. Conversion factors for copper and zinc are based on a regression of dissolved metal values to total metal values collected at Sawtelle. The CTR default conversion factor based on a hardness value of 77 mg/L is used for lead. The wet-weather target for selenium is independent of hardness and expressed as total recoverable metals.

<table>
<tr><th colspan="4"><u>Wet-weather numeric targets (µg total recoverable metals/L)</u></th></tr>
<tr><th></th><th>Dissolved</th><th>Conversion Factor</th><th>Total Recoverable</th></tr>
<tr><td>Copper</td><td>11</td><td>0.62</td><td>18</td></tr>
<tr><td>Lead</td><td>49</td><td>0.829</td><td>59</td></tr>
<tr><td>Selenium</td><td></td><td></td><td>5</td></tr>
<tr><td>Zinc</td><td>94</td><td>0.79</td><td>119</td></tr>
</table>

</td></tr>
<tr><td>Source Analysis</td><td>There are significant difference in the sources of copper, lead, selenium and zinc loadings during dry weather and wet weather. During dry weather, most of the metals loadings are in the dissolved form. Storm drains convey a large percentage of the metals loadings during dry weather because although their flows are typically low, concentrations of metals in urban runoff may be quite high. During dry years, dry-weather loadings account for 25-35% of the annual metals loadings. Additional sources of dry weather flow and metals loading include groundwater discharge and flows from other permitted NPDES discharges within the watershed.</td></tr>
</table>

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Source Analysis (continued)</td><td>During wet weather, most of the metals loadings in Ballona Creek are in the particulate form and are associated with wet-weather storm water flows. On an annual basis, storm water contributes about 91% of the copper loading and 92% of the lead loading to Ballona Creek. Storm water flow is permitted through the municipal separate storm sewer system (MS4) permit issued to the County of Los Angeles, a separate Caltrans storm water permit, a general construction storm water permit, and a general industrial storm water permit.

Non-point sources are not considered to be a significant source in this TMDL. Direct atmospheric deposition of metals is insignificant relative to the annual dry-weather loading or the total annual loading. Indirect atmospheric deposition reflects the process by which metals deposited on the land surface may be washed off during storm events and delivered to Ballona Creek and its tributaries. The loading of metals associated with indirect atmospheric deposition are accounted for in the estimates of the storm water loading.</td></tr>
<tr><td>Loading Capacity</td><td>TMDLs are developed for copper, lead, selenium and zinc for Ballona Creek and Sepulveda Canyon Channel.

Dry Weather

Dry-weather loading capacities for Ballona Creek and Sepulveda Canyon Channel are equal to the dry-weather numeric targets multiplied by the critical dry-weather flow for each waterbody. Based on long-term flow records for Ballona Creek at Sawtelle the median dry-weather flow is 14 cfs. The median dry-weather flow for Sepulveda Canyon Channel, based on measurements conducted in 2003, is 6.3 cfs.

<u>Dry-weather loading capacity (grams total recoverable metals/day)</u>
<table>
<tr><th></th><th>Copper</th><th>Lead</th><th>Selenium</th><th>Zinc</th></tr>
<tr><td>Ballona Creek</td><td>821</td><td>440</td><td>171</td><td>10,423</td></tr>
<tr><td>Sepulveda Channel</td><td>371</td><td>199</td><td>77</td><td>4,712</td></tr>
</table>
Wet Weather

Wet-weather loading capacities are calculated by multiplying the daily storm volume by the wet-weather numeric target for each metal.

<u>Wet-weather loading capacity (total recoverable metals)</u>
<table>
<tr><th>Metal</th><th>Load Capacity</th></tr>
<tr><td>Copper</td><td>Daily storm volume x 18 µg/L</td></tr>
<tr><td>Lead</td><td>Daily storm volume x 59 µg/L</td></tr>
<tr><td>Selenium</td><td>Daily storm volume x 5 µg/L</td></tr>
<tr><td>Zinc</td><td>Daily storm volume x 119 µg/L</td></tr>
</table></td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Load Allocations (for nonpoint sources)	Load allocations (LA) are assigned to non-point sources for Ballona Creek and Sepulveda Canyon Channel. **Dry Weather** Dry-weather load allocations for copper, lead and zinc are developed for direct atmospheric deposition. The mass-based load allocations are equal to the ratio of the length of each segment over the total length multiplied by the estimates of direct atmospheric loading for Ballona Creek (3.5 g/day for copper, 2.3 g/day for lead, and 11.7 k/day for zinc). **Dry-weather direct air deposition LAs (total recoverable metals)** | | Copper (g/day) | Lead (g/day) | Zinc (g/day) | | Ballona Creek | 2.0 | 1.4 | 6.8 | | Sepulveda Channel | 0.3 | 0.2 | 0.9 | **Wet Weather** Wet-weather load allocations for copper, lead, selenium and zinc are developed for direct atmospheric deposition. The mass-based load allocations for direct atmospheric deposition are equal to the percent area of surface water (0.6%) multiplied by the total loading capacity. **Wet-weather direct air deposition LAs (total recoverable metals)** | | Load Allocation (grams/day) | | Copper | 1.05E-07 x Daily storm volume (L) | | Lead | 3.54E-07 x Daily storm volume (L) | | Selenium | 3.00E-08 x Daily storm volume (L) | | Zinc | 7.14E-07 x Daily storm volume (L) |
Waste Load Allocations (for point sources)	Waste load allocations (WLA) are assigned to point sources for Ballona Creek and Sepulveda Canyon Channel. A grouped mass-based waste load allocation is developed for the storm water permittees (Los Angeles County MS4, Caltrans, General Construction and General Industrial) by subtracting the load allocation from the total loading capacity. Concentration-based waste load allocations are developed for other point sources in the watershed. **Dry Weather** Dry-weather waste load allocation for storm water is equal to the dry-weather critical flow multiplied by the dry-weather numeric target minus the load allocation for direct atmospheric deposition. **Dry-weather Storm Water WLAs (grams total recoverable metals/day)** | | Copper | Lead | Selenium | Zinc | | Ballona Creek | 818.9 | 438.6 | 171 | 10,416.2 | | Sepulveda Channel | 370.7 | 198.8 | 77 | 4,711.1 |

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	A waste load allocation of zero is assigned to all general construction and industrial storm water permits during dry weather. Therefore, the storm water waste load allocations are apportioned between the MS4 permittees and Caltrans, based on an areal weighting approach. **Dry-weather Storm Water WLAs Apportioned between Storm Water Permits (grams total recoverable metals/day)** | | Copper | Lead | Selenium | Zinc | Ballona Creek MS4 permittees: 807.7 | 432.6 | 169 | 10,273.1 Caltrans: 11.2 | 6.0 | 2 | 143.1 Sepulveda Channel MS4 Permittees: 365.6 | 196.1 | 76 | 4646.4 Caltrans: 5.1 | 2.7 | 1 | 64.7 Concentration-based dry-weather waste load allocations are assigned to the minor NPDES permits and general non-storm water NPDES permits that discharge to Ballona Creek or its tributaries. Any future minor NPDES permits or enrollees under a general non-storm water NPDES permit will also be subject to the concentration-based waste load allocations. **Dry-weather WLAs for other permits (total recoverable metals)** Copper (µg/L): 24; Lead (µg/L): 13; Selenium (µg/L): 5; Zinc (µg/L): 304 **Wet Weather** Wet-weather waste load allocation for storm water is equal to the total loading capacity minus the load allocation for direct atmospheric deposition. Wet-weather waste load allocations for the grouped storm water permittees apply to all reaches and tributaries. **Wet-weather Storm Water WLAs (total recoverable metals)** Waste Load Allocation (grams/day) Copper: 1.79E-05 x Daily storm volume (L) Lead: 5.87E-05 x Daily storm volume (L) Selenium: 4.97E-06 x Daily storm volume (L) Zinc: 1.18E-04 x Daily storm volume (L) The storm water waste load allocations are apportioned between the MS4 permittees, Caltrans, the general construction and the general industrial storm water permits based on an areal weighting approach.

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	**Wet-weather Storm Water WLAs Apportioned Between Storm Water Permits (total recoverable metals)**

	Waste Load Allocation (grams/day)
Copper	
MS4 Permittees	1.70E-05 x Daily storm volume (L)
Caltrans	2.37E-07 x Daily storm volume (L)
General Construction	4.94E-07 x Daily storm volume (L)
General Industrial	1.24E-07 x Daily storm volume (L)
Lead	
MS4 Permittees	5.58E-05 x Daily storm volume (L)
Caltrans	7.78E-07 x Daily storm volume (L)
General Construction	1.62E-06 x Daily storm volume (L)
General Industrial	4.06E-07 x Daily storm volume (L)
Selenium	
MS4 Permittees	4.73E-06 x Daily storm volume (L)
Caltrans	6.59E-08 x Daily storm volume (L)
General Construction	1.37E-07 x Daily storm volume (L)
General Industrial	3.44E-08 x Daily storm volume (L)
Zinc	
MS4 Permittees	1.13E-04 x Daily storm volume (L)
Caltrans	1.57E-06 x Daily storm volume (L)
General Construction	3.27E-06 x Daily storm volume (L)
General Industrial	8.19E-07 x Daily storm volume (L)

Each storm water permittee enrolled under the general construction or industrial storm water permits will receive an individual waste load allocation on a per acre basis, based on the acreage of their facility.

Individual per Acre WLAs for General Construction or Industrial Storm Water Permittees (total recoverable metals)

	Waste Load Allocation (grams/day/acre)
Copper	2.20E-10 x Daily storm volume (L)
Lead	7.20E-10 x Daily storm volume (L)
Selenium	6.10E-11 x Daily storm volume (L)
Zinc	1.45E-09 x Daily storm volume (L)

Concentration-based wet-weather waste load allocations are assigned to the minor NPDES permits and general non-storm water NPDES permits that discharge to Ballona Creek or its tributaries. Any future minor NPDES permits or enrollees under a general non-storm water NPDES permit will also be subject to the concentration-based waste load allocations.

Wet-weather WLAs for other permits (total recoverable metals)

Copper (µg/L)	Lead (µg/L)	Selenium (µg/L)	Zinc (µg/L)
18	59	5	119

Element	Key Findings and Regulatory Provisions
Margin of Safety	There is an implicit margin of safety through the use of conservative values for the conversion from total recoverable metals to the dissolved fraction during dry and wet weather. In addition, the TMDL includes a margin of safety by evaluating dry-weather and wet-weather conditions separately and assigning allocations based on two disparate critical conditions.
Implementation	The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the State of California Department of Transportation (Caltrans) Storm Water Permit, minor NPDES permits, general NPDES permits, general industrial storm water NPDES permits, and general construction storm water NPDES permits. Nonpoint sources will be regulated through the authority contained in Sections 13263 and 13269 of the Water Code, in conformance with the State Water Resources Control Board's Nonpoint Source Implementation and Enforcement Policy (May 2004). Each NPDES permit assigned a WLA shall be reopened or amended at re-issuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. The Regional Board shall reconsider this TMDL by January 11, 2011 based on additional data obtained from special studies. Table 7-12.2 presents the implementation schedule for the responsible permittees. **Minor NPDES Permits and General Non-Storm Water NPDES Permits:** Permit writers may translate applicable waste load allocations into effluent limits for the minor and general NPDES permits by applying the effluent limitation procedures in Section 1.4 of the State Water Resources Control Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (2000) or other applicable engineering practices authorized under federal regulations. Compliance schedules may be established in individual NPDES permits, allowing up to 5 years within a permit cycle to achieve compliance. Compliance schedules may not be established in general NPDES permits. A discharger that can not comply immediately with effluent limitations specified to meet waste load allocations will be required to apply for an individual permit, in order to, demonstrate the need for a compliance schedule. Permittees that hold individual NPDES permits and solely discharge storm water may be allowed (at Regional Board discretion) compliance schedules up to January 11, 2016 to achieve compliance with final WLAs. **General Industrial Storm Water Permits:** The Regional Board will develop a watershed specific general industrial storm water permit to incorporate waste load allocations.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	<u>Dry-weather Implementation</u> Non-storm water flows authorized by Order No. 97-03 DWQ, or any successor order, are exempt from the dry-weather waste load allocation equal to zero. Instead, these authorized non-storm water flows shall meet the concentration-based waste load allocations assigned to the other NPDES Permits. The dry-weather waste load allocation equal to zero applies to unauthorized non-storm water flows, which are prohibited by Order No. 97-03 DWQ. It is anticipated that the dry-weather waste load allocations will be implemented by requiring improved best management practices (BMPs) to eliminate the discharge of non-storm water flows. However, the permit writers must provide adequate justification and documentation to demonstrate that specified BMPs are expected to result in attainment of the numeric waste load allocations. <u>Wet-weather Implementation</u> The general industrial storm water permittees are allowed interim wet-weather concentration-based waste load allocations based on benchmarks contained in EPA's Storm Water Multi-sector General Permit for Industrial Activities. The interim waste load allocations apply to all industry sectors until no later than January 11, 2016. **Interim Wet-Weather WLAs for General Industrial Storm Water Permittees (total recoverable metals)** Copper (µg/L): 63.6 — Lead (µg/L): 81.6 — Selenium (µg/L): 238.5 — Zinc (µg/L): 117 Until January 11, 2011, interim waste load allocations will not be interpreted as enforceable permit conditions. If monitoring demonstrates that interim waste load allocations are being exceeded, the permittee shall evaluate existing and potential BMPs, including structural BMPs, and implement any necessary BMP improvements. It is anticipated that monitoring results and any necessary BMP improvements would occur as part of an annual reporting process. After January 11, 2011, interim waste load allocations shall be translated into enforceable permit conditions. Compliance with permit conditions may be demonstrated through the installation, maintenance, and monitoring of Regional Board-approved BMPs. If this method of compliance is chosen, permit writers must provide adequate justification and documentation to demonstrate that BMPs are expected to result in attainment of interim waste load allocations.

Interim Wet-Weather WLAs for General Industrial Storm Water Permittees (total recoverable metals)

Copper (µg/L)	Lead (µg/L)	Selenium (µg/L)	Zinc (µg/L)
63.6	81.6	238.5	117

Element	Key Findings and Regulatory Provisions
Implementation (continued)	The general industrial storm water permits shall achieve final wet-weather waste load allocations no later than January 11, 2016, which shall be expressed as NPDES water quality-based effluent limitations. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs if adequate justification and documentation demonstrate that BMPs are expected to result in attainment of waste load allocations. **General Construction Storm Water Permits:** Waste load allocations will be incorporated into the State Board general permit upon renewal or into a watershed-specific general permit developed by the Regional Board. Dry-weather Implementation Non-storm water flows authorized by the General Permit for Storm Water Discharges Associated with Construction Activity (Water Quality Order No. 99-08 DWQ), or any successor order, are exempt from the dry-weather waste load allocation equal to zero as long as they comply with the provisions of sections C.3 and A.9 of the Order No. 99-08 DWQ, which state that these authorized non-storm discharges shall be (1) infeasible to eliminate (2) comply with BMPs as described in the Storm Water Pollution Prevention Plan prepared by the permittee, and (3) not cause or contribute to a violation of water quality standards, or comparable provisions in any successor order. Unauthorized non-storm water flows are already prohibited by Order No. 99-08 DWQ. Wet-weather Implementation By January 11, 2013, the construction industry will submit the results of BMP effectiveness studies to determine BMPs that will achieve compliance with the final waste load allocations assigned to construction storm water permittees. Regional Board staff will bring the recommended BMPs before the Regional Board for consideration by January 11, 2014. General construction storm water permittees will be considered in compliance with final waste load allocations if they implement these Regional Board approved BMPs. All permittees must implement the approved BMPs by January 11, 2015. If no effectiveness studies are conducted and no BMPs are approved by the Regional Board by January 11, 2014, each general construction storm water permit holder will be subject to site-specific BMPs and monitoring requirements to demonstrate compliance with final waste load allocations.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	**MS4 and Caltrans Storm Water Permits:** The County of Los Angeles, City of Los Angeles, Beverly Hills, Culver City, Inglewood, Santa Monica, and West Hollywood are jointly responsible for meeting the mass-based waste load allocations for the MS4 permittees. Caltrans is responsible for meeting their mass-based waste load allocations, however, they may choose to work with the MS4 permittees. The primary jurisdiction for the Ballona Creek watershed is the City of Los Angeles. Applicable CTR limits are being met most of the time during dry weather, with episodic exceedances. Due to the expense of obtaining accurate flow measurements required for calculating loads, concentration-based permit limits may apply during dry weather. These concentration-based limits would be equal to the dry-weather concentration-based waste load allocations assigned to the other NPDES permits. Each municipality and permittee will be required to meet the storm water waste load allocation at the designated TMDL effectiveness monitoring points. A phased implementation approach, using a combination of non-structural and structural BMPs may be used to achieve compliance with the stormwater waste load allocations. The administrative record and the fact sheets for the MS4 and Caltrans storm water permits must provide reasonable assurance that the BMPs selected will be sufficient to implement the waste load allocations. The implementation schedule for the MS4 and Caltrans permittees consists of a phased approach, with compliance to be achieved in prescribed percentages of the watershed, with total compliance to be achieved within 15 years.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for dry weather and wet weather. Based on long-term flow records, dry-weather flows in Ballona Creek are estimated to be 14 cubic feet per second (cfs). Since, this flow has been very consistent, 14 cfs is used to define the critical dry-weather flow for Ballona Creek at Sawtelle Boulevard (upstream of Sepulveda Canyon Channel). There are no historic flow records to determine the average long-term flows for Sepulveda Canyon Channel. Therefore, in the absence of historical records the 2003 dry-weather characterization study measurements are assumed reasonable estimates of flow for this channel. The critical dry-weather flow for Sepulveda Canyon Channel is defined as the average flow of 6.3 cfs. Wet-weather allocations are developed using the load-duration curve concept. The total wet-weather waste load allocation varies by storm, therefore, given this variability in storm water flows, no justification was found for selecting a particular sized storm as the critical condition.

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Monitoring</td><td>
Effective monitoring will be required to assess the condition of the Ballona Creek and to assess the on-going effectiveness of efforts by dischargers to reduce metals loading to Ballona Creek. Special studies may also be appropriate to provide further information about new data, new or alternative sources, and revised scientific assumptions. Below the Regional Board identifies the various goals of monitoring efforts and studies. The programs, reports, and studies will be developed in response to subsequent orders issued by the Executive Officer.
Ambient monitoring
An ambient monitoring program is necessary to assess water quality throughout Ballona Creek and its tributaries and the progress being made to remove the metals impairments. The MS4 and Caltrans storm water NPDES permittees are jointly responsible for implementing the ambient monitoring program. The responsible agencies shall analyze samples for total recoverable metals and dissolved metals, including cadmium and silver, and hardness once a month at each monitoring location. The reported detection limits shall be lower than the hardness adjusted CTR criteria to determine if water quality objectives are being met. There are three ambient monitoring locations.
Ambient Monitoring Locations
<table>
<tr><th>Waterbody</th><th>Location</th></tr>
<tr><td>Ballona Creek</td><td>At Sawtelle Boulevard</td></tr>
<tr><td>Sepulveda Channel</td><td>Just Above the Confluence with Ballona Creek</td></tr>
<tr><td>Ballona Creek</td><td>At Inglewood Boulevard</td></tr>
</table>
TMDL Effectiveness Monitoring
The MS4 and Caltrans storm water NPDES permittees are jointly responsible for assessing the progress in reducing pollutant loads to achieve the TMDL. The MS4 and Caltrans storm water NPDES permittees are required to submit for approval of the Executive Officer a coordinated monitoring plan that will demonstrate the effectiveness of the phased implementation schedule for this TMDL, which requires attainment of the applicable waste load allocations in prescribed percentages of the watershed over a 15-year period. The monitoring locations specified for the ambient monitoring program may be used as the effectiveness monitoring locations.
</td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Monitoring	The MS4 and Caltrans storm water NPDES permittees will be found to be effectively meeting the dry-weather waste load allocations if the in-stream pollutant concentrations or load at the first downstream monitoring location is equal to or less than the corresponding concentration- or load-based waste load allocation. Alternatively, effectiveness of the TMDL may be assessed at the storm drain outlet based on the concentration-based waste load allocation for the receiving water. For storm drains that discharge to other storm drains, the waste load allocation will be based on the waste load allocation for the ultimate receiving water for that storm drain system. The MS4 and Caltrans storm water NPDES permittees will be found to be effectively meeting the wet-weather waste load allocations if the loading at the most downstream monitoring location is equal to or less then the wet-weather waste load allocation. Compliance with individual general construction and industrial storm water permittees will be based on monitoring of discharges at the property boundary. Compliance may be assessed based on concentration and/or load allocations. The general storm water permits shall contain a model monitoring and reporting program to evaluate BMP effectiveness. A permittee enrolled under the general permits shall have the choice of conducting individual monitoring based on the model program or participating in a group monitoring effort. MS4 permittees are encouraged to take the lead in group monitoring efforts for industrial facilities under their jurisdiction because compliance with waste load allocations by these facilities will in many cases translate to reductions in metals loads to the MS4 system. **Special studies** The implementation schedule, Table 7-12.2, allows time for special studies that may serve to refine the estimate of loading capacity, waste load and/or load allocations, and other studies that may serve to optimize implementation efforts. The Regional Board will re-consider the TMDL by January 11, 2011 in light of the findings of these studies. Studies may include: • Refinement of hydrologic and water quality model • Additional source assessment • Refinement of potency factors correlation between total suspended solids and metals loadings during dry and wet weather • Correlation between short-term rainfall intensity and metals loadings for use in sizing in-line structural BMPs • Correlation between storm volume and total recoverable metals loading for use in sizing storm water retention facilities • Refined estimates of metals partitioning coefficients, conversion factors, and site-specific toxicity. • Evaluation of potential contribution of aerial deposition and sources of aerial deposition.

Table 7-12.2. Ballona Creek Metals TMDL: Implementation Schedule

Date	Action
January 11, 2006	Regional Board permit writers shall incorporate the waste load allocations into the NPDES permits. Waste load allocations will be implemented through NPDES permit limits in accordance with the implementation schedule contained herein, at the time of permit issuance or re-issuance.
January 11, 2010	Responsible jurisdictions and agencies shall provide to the Regional Board results of the special studies.
January 11, 2011	The Regional Board shall reconsider this TMDL to re-evaluate the waste load allocations and the implementation schedule.
MINOR NPDES PERMITS AND GENERAL NON-STORM WATER NPDES PERMITS	
Upon permit issuance or renewal	The non-storm water NPDES permittees shall achieve the waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Compliance schedules may allow up to five years in individual NPDES permits to meet permit requirements. Compliance schedules may not be established in general NPDES permits. Permittees that hold individual NPDES permits and solely discharge storm water may be allowed (at Regional Board discretion) compliance schedules up to January 11, 2016 to achieve compliance with final WLAs.
GENERAL INDUSTRIAL STORM WATER PERMITS	
Upon permit issuance or renewal	The general industrial storm water NPDES permittees shall achieve dry-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs. Permittees shall begin to install and test BMPs to meet the interim wet-weather WLAs. BMP effectiveness monitoring will be implemented to determine progress in achieving interim wet-weather waste load allocations.
January 11, 2011	The general industrial storm water NPDES permittees shall achieve the interim wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs. Permittees shall begin an iterative BMP process including BMP effectiveness monitoring to achieve compliance with final wet-weather WLAs.

Date	Action
January 11, 2016	The general industrial storm water NPDES permittees shall achieve the final wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
GENERAL CONSTRUCTION STORM WATER PERMITS	
Upon permit issuance, renewal, or re-opener	Non-storm water flows not authorized by Order No. 99-08 DWQ, or any successor order, shall achieve dry-weather waste load allocations of zero. Waste load allocations shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
January 11, 2013	The construction industry will submit the results of wet-weather BMP effectiveness studies to the Regional Board for consideration. In the event that no effectiveness studies are conducted and no BMPs are approved, permittees shall be subject to site-specific BMPs and monitoring to demonstrate BMP effectiveness.
January 11, 2014	The Regional Board will consider results of the wet-weather BMP effectiveness studies and consider approval of BMPs.
January 11, 2015	All general construction storm water permittees shall implement Regional Board-approved BMPs.
MS4 AND CALTRANS STORM WATER PERMITS	
January 11, 2007	In response to an order issued by the Executive Officer, the MS4 and Caltrans storm water NPDES permittees must submit a coordinated monitoring plan, to be approved by the Executive Officer, which includes both ambient monitoring and TMDL effectiveness monitoring. Once the coordinated monitoring plan is approved by the Executive Officer ambient monitoring shall commence within 6 months.
January 11, 2010 (Draft Report) July 11, 2010 (Final Report)	MS4 and Caltrans storm water NPDES permittees shall provide a written report to the Regional Board outlining the drainage areas to be address and how these areas will achieve compliance with the waste load allocations. The report shall include implementation methods, an implementation schedule, proposed milestones, and any applicable revisions to the TMDL effectiveness monitoring plan.
January 11, 2012	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 50% of the total drainage area served by the MS4 system is effectively meeting the dry-weather waste load allocations and 25% of the total drainage area served by the MS4 system is effectively meeting the wet-weather waste load allocations.

Date	Action
January 11, 2014	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 75% of the total drainage area served by the MS4 system is effectively meeting the dry-weather waste load allocations.
January 11, 2016	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 100% of the total drainage area served by the MS4 system is effectively meeting the dry-weather waste load allocations and 50% of the total drainage area served by the MS4 system is effectively meeting the wet-weather waste load allocations.
January 11, 2021	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 100% of the total drainage area served by the MS4 system is effectively meeting both the dry-weather and wet-weather waste load allocations.

7-13 Los Angeles River and Tributaries Metals TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on June 2, 2005.

This TMDL was approved by:
The State Water Resources Control Board on October 20, 2005.
Office of Administrative Law on December 9, 2005.
The U.S. Environmental Protection Agency on December 22, 2005.

This TMDL was voided and set aside on: May 6, 2009.

This TMDL was re-adopted by
The Regional Water Quality Control Board on September 6, 2007.

This TMDL was approved by:
The State Water Resources Control Board on June 17, 2008.
The Office of Administrative Law on October 14, 2008.
The U.S. Environmental Protection Agency on October 29, 2008.

This TMDL was revised and adopted by
The Regional Water Quality Control Board on May 6, 2010.

This TMDL revision was approved by:
The State Water Resources Control Board on April 19, 2011.
The Office of Administrative Law on July 27, 2011.
The U.S. Environmental Protection Agency on TBD.

The effective date of this TMDL is: October 29, 2008.

The following table includes the elements of this TMDL.

Table 7-13.1 Los Angeles River and Tributaries Metals TMDL: Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Segments of the Los Angeles River and its tributaries are on the Clean Water Act section 303(d) list of impaired waterbodies for copper, cadmium, lead, zinc, aluminum and selenium. The metals subject to this TMDL are toxic pollutants, and the existing water quality objectives for the metals reflect national policy that the discharge of toxic pollutants in toxic amounts be prohibited. When one of the metals subject to this TMDL is present at levels exceeding the existing numeric objectives, then the receiving water is toxic. The beneficial uses impaired by metals in the Los Angeles River and its tributaries are those associated with aquatic life and water supply, including wildlife habitat, rare, threatened or endangered species, warm freshwater habitat, wetlands, and groundwater recharge. TMDLs are developed for reaches on the 303(d) list and for reaches where recent data indicate additional impairments. Addressing the impairing metals throughout the Los Angeles River watershed will ensure that the metals do not contribute to an impairment elsewhere in the watershed. Metals allocations are therefore developed for upstream reaches and tributaries that drain to impaired reaches. These TMDLs address wet- and dry-weather discharges of copper, lead, zinc and selenium and wet-weather discharges of cadmium. Impairments related to cadmium only occur during wet weather. Impairments related to selenium are confined to Reach 6 and its tributaries. Dry-weather impairments related to zinc only occur in Rio Hondo Reach 1. The aluminum listing was based on water quality objectives set to support the municipal water supply beneficial use (MUN). MUN is a conditional use in the Los Angeles River watershed. The United States Environmental Protection Agency (USEPA) has determined that TMDLs are not required for impairments of conditional uses.

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)</td><td>
Numeric water quality targets are based on the numeric water quality criteria established by the California Toxics Rule (CTR). The targets are expressed in terms of total recoverable metals. There are separate targets for dry and wet weather because hardness values and flow conditions in the Los Angeles River and tributaries vary between dry and wet weather. The dry-weather targets apply to days when the maximum daily flow in the River is less than 500 cfs. The wet-weather targets apply to days when the maximum daily flow in the River is equal to or greater than 500 cfs.

The dry-weather targets for copper and lead are based on chronic CTR criteria. The dry-weather targets for zinc are based on acute CTR criteria. Copper, lead and zinc targets are dependent on hardness and a water effects ratio (WER), which are both factors built into the CTR criteria to adjust for site specific conditions, and conversion factors to convert between dissolved and total recoverable metals. Copper and lead targets are based on 50th percentile hardness values. Zinc targets are based on 10th percentile hardness values. Site-specific copper conversion factors are applied immediately downstream of the Tillman and LA-Glendale water reclamation plants (WRP). CTR default conversion factors are used for copper, lead, and zinc in all other cases. The dry-weather target for selenium is independent of hardness or conversion factors.
<table>
<tr><th colspan="4">Dry-weather conversion factors:</th></tr>
<tr><th></th><th>Default</th><th>Below Tillman WRP</th><th>Below LA-Glendale WRP</th></tr>
<tr><td>Copper</td><td>0.96</td><td>0.74</td><td>0.80</td></tr>
<tr><td>Lead</td><td>0.79</td><td></td><td></td></tr>
<tr><td>Zinc</td><td>0.61</td><td></td><td></td></tr>
</table>
<table>
<tr><th colspan="5">Dry-weather numeric targets (µg total recoverable metals/L)</th></tr>
<tr><th></th><th>Cu</th><th>Pb</th><th>Zn</th><th>Se</th></tr>
<tr><td>Reach 5, 6 and Bell Creek</td><td>WER[1] x 30</td><td>WER[1] x 19</td><td></td><td>5</td></tr>
<tr><td>Reach 4</td><td>WER[2] x 26</td><td>WER[1] x 10</td><td></td><td></td></tr>
<tr><td>Reach 3 above LA-Glendale WRP and Verdugo</td><td>WER[2] x 23</td><td>WER[1] x 12</td><td></td><td></td></tr>
<tr><td>Reach 3 below LA-Glendale WRP</td><td>WER[2] x 26</td><td>WER[1] x 12</td><td></td><td></td></tr>
<tr><td>Burbank Western Channel (above WRP)</td><td>WER[2] x 26</td><td>WER[1] x 14</td><td></td><td></td></tr>
<tr><td>Burbank Western Channel (below WRP)</td><td>WER[2] x 19</td><td>WER[1] x 9.1</td><td></td><td></td></tr>
<tr><td>Reach 2 and Arroyo Seco</td><td>WER[2] x 22</td><td>WER[1] x 11</td><td></td><td></td></tr>
<tr><td>Reach 1</td><td>WER[2] x 23</td><td>WER[1] x 12</td><td></td><td></td></tr>
<tr><td>Compton Creek</td><td>WER[1] x 19</td><td>WER[1] x 8.9</td><td></td><td></td></tr>
<tr><td>Rio Hondo Reach 1</td><td>WER[1] x 13</td><td>WER[1] x 5.0</td><td>WER[1] x 131</td><td></td></tr>
<tr><td>Monrovia Canyon</td><td></td><td>WER[1] x 8.2</td><td></td><td></td></tr>
</table>
[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent in this reach is 3.96.
</td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Numeric Target (continued) (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	The wet-weather targets for cadmium, copper, lead and zinc are based on acute CTR criteria and the 50th percentile hardness values for storm water collected at the Wardlow gage station, multiplied by a WER. Conversion factors for copper, lead and zinc are based on a regression of dissolved metals values to total recoverable metals values collected at Wardlow. The CTR default conversion factor is applied to cadmium. The wet-weather target for selenium is independent of hardness or conversion factors. **Wet-weather conversion factors:** Cadmium 0.94 Copper 0.65 Lead 0.82 Zinc 0.61 **<u>Wet-weather numeric targets (μg total recoverable metals/L)</u>** Cd: WER[1] x 3.1 Cu: WER[2] x 17 Pb: WER[1] x 62 Zn: WER[1] x 159 Se: 5 [1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved. [2] The WER for this constituent is 3.96.
Source Analysis	There are significant differences in the sources of metals loadings during dry weather and wet weather. During dry weather, most of the metals loadings are in the dissolved form. The three major publicly owned treatment works (POTWs) that discharge to the river (Tillman WRP, LA-Glendale WRP, and Burbank WRP) constitute the majority of the flow and metals loadings during dry weather. The storm drains also contribute a large percentage of the loadings during dry weather because although their flows are typically low, concentrations of metals in urban runoff may be quite high. The remaining portion of the dry weather flow and metals loadings represents a combination of tributary flows, groundwater discharge, and flows from other permitted NPDES discharges within the watershed. During wet weather, most of the metals loadings are in the particulate form and are associated with wet-weather storm water flow. On an annual basis, storm water contributes about 40% of the cadmium loading, 80% of the copper loading, 95% of the lead loading and 90% of the zinc loading. This storm water flow is permitted through two municipal separate storm sewer system (MS4) permits, a separate Caltrans MS4 permit, a general construction storm water permit and a general industrial storm water permit. Nonpoint sources of metals may include tributaries that drain the open space areas of the watershed. Direct atmospheric deposition of metals on the river is also a small source. Indirect atmospheric deposition on the land surface that is washed off during storms is a larger source, which is accounted for in the estimates of storm water loadings. The sources of selenium appear to be related to natural levels of selenium in soils in the upper watershed. Separate studies are underway to evaluate whether selenium levels represent a “natural condition” for this watershed.

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Loading Capacity</td><td>
Dry Weather

Dry-weather TMDLs are developed for the following pollutant waterbody combinations (allocations are developed for upstream reaches and tributaries to meet TMDLs in downstream reaches):

• Copper for the Los Angeles River Reaches 1, 2, 3, 4, and 5, Burbank Channel, Compton Creek, Tujunga Wash, Rio Hondo Reach 1.
• Lead for the Los Angeles River Reaches 1, 2, 3, 4, and 5, Burbank Channel, Rio Hondo Reach 1, Compton Creek, Monrovia Canyon Creek.
• Zinc for Rio Hondo Reach 1.
• Selenium for Reach 6, Aliso Creek, Dry Canyon Creek, McCoy Canyon Creek.

For dry weather, loading capacities are equal to reach-specific numeric targets multiplied by reach-specific critical dry-weather flows. Summing the critical flows for each reach and tributary, the critical flow for the entire river is 203 cfs, which is equal to the combined design flow of the three POTWs (169 cfs) plus the median flow from the storm drains and tributaries (34 cfs). The median storm drain and tributary flow is equal to the median flow at Wardlow (145 cfs) minus the existing median POTW flow (111 cfs). The dry-weather loading capacities for each impaired reach include the critical flows for upstream reaches. The dry-weather loading capacity for Reach 5 includes flows from Reach 6 and Bell Creek, the dry-weather loading capacity for Reach 3 includes flows from Verdugo Wash, and the dry-weather loading capacity for Reach 2 includes flows from Arroyo Seco.

Dry-weather loading capacity (total recoverable metals)
<table>
<tr><th></th><th>Critical Flow (cfs)</th><th>Cu (kg/day)</th><th>Pb (kg/day)</th><th>Zn (kg/day)</th></tr>
<tr><td>LA River Reach 5</td><td>8.74</td><td>WER[1] x 0.65</td><td>WER[1] x 0.39</td><td></td></tr>
<tr><td>LA River Reach 4</td><td>129.13</td><td>WER[2] x 8.1</td><td>WER[1] x 3.2</td><td></td></tr>
<tr><td>LA River Reach 3</td><td>39.14</td><td>WER[2] x 2.3</td><td>WER[1] x 1.01</td><td></td></tr>
<tr><td>LA River Reach 2</td><td>4.44</td><td>WER[2] x 0.16</td><td>WER[1] x 0.084</td><td></td></tr>
<tr><td>LA River Reach 1</td><td>2.58</td><td>WER[2] x 0.14</td><td>WER[1] x 0.075</td><td></td></tr>
<tr><td>Tujunga Wash</td><td>0.15</td><td>WER[1] x 0.007</td><td>WER[1] x 0.0035</td><td></td></tr>
<tr><td>Burbank Channel</td><td>17.3</td><td>WER[2] x 0.80</td><td>WER[1] x 0.39</td><td></td></tr>
<tr><td>Rio Hondo Reach 1</td><td>0.50</td><td>WER[1]x 0.015</td><td>WER[1]x0.0061</td><td>WER[1]x0.16</td></tr>
<tr><td>Compton Creek</td><td>0.90</td><td>WER[1] x 0.041</td><td>WER[1] x 0.020</td><td></td></tr>
</table>
[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent in this reach is 3.96.

No dry-weather loading capacities are calculated for lead in Monrovia Canyon Creek or selenium in Reach 6 or its tributaries. Concentration-based allocations are assigned for these metals in these reaches.
</td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Loading Capacity (continued)	**Wet Weather** Wet-weather TMDLs are calculated for cadmium, copper, lead, and zinc in Reach 1. Allocations are developed for all upstream reaches and tributaries to meet these TMDLs. Wet-weather loading capacities are calculated by multiplying daily storm volumes by the wet-weather numeric target for each metal. The resulting curves identify the load allowance for a given flow. **Wet-weather loading capacity (total recoverable metals)** **Metal** — **Load Duration Curve (kg/day)** Cadmium — Daily storm volume x WER[1] x 3.1 µg/L Copper — Daily storm volume x WER[2] x 17 µg/L Lead — Daily storm volume x WER[1] x 62 µg/L Zinc — Daily storm volume x WER[1] x 159 µg/L [1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved. [2] The WER for this constituent is 3.96.
Load Allocations (for nonpoint sources)	**Dry Weather** Dry-weather nonpoint source load allocations (LAs) for copper and lead apply to open space and direct atmospheric deposition to the river. Dry-weather open space load allocations are equal to the critical flow for the upper portion of tributaries that drain open space, multiplied by the numeric targets for these tributaries. **Open space dry-weather LAs (total recoverable metals)** — **Critical Flow** — **Cu (kg/day)** — **Pb (kg/day)** Tujunga Wash — 0.12 — WER[1] x 0.0056 — WER[1] x 0.0028 Arroyo Seco — 0.33 — WER[1] x 0.018 — WER[1] x 0.009 [1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved. Load allocations for direct atmospheric deposition to the entire river are obtained from previous studies (3 kg/year for copper, 2 kg/year for lead and 10 kg/year for zinc.) Loads are allocated to each reach and tributary based on their length. The ratio of the length of each river segment to the total length of the river is multiplied by the estimates of direct atmospheric loading to the entire river.

Element	Key Findings and Regulatory Provisions
Load Allocations (continued) (for nonpoint sources)	**Direct air deposition dry-weather LAs (total recoverable metals)**

	Cu (kg/day)	Pb (kg/day)	Zn(kg/day)
LA River Reach 6	WER[1] x 3.3x10^{-4}	WER[1] x 2.2x10^{-4}	
LA River Reach 5	WER[1] x 3.6x10^{-4}	WER[1] x 2.4x10^{-4}	
LA River Reach 4	WER[1] x 8.1x10^{-4}	WER[1] x 5.4x10^{-4}	
LA River Reach 3	WER[1] x 6.04x10^{-4}	WER[1] x 4.03x10^{-4}	
LA River Reach 2	WER[1] x 1.4 x10^{-3}	WER[1] x 9.5x10^{-4}	
LA River Reach 1	WER[1] x 4.4x10^{-4}	WER[1] x 2.96x10^{-4}	
Bell Creek	WER[1] x 2.98x10^{-4}	WER[1] x 1.99x10^{-4}	
Tujunga Wash	WER[1] x 7.4x10^{-4}	WER[1] x 4.9x10^{-4}	
Verdugo Wash	WER[1] x 4.7x10^{-4}	WER[1] x 3.2x10^{-4}	
Burbank Channel	WER[1] x 7.1x10^{-4}	WER[1] x 4.7x10^{-4}	
Arroyo Seco	WER[1] x 7.3x10^{-4}	WER[1] x 4.9x10^{-4}	
Rio Hondo Reach 1	WER[1] x 6.4x10^{-4}	WER[1] x 4.2x10^{-4}	WER[1]x 2.1x10^{-3}
Compton Creek	WER[1] x 6.5x10^{-4}	WER[1] x 4.3x10^{-4}	

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

A dry-weather concentration-based load allocation for lead equal to the dry-weather numeric target (WER[1] x 8.2 µg/L) applies to Monrovia Canyon Creek. The load allocation is not assigned to a particular nonpoint source or group of nonpoint sources.

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

A dry-weather concentration-based load allocation for selenium equal to the dry-weather numeric target (5 µg/L) is assigned to Reach 6 and its tributaries. The load allocation is not assigned to a particular nonpoint source or group of nonpoint sources.

Wet Weather

Wet-weather load allocations for open space are equal to the percent metals loading from open space (predicted by the wet-weather model) multiplied by the total loading capacity, then by the ratio of open space located outside the storm drain system to the total open space area. There is no load allocation for cadmium because open space is not believed to be a source of the wet-weather cadmium impairment in Reach 1.

Wet-weather open space LAs (total recoverable metals)

Metal	Load Allocation (kg/day)
Copper	WER[1] x 2.6x10^{-10} µg /L/day x daily storm volume(L)
Lead	WER[1] x 2.4x10^{-10} µg /L/day x daily storm volume(L)
Zinc	WER[1] x 1.4x10^{-9} µg /L/day x daily storm volume(L)

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

Element	Key Findings and Regulatory Provisions
Load Allocations (continued) (for nonpoint sources)	Wet-weather load allocations for direct atmospheric deposition are equal to the percent area of the watershed comprised by surface water (0.2%) multiplied by the total loading capacity. **Wet-weather direct air deposition LAs (total recoverable metals)** **Metal — Load Allocation (kg/day)** Cadmium — WER[1] x 6.2×10^{-10} µg /L/day x daily storm volume(L) Copper — WER[1] x 3.4×10^{-10} µg /L/day x daily storm volume(L) Lead — WER[1] x 1.2×10^{-10} µg /L/day x daily storm volume(L) Zinc — WER[1] x 3.2×10^{-9} µg /L/day x daily storm volume(L) [1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved. A wet-weather concentration-based load allocation for selenium equal to the dry-weather numeric target (5 µg/L) is assigned to Reach 6 and its tributaries. The load allocation is not assigned to a particular nonpoint source or group of nonpoint sources.
Waste Load Allocations (for point sources)	**Dry Weather** Dry-weather point source waste load allocations (WLAs) apply to the three POTWs (Tillman, Glendale, and Burbank). A grouped waste load allocation applies to the storm water permitees (Los Angeles County MS4, Long Beach MS4, Caltrans, General Industrial and General Construction), which is calculated by subtracting load allocations (and waste load allocations for reaches with POTWs) from the total loading capacity. Concentration-based waste load allocations are developed for other point sources in the watershed. Mass- and concentration-based waste load allocations for Tillman, Los Angeles-Glendale and Burbank WRPs are developed to meet the dry-weather targets for copper and lead in Reach 4, Reach 3 and the Burbank Western Channel, respectively. **POTW dry-weather WLAs (total recoverable metals):** — **Cu** / **Pb** **Tillman** Concentration-based (µg/L) — WER[2] x 26 / WER[1] x 10 Mass-based (kg/day) — WER[2] x 7.8 / WER[1] x 3.03 **Glendale** Concentration-based (µg/L) — WER[2] x 26 / WER[1] x 12 Mass-based (kg/day) — WER[2] x 2.0 / WER[1] x 0.88 **Burbank** Concentration-based (µg/L) — WER[2] x 19 / WER[1] x 9.1 Mass-based (kg/day) — WER[2] x 0.64 / WER[1] x 0.31 [1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved. [2] The WER for this constituent is 3.96. Regardless of the WER, effluent limitations shall ensure that effluent concentrations and mass discharges do not exceed the levels of water quality that can be attained by performance of this facility's treatment technologies existing at the time of permit issuance, reissuance, or modification.

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (continued) (for point sources)	Dry-weather waste load allocations for storm water are equal to storm drain flows (critical flows minus median POTW flows minus median open space flows) multiplied by reach-specific numeric targets, minus the contribution from direct air deposition.

Storm water dry-weather WLAs (total recoverable metals)

	Critical Flow (cfs)	Cu (kg/day)	Pb (kg/day)	Zn (kg/day)
LA River Reach 6	7.20	WER[1] x 0.53	WER[1] x 0.33	
LA River Reach 5	0.75	WER[1] x 0.05	WER[1] x 0.03	
LA River Reach 4	5.13	WER[1] x 0.32	WER[1] x 0.12	
LA River Reach 3	4.84	WER[1] x 0.06	WER[1] x 0.03	
LA River Reach 2	3.86	WER[1] x 0.13	WER[1] x 0.07	
LA River Reach 1	2.58	WER[1] x 0.14	WER[1] x 0.07	
Bell Creek	0.79	WER[1] x 0.06	WER[1] x 0.04	
Tujunga Wash	0.03	WER[1] x 0.001	WER[1] x 0.0002	
Burbank Channel	3.3	WER[1] x 0.15	WER[1] x 0.07	
Verdugo Wash	3.3	WER[1] x 0.18	WER[1] x 0.10	
Arroyo Seco	0.25	WER[1] x 0.01	WER[1] x 0.01	
Rio Hondo Reach 1	0.50	WER[1]x 0.01	WER[1]x0.006	WER[1]x 0.16
Compton Creek	0.90	WER[1] x 0.04	WER[1] x 0.02	

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

A zero waste load allocation is assigned to all industrial and construction storm water permittees during dry weather. The remaining waste load allocations are shared by the MS4 permittees and Caltrans.

Other NPDES Permits

Concentration-based dry-weather waste load allocations apply to the other NPDES permits* that discharge to the reaches and tributaries in the following table.

* “Other NPDES permits” refers to minor NPDES permits, general non-storm water NDPES permits, and major permits other than the Tillman, LA-Glendale, and Burbank POTWs.

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Waste Load Allocations (continued)
(for point sources)</td><td>
<table>
<tr><th colspan="5">Other dry-weather WLAs (μg total recoverable metals/L)</th></tr>
<tr><th></th><th>Cu</th><th>Pb</th><th>Zn</th><th>Se</th></tr>
<tr><td>Reach 5, 6 and Bell Creek</td><td>WER¹ x 30</td><td>WER¹ x 19</td><td></td><td>5</td></tr>
<tr><td>Reach 4</td><td>WER¹ x 26</td><td>WER¹ x 10</td><td></td><td></td></tr>
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<tr><td>Rio Hondo Reach 1</td><td>WER¹ x 13</td><td>WER¹ x 5.0</td><td>WER¹ x 131</td><td></td></tr>
</table>
¹ WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

Wet Weather

During wet-weather, POTW allocations are based on dry-weather in-stream numeric targets because the POTWs exert the greatest influence over in-stream water quality during dry weather. During wet weather, the concentration-based dry-weather waste load allocations apply but the mass-based dry-weather allocations do not apply when influent flows exceed the design capacity of the treatment plants. Additionally, the POTWs are assigned reach-specific allocations for cadmium and zinc based on dry weather targets to meet the wet-weather TMDLs in Reach 1.
</td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (continued) (for point sources)	See below

POTW wet-weather WLAs (total recoverable metals):

	Cd	Cu	Pb	Zn
Tillman				
Concentration-based (µg/L)	WER[1]x4.7	WER[2]x26	WER[1]x10	WER[1]x212
Mass-based (kg/day)	WER[1]x1.4	WER[2]x7.8	WER[1]x 3.03	WER[1]x64
Glendale				
Concentration-based (µg/L)	WER[1]x5.3	WER[2]x26	WER[1]x12	WER[1]x253
Mass-based (kg/day)	WER[1]x0.40	WER[2]x2.0	WER[1]x0.88	WER[1]x19
Burbank				
Concentration-based (µg/L)	WER[1]x4.5	WER[2]x19	WER[1]x9.1	WER[1]x 212
Mass-based (kg/day)	WER[1]x0.15	WER[2]x0.64	WER[1]x0.31	WER[1]x7.3

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
[2] The WER for this constituent is 3.96. Regardless of the WER, effluent limitations shall ensure that effluent concentrations and mass discharges do not exceed the levels of water quality that can be attained by performance of this facility's treatment technologies existing at the time of permit issuance, reissuance, or modification.

Wet-weather waste load allocations for the grouped storm water permittees are equal to the total loading capacity minus the load allocations for open space and direct air deposition and the waste load allocations for the POTWs. Wet-weather waste load allocations for the grouped storm water permittees apply to all reaches and tributaries.

Storm water wet-weather WLAs (total recoverable metals):

Metal	Waste Load Allocation (kg/day)
Cadmium	WER[1] x $3.1\text{x}10^{-9}$ x daily volume(L) – 1.95
Copper	WER[1] x $1.7\text{x}10^{-8}$ x daily volume (L) – 10
Lead	WER[1] x $6.2\text{x}10^{-8}$ x daily volume (L) – 4.2
Zinc	WER[1] x $1.6\text{x}10^{-7}$ x daily volume (L) – 90

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.

The combined storm water waste load allocation is apportioned between the different storm water categories by their percent area of the portion of the watershed served by storm drains.

MS4 wet-weather WLAs (total recoverable metals):

Metal	Waste Load Allocation (kg/day)
Cadmium	WER[1] x $2.8\text{x}10^{-9}$ x daily volume(L) – 1.8
Copper	WER[1] x $1.5\text{x}10^{-8}$ x daily volume (L) – 9.5
Lead	WER[1] x $5.6\text{x}10^{-8}$ x daily volume (L) – 3.85
Zinc	WER[1] x $1.4\text{x}10^{-7}$ x daily volume (L) – 83

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Waste Load Allocations (continued)
(for point sources)</td><td>
Caltrans wet-weather WLAs (total recoverable metals):
<table>
<tr><th>Metal</th><th>Waste Load Allocation (kg/day)</th></tr>
<tr><td>Cadmium</td><td>WER[1] x $5.3x10^{-11}$ x daily volume(L) – 0.03</td></tr>
<tr><td>Copper</td><td>WER[1] x $2.9x10^{-10}$ x daily volume (L) – 0.2</td></tr>
<tr><td>Lead</td><td>WER[1] x $1.06x10^{-9}$ x daily volume (L) – 0.07</td></tr>
<tr><td>Zinc</td><td>WER[1] x $2.7x10^{-9}$ x daily volume (L) – 1.6</td></tr>
</table>
General Industrial wet-weather WLAs (total recoverable metals):
<table>
<tr><th>Metal</th><th>Waste Load Allocation (kg/day)</th></tr>
<tr><td>Cadmium</td><td>WER[1] x $1.6x10^{-10}$ x daily volume(L) – 0.11</td></tr>
<tr><td>Copper</td><td>WER[1] x $8.8x10^{-10}$ x daily volume (L) – 0.5</td></tr>
<tr><td>Lead</td><td>WER[1] x $3.3x10^{-9}$ x daily volume (L) – 0.22</td></tr>
<tr><td>Zinc</td><td>WER[1] x $8.3x10^{-9}$ x daily volume (L) – 4.8</td></tr>
</table>
General Construction wet-weather WLAs (total recoverable metals):
<table>
<tr><th>Metal</th><th>Waste Load Allocation (kg/day)</th></tr>
<tr><td>Cadmium</td><td>WER[1] x $5.9x10^{-11}$ x daily volume(L) – 0.04</td></tr>
<tr><td>Copper</td><td>WER[1] x $3.2x10^{-10}$ x daily volume (L) – 0.2</td></tr>
<tr><td>Lead</td><td>WER[1] x $1.2x10^{-9}$ x daily volume (L) – 0.08</td></tr>
<tr><td>Zinc</td><td>WER[1] x $3.01x10^{-}9$ x daily volume (L) – 4.8</td></tr>
</table>
[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
Each storm water permittee under the general industrial and construction storm water permits will receive individual waste load allocations per acre based on the total acres of their facility.
Individual General Construction or Industrial Permittees WLAs (total recoverable metals):
<table>
<tr><th>Metal</th><th>Waste Load Allocation (g/day/acre)</th></tr>
<tr><td>Cadmium</td><td>WER[1] x $7.6x10^{-12}$ x daily volume(L) – $4.8x10^{-6}$</td></tr>
<tr><td>Copper</td><td>WER[1] x $4.2x10^{-11}$ x daily volume (L) – $2.6x10^{-5}$</td></tr>
<tr><td>Lead</td><td>WER[1] x $1.5x10^{-10}$ x daily volume (L) – $1.04x10^{-5}$</td></tr>
<tr><td>Zinc</td><td>WER[1] x $3.9x10^{-10}$ x daily volume (L) – $2.2x10^{-4}$</td></tr>
</table>
[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
</td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (continued) (for point sources)	**Other NPDES Permits** Concentration-based wet-weather waste load allocations apply to the other NPDES permits* that discharge to all reaches of the Los Angeles River and its tributaries. **Wet-weather WLAs for other permits (total recoverable metals)** **Cadmium (µg /L)** — WER[1] x 3.1 **Copper (µg /L)** — WER[1] x 17 **Lead (µg /L)** — WER[1] x 62 **Zinc (µg /L)** — WER[1] x 159 [1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved. * "Other NPDES permits" refers to minor NPDES permits, general non-storm water NDPES permits, and major permits other than the Tillman, LA-Glendale, and Burbank POTWs.
Margin of Safety	There is an implicit margin of safety that stems from the use of conservative values for the translation from total recoverable to the dissolved fraction during the dry and wet periods. In addition, the TMDL includes a margin of safety by evaluating wet-weather conditions separately from dry-weather conditions, which is in effect, assigning allocations for two distinct critical conditions. Furthermore, the use of the wet-weather model to calculate load allocations for open space can be applied to the margin of safety because it tends to overestimate loads from open spaces, thus reducing the available waste load allocations to the permitted discharges. An additional explicit margin of safety is provided in Reaches 1-4 and Burbank Western Channel for which a site-specific WER has been developed. Specifically, while the copper targets and loading capacity are adjusted based on the final WER of 3.96, only the WLAs for Tillman WRP, LA-Glendale WRP, and Burbank WRP are adjusted using the site-specific WER until additional data are collected to determine whether the site-specific WER is fully protective of aquatic life in all reaches and can be appropriately applied to all LAs and WLAs.
Implementation	The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the City of Long Beach MS4, the Caltrans storm water permit, major NPDES permits, minor NPDES permits, general NPDES permits, general industrial storm water NPDES permits, and general construction storm water NPDES permits. Nonpoint sources will be regulated through the authority contained in sections 13263 and 13269 of the Water Code, in conformance with the State Water Resources Control Board's Nonpoint Source Implementation and Enforcement Policy (May 2004). Each NPDES permit assigned a WLA shall be reopened or amended at reissuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	The Regional Board shall reconsider this TMDL by January 11, 2011 based on additional data obtained from special studies. Table 7-13-2 presents the implementation schedule for the responsible permittees. **Implementation of WERs** The copper WER of 3.96 for Reaches 1-4 of the Los Angeles River and Burbank Western Channel shall apply until this TMDL is reconsidered. At the time this TMDL is reconsidered, the WER for Reaches 1-4 and Burbank Western Channel may be modified or revert back to a default of 1.0 unless additional data have been collected that support application of a WER to all WLAs and LAs, or confirm continued application of the site-specific WER to the WLAs for the POTWs only. Any WER that is incorporated into a discharger's permit shall include an appropriate reopener that authorizes the Regional Board to modify the WER as appropriate to accommodate new information. **Non storm water NPDES permits (including POTWs, other major, minor, and general permits):** Permit writers may translate applicable waste load allocations into daily maximum and monthly average effluent limits for the major, minor and general NPDES permits by applying the effluent limitation procedures in Section 1.4 of the State Water Resources Control Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (2000) or other applicable engineering practices authorized under federal regulations. Permittees that hold individual NPDES permits and solely discharge storm water may be allowed (at Regional Board discretion) compliance schedules up to January 11, 2016 to achieve compliance with final WLAs. **General industrial storm water permits:** The Regional Board will develop a watershed-specific general industrial storm water permit to incorporate waste load allocations. <u>Dry-weather implementation</u> Non-storm water flows authorized by Order No. 97-03 DWQ, or any successor order, are exempt from the dry-weather waste load allocation equal to zero. Instead, these authorized non-storm water flows shall meet the reach-specific concentration-based waste load allocations assigned to the "other NPDES permits". The dry-weather waste load allocation equal to zero applies to unauthorized non-storm water flows, which are prohibited by Order No. 97-03 DWQ.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	It is anticipated that the dry-weather waste load allocations will be implemented by requiring improved best management practices (BMPs) to eliminate the discharge of non-storm water flows. However, permit writers must provide adequate justification and documentation to demonstrate that specified BMPs are expected to result in attainment of the numeric waste load allocations. <u>Wet-weather implementation</u> General industrial storm water permittees are allowed interim wet-weather concentration-based waste load allocations based on benchmarks contained in EPA's Storm Water Multi-sector General Permit for Industrial Activities. The interim waste load allocations apply to all industry sectors and apply until no later than January 11, 2016. **Interim wet-weather WLAs for general industrial storm water permittees (total recoverable metals)*** **Cd (µg/L)** | **Cu(µg/L)** | **Pb(µg/L)** | **Zn(µg/L)** 15.9 | 63.6 | 81.6 | 117 *Based on USEPA benchmarks for industrial storm water sector Until January 11, 2011, interim waste load allocations will not be interpreted as enforceable permit conditions. If monitoring demonstrates that interim waste load allocations are being exceeded, the permittee shall evaluate existing and potential BMPs, including structural BMPs, and implement any necessary BMP improvements. It is anticipated that monitoring results and any necessary BMP improvements would occur as part of an annual reporting process. After January 11, 2011, interim waste load allocations shall be translated into enforceable permit conditions. Compliance with permit conditions may be demonstrated through the installation, maintenance, and monitoring of Regional Board-approved BMPs. If this method of compliance is chosen, permit writers must provide adequate justification and documentation to demonstrate that BMPs are expected to result in attainment of interim waste load allocations. The general industrial storm water permits shall achieve final wet-weather waste load allocations no later than January 11, 2016, which shall be expressed as NPDES water quality-based effluent limitations. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs if adequate justification and documentation demonstrate that BMPs are expected to result in attainment of waste load allocations.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	**General construction storm water permits:** Waste load allocations will be incorporated into the State Board general permit upon renewal or into a watershed-specific general permit developed by the Regional Board. <u>Dry-weather implementation</u> Non-storm water flows authorized by the General Permit for Storm Water Discharges Associated with Construction Activity (Water Quality Order No. 99-08 DWQ), or any successor order, are exempt from the dry-weather waste load allocation equal to zero as long as they comply with the provisions of sections C.3.and A.9 of the Order No. 99-08 DWQ, which state that these authorized non-storm discharges shall be (1) infeasible to eliminate (2) comply with BMPs as described in the Storm Water Pollution Prevention Plan prepared by the permittee, and (3) not cause or contribute to a violation of water quality standards, or comparable provisions in any successor order. Unauthorized non-storm water flows are already prohibited by Order No. 99-08 DWQ. <u>Wet-weather implementation</u> By January 11, 2013, the construction industry will submit the results of BMP effectiveness studies to determine BMPs that will achieve compliance with the final waste load allocations assigned to construction storm water permittees. Regional Board staff will bring the recommended BMPs before the Regional Board for consideration by January 11, 2014. General construction storm water permittees will be considered in compliance with final waste load allocations if they implement these Regional Board approved BMPs. All permittees must implement the approved BMPs by January 11, 2015. If no effectiveness studies are conducted and no BMPs are approved by the Regional Board by January 11, 2014, each general construction storm water permit holder will be subject to site-specific BMPs and monitoring requirements to demonstrate compliance with final waste load allocations. **MS4 and Caltrans permits** Applicable CTR limits are being met most of the time during dry weather, with episodic exceedances. Due to the expense of obtaining accurate flow measurements required for calculating loads, concentration-based permit limits may apply during dry weather. These concentration-based limits would be equal to dry-weather reach-specific numeric targets.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	Each municipality and permittee will be required to meet the storm water waste load allocations shared by the two MS4s and Caltrans permittees at the designated TMDL effectiveness monitoring points. A phased implementation approach, using a combination of non-structural and structural BMPs may be used to achieve compliance with the waste load allocations. The administrative record and the fact sheets for the MS4 and Caltrans storm water permits must provide reasonable assurance that the BMPs selected will be sufficient to implement the waste load allocations. The implementation schedule for the MS4 and Caltrans permittees consists of a phased approach. The watershed is divided into five jurisdictional groups based on the subwatersheds of the tributaries that drain to each reach of the river, as presented in Table 7-13-3. Each jurisdictional group shall achieve compliance in prescribed percentages of its subwatershed(s), with total compliance to be achieved within 22 years. Jurisdictional groups can be reorganized or subdivided upon approval by the Executive Officer.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for dry weather and wet weather. For dry weather, critical flows for each reach are established from the long-term flow records (1988-2000) generated by stream gages located throughout the watershed and in selected reaches. The median dry-weather urban runoff plus the combined design capacity of the three major POTWs is selected as the critical flow since most of the flow is from effluent which results in a relatively stable dry-weather flow condition. In areas where there are no flow records, an area-weighted approach is used to assign flows to these reaches. Wet-weather allocations are developed using the load-duration curve concept. The total wet-weather waste load allocation for wet weather varies by storm. Given this variability in storm water flows, no justification was found for selecting a particular sized storm as the critical condition.
Compliance Monitoring and Special Studies	Effective monitoring will be necessary to assess the condition of the Los Angeles River and its tributaries and to assess the on-going effectiveness of efforts by dischargers to reduce metals loading to the Los Angeles River. Special studies may also be appropriate to provide further information about new data, new or alternative sources, and revised scientific assumptions. Below the Regional Board identifies the various goals of monitoring efforts and studies. The programs, reports, and studies will be developed in response to subsequent orders issued by the Executive Officer.

Element	Key Findings and Regulatory Provisions
Compliance Monitoring and Special Studies (continued)	**Ambient Monitoring** An ambient monitoring program is necessary to assess water quality throughout the Los Angeles River and its tributaries and the progress being made to remove the metals impairments. The MS4 and Caltrans storm water NPDES permittees in each jurisdictional group are jointly responsible for implementing the ambient monitoring program. The responsible agencies shall sample for total recoverable metals, dissolved metals, including cadmium and zinc, and hardness once per month at each ambient monitoring location at least until the TMDL is re-considered at year 5. The reported detection limits shall be below the hardness adjusted CTR criteria. Eight ambient monitoring points currently exist in the Los Angeles River and its tributaries as part of the City of Los Angeles Watershed Monitoring Program. These monitoring points could be used to assess water quality. **Ambient Monitoring Points** — **Reaches and Tributaries** White Oak Avenue — LA River 6, Aliso Creek, McCoy Creek, Bell Creek Sepulveda Boulevard — LA River 5, Bull Creek Tujunga Avenue — LA River 4, Tujunga Wash Colorado Boulevard — LA River 3, Burbank Western Channel, Verdugo Wash Figueroa Street — LA River 3, Arroyo Seco Washington Boulevard — LA River 2 Rosecrans Avenue — LA River 2, Rio Hondo (gage just above Rio Hondo) Willow Street — LA River 1, Compton Creek (gage at Wardlow) **TMDL Effectiveness Monitoring** The MS4 and Caltrans storm water NPDES permittees in each jurisdictional group are jointly responsible for assessing progress in reducing pollutant loads to achieve the TMDL. Each jurisdictional group is required to submit for approval by the Executive Officer a coordinated monitoring plan that will demonstrate the effectiveness of the phased implementation schedule for this TMDL (See Table 7-13.2), which requires attainment of the applicable waste load allocations in prescribed percentages of each subwatershed over a 22-year period. The monitoring locations specified for the ambient monitoring program may be used as effectiveness monitoring locations.

Element	Key Findings and Regulatory Provisions
Compliance Monitoring and Special Studies (continued)	The MS4 and Caltrans storm water NPDES permittees will be found to be effectively meeting dry-weather waste load allocations if the in-stream pollutant concentration or load at the first downstream monitoring location is equal to or less than the corresponding concentration- or load-based waste load allocation. Alternatively, effectiveness of the TMDL may be assessed at the storm drain outlet based on the waste load allocation for the receiving water. For storm drains that discharge to other storm drains, the waste load allocation will be based on the waste load allocation for the ultimate receiving water for that storm drain system. The MS4 and Caltrans storm water NPDES permittees will be found to be effectively meeting wet-weather waste load allocations if the loading at the downstream monitoring location is equal to or less then the wet-weather waste load allocation. The general industrial storm water permit shall contain a model monitoring and reporting program to evaluate BMP effectiveness. A permittee enrolled under the general permit shall have the choice of conducting individual monitoring based on the model program or participating in a group monitoring effort. MS4 permittees are encouraged to take the lead in group monitoring efforts for industrial facilities within their jurisdiction because compliance with waste load allocations by these facilities will in many cases translate to reductions in metals loads to the MS4 system. The Tillman, LA-Glendale, and Burbank POTWs, and the remaining permitted discharges in the watershed will have effluent monitoring requirements to ensure compliance with waste load allocations. Additionally, the Tillman, LA-Glendale, and Burbank POTWs shall conduct additional receiving water monitoring to verify that water quality conditions are similar to those of the 2008 copper WER study period. Monitoring is also required to determine if the WER-based copper WLAs will achieve downstream water quality standards. This additional monitoring shall be required through the POTWs' NPDES permit monitoring and reporting programs or other Regional Board required monitoring programs. The Regional Board will evaluate the WER-based copper WLAs based on potential changes in the chemical characteristics of the water body that could impact the calculation or application of the WER and will revise the WERs and copper WLAs, if necessary, to ensure protection of beneficial uses. **Special Studies** The implementation schedule (see Table 7-13.2) allows time for special studies that may serve to refine the estimate of loading capacity, waste load and/or load allocations, and other studies that may serve to optimize implementation efforts. The Regional Board will re-consider the TMDL by January 11, 2011 in light of the findings of these studies. Studies may include:

Element	Key Findings and Regulatory Provisions
Compliance Monitoring and Special Studies (continued)	• Refined flow estimates for the Los Angeles River mainstem and tributaries where there presently are no flow gages and for improved gaging of low-flow conditions. • Water quality measurements, including a better assessment of hardness, water chemistry data (e.g., total suspended solids and organic carbon) that may refine the use of metals partitioning coefficients. • Effects studies designed to evaluate site-specific toxic effects of metals on the Los Angeles River and its tributaries. • Source studies designed to characterize loadings from background or natural sources • Review of water quality modeling assumptions including the relationship between metals and total suspended solids as expressed in the potency factors and buildup and washoff and transport coefficients. • Evaluation of aerial deposition and sources of aerial deposition. • POTWs that are unable to demonstrate compliance with final waste load allocations must conduct source reduction audits by January 11, 2008. • POTWs that will be requesting the Regional Board to extend their implementation schedule to allow for the installation of advanced treatment must prepare work plans, with time schedules to allow for the installation advanced treatment. The work plan must be submitted January 11, 2010.

Table 7-13.2 Los Angeles River and Tributaries Metals TMDL: Implementation Schedule

Date	Action
January 11, 2006	Regional Board permit writers shall incorporate waste load allocations into NPDES permits. Waste load allocations will be implemented through NPDES permit limits in accordance with the implementation schedule contained herein, at the time of permit issuance, renewal, or re-opener.
January 11, 2010	Responsible jurisdictions and agencies shall provide to the Regional Board results of the special studies. POTWs that will be requesting the Regional Board to extend their implementation schedule to allow for the installation of advanced treatment must submit work plans.
January 11, 2011	The Regional Board shall reconsider this TMDL to re-evaluate the waste load allocations and the implementation schedule.
NON-STORM WATER NPDES PERMITS (INCLUDING POTWS, OTHER MAJOR, MINOR, AND GENERAL PERMITS)	
Upon permit issuance, renewal, or re-opener	The non-storm water NPDES permits shall achieve waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Permit writers may translate applicable waste load allocations into daily maximum and monthly average effluent limits for the major, minor and general NPDES permits by applying the effluent limitation procedures in Section 1.4 of the SIP or other applicable engineering practices authorized under federal regulations. Effluent limitations based on WER-adjusted WLAs shall ensure that effluent concentrations and mass discharges do not exceed the levels of water quality that can be attained by performance of a facility's treatment technologies existing at the time of permit issuance, reissuance, or modification. Permittees that hold individual NPDES permits and solely discharge storm water may be allowed (at Regional Board discretion) compliance schedules up to January 11, 2016 to achieve compliance with final WLAs.
GENERAL INDUSTRIAL STORM WATER PERMITS	
Upon permit issuance, renewal, or re-opener	The general industrial storm water permitees shall achieve dry-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs. Permittees shall begin to install and test BMPs to meet the interim wet-weather WLAs. BMP effectiveness monitoring will be implemented to determine progress in achieving interim wet-weather waste load allocations.
January 11, 2011	The general industrial storm water permits shall achieve interim wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs. Permittees shall begin an iterative BMP process including BMP effectiveness monitoring to achieve compliance with final waste load allocations.

Date	Action
January 11, 2016	The general industrial storm water permits shall achieve final wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
GENERAL CONSTRUCTION STORM WATER PERMITS	
Upon permit issuance, renewal, or re-opener	Non-storm water flows not authorized by Order No. 99-08 DWQ, or any successor order, shall achieve dry-weather waste load allocations of zero. Waste load allocations shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
January 11, 2013	The construction industry will submit the results of wet-weather BMP effectiveness studies to the Regional Board for consideration. In the event that no effectiveness studies are conducted and no BMPs are approved, permittees shall be subject to site-specific BMPs and monitoring to demonstrate BMP effectiveness.
January 11, 2014	The Regional Board will consider results of the wet-weather BMP effectiveness studies and consider approval of BMPs.
January 11, 2015	All general construction storm water permittees shall implement Regional Board-approved BMPs.
MS4 AND CALTRANS STORM WATER PERMITS	
April 11, 2007	In response to an order issued by the Executive Officer, each jurisdictional group must submit a coordinated monitoring plan, to be approved by the Executive Officer, which includes both TMDL effectiveness monitoring and ambient monitoring. Once the coordinated monitoring plan is approved by the Executive Officer ambient monitoring shall commence within 6 months.
January 11, 2010 (Draft Report) July 11, 2010 (Final Report)	Each jurisdictional group shall provide a written report to the Regional Board outlining the how the subwatersheds within the jurisdictional group will achieve compliance with the waste load allocations. The report shall include implementation methods, an implementation schedule, proposed milestones, and any applicable revisions to the TMDL effectiveness monitoring plan.
January 11, 2012	Each jurisdictional group shall demonstrate that 50% of the group's total drainage area served by the storm drain system is effectively meeting the dry-weather waste load allocations and 25% of the group's total drainage area served by the storm drain system is effectively meeting the wet-weather waste load allocations.
January 11, 2020	Each jurisdictional group shall demonstrate that 75% of the group's total drainage area served by the storm drain system is effectively meeting the dry-weather WLAs.

Date	Action
January 11, 2024	Each jurisdictional group shall demonstrate that 100% of the group's total drainage area served by the storm drain system is effectively meeting the dry-weather WLAs and 50% of the group's total drainage area served by the storm drain system is effectively meeting the wet-weather WLAs.
January 11, 2028	Each jurisdictional group shall demonstrate that 100% of the group's total drainage area served by the storm drain system is effectively meeting both the dry-weather and wet-weather WLAs.

Table 7-13.3 Los Angeles River and Tributaries Metals TMDL: Jurisdictional Groups

Jurisdictional Group	Responsible Jurisdictions & Agencies	Subwatershed(s)
1	Carson County of Los Angeles City of Los Angeles Compton Huntington Park Long Beach Lynwood Signal Hill Southgate Vernon	Los Angeles River Reach 1 and Compton Creek
2	Alhambra Arcadia Bell Bell Gardens Bradbury Carson Commerce Compton County of Los Angeles Cudahy Downey Duarte El Monte Glendale Huntington Park Irwindale La Canada Flintridge Long Beach City of Los Angeles Lynwood Maywood Monrovia Montebello Monterey Park Paramount Pasadena Pico Rivera Rosemead San Gabriel San Marino Sierra Madre South El Monte South Pasadena Southgate Temple City Vernon	Los Angeles River Reach 2, Rio Hondo, Arroyo Seco, and all contributing sub watersheds
3	City of Los Angeles County of Los Angeles Burbank Glendale La Canada Flintridge Pasadena	Los Angeles River Reach 3, Verdugo Wash, Burbank Western Channel
4-5	Burbank Glendale City of Los Angeles County of Los Angeles San Fernando	Los Angeles River Reach 4, Reach 5, Tujunga Wash, and all contributing subwatersheds
6	Calabasas City of Los Angeles County of Los Angeles Hidden Hills	Los Angeles River Reach 6, Bell Creek, and all contributing subwatersheds

7-14 Ballona Creek Estuary Toxic Pollutants TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on July 7, 2005.

This TMDL was approved by:
The State Water Resources Control Board on October 20, 2005.
The Office of Administrative Law on December 15, 2005.
The U.S. Environmental Protection Agency on December 22, 2005.

The effective date of this TMDL is January 11, 2006.

The following tables include the elements of this TMDL.

Table 7-14.1. Ballona Creek Estuary Toxic Pollutants TMDL: Elements

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Problem Statement</td><td>Ballona Creek and Ballona Creek Estuary (Estuary) is on the Clean Water Act Section 303(d) list of impaired waterbodies for cadmium, copper, lead, silver, zinc, chlordane, DDT, PCBs and PAHs in sediments. The following designated beneficial uses are impaired by these toxic pollutants: water contact recreation (REC1); non-contact water recreation (REC2); estuarine habitat (EST); marine habitat (MAR); wildlife habitat (WILD); rare and threatened or endangered species (RARE); migration of aquatic organisms (MIGR); reproduction and early development of fish (SPWN); commercial and sport fishing (COMM); and shellfish harvesting (SHELL).</td></tr>
<tr><td>Numeric Target (Interpretation of the narrative and numeric water quality objective, used to calculate the allocations)</td><td>Numeric water quality targets are based on the sediment quality guidelines compiled by the National Oceanic and Atmospheric Administration, which are used in evaluating waterbodies within the Los Angeles Region for development of the 303(d) list. The Effects Range-Low (ERLs) guidelines are established as the numeric targets for sediments in Ballona Creek Estuary.

Metal Numeric Targets (mg/kg)<table><tr><th>Cadmium</th><th>Copper</th><th>Lead</th><th>Silver</th><th>Zinc</th></tr><tr><td>1.2</td><td>34</td><td>46.7</td><td>1.0</td><td>150</td></tr></table>
Organic Numeric Targets (µg/kg)<table><tr><th>Chlordane</th><th>DDTs</th><th>Total PCBs</th><th>Total PAHs</th></tr><tr><td>0.5</td><td>1.58</td><td>22.7</td><td>4,022</td></tr></table></td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Source Analysis	Urban storm water has been recognized as a substantial source of metals. Numerous researchers have documented that the most prevalent metals in urban storm water (i.e., copper, lead, zinc, and to a lesser degree cadmium) are consistently associated with suspended solids. Because metals are typically associated with fine particles in storm water runoff, they have the potential to accumulate in estuarine sediments where they may pose a risk of toxicity. McPherson et al.[1] estimated that 83% of the cadmium and 86% of the lead were associated with the particle phase in Ballona Creek. Similar to metals, the majority of organic constituents in storm water are associated with particulates, measured concentrations of PAHs, phthalates, and organochlorine compounds in Sepulveda Channel, Centinela Creek, and Ballona Creek found that the majority of these compounds occurred in association with suspended solids. There is toxicity associated with suspended solids in urban runoff discharged from Ballona Creek, as well as with the receiving water sediments. This toxicity is likely attributed to metals and PAHs associated with the suspended sediments. Nonpoint sources are not considered a significant source of toxic pollutants in this TMDL. Nonpoint sources are urban runoff from the Ballona Wetland, since this area discharges directly to the Estuary through a tide gate, and direct atmospheric deposition. The Ballona Wetlands cover approximately 460 acres or 0.6% of the watershed, therefore, loading from this source is considered insignificant. Direct atmospheric deposition of metals and PAHs is considered insignificant because the portion of the Ballona Creek watershed covered by water is small, approximately 480 acres or 0.6% of the watershed. Indirect atmospheric deposition reflects the process by which metals deposited on the land surface may be washed off during storm events and delivered to Ballona Creek and its tributaries. The loading of metals associated with indirect atmospheric deposition are accounted for in the storm water runoff.
Loading Capacity	TMDLs are developed for cadmium, copper, lead, silver, zinc, chlordane, DDT, PCBs and PAHs within the sediments of the Ballona Creek Estuary. The loading capacity for Ballona Creek Estuary is calculated by multiplying the numeric targets by the average annual deposition of fine sediment, defined as silts (grain size 0.0625 millimeters) and smaller, within the Estuary by the bulk density of the sediment. The average annual fine sediment deposited is 5,004 cubic meters per year (m^3/yr) and the bulk density is 1.42 metric tons per cubic meter (mt/m^3). The TMDL is set equal to the loading capacity. **Metals Loading Capacity (kilograms/year)** Cadmium: 8.5; Copper: 241.6; Lead: 332; Silver: 7.1; Zinc: 1,066 **Organics Loading Capacity (grams/year)** Chlordane: 3.55; DDTs: 11.2; Total PCBs: 161; Total PAHs: 28,580

Metals Loading Capacity (kilograms/year)

Cadmium	Copper	Lead	Silver	Zinc
8.5	241.6	332	7.1	1,066

Organics Loading Capacity (grams/year)

Chlordane	DDTs	Total PCBs	Total PAHs
3.55	11.2	161	28,580

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Load Allocations
(for nonpoint sources)</td><td>Load allocations (LA) are assigned to nonpoint sources for Ballona Creek Estuary. Load allocations are developed for open space and direct atmospheric deposition.

The mass-based load allocation for open space is equal to the percentage of the watershed covered by the Ballona Wetlands (0.6%) multiplied by the total loading capacity.

<u>Metals Load Allocations for Open Space (kg/yr)</u>
Cadmium | Copper | Lead | Silver | Zinc
0.05 | 1.4 | 2 | 0.04 | 6

<u>Organics Load Allocations for Open Space (g/yr)</u>
Chlordane | DDTs | Total PCBs | Total PAHs
0.02 | 0.1 | 1 | 160

The mass-based load allocation for direct atmospheric deposition is equal to the percentage of the watershed covered by water (0.6%) multiplied by the total loading capacity.

<u>Metals Load Allocations for Direct Atmospheric Deposition (kg/yr)</u>
Cadmium | Copper | Lead | Silver | Zinc
0.05 | 1.4 | 2 | 0.04 | 6

<u>Organics Load Allocations for Direct Atmospheric Deposition (g/yr)</u>
Chlordane | DDTs | Total PCBs | Total PAHs
0.02 | 0.1 | 1 | 170</td></tr>
<tr><td>Waste Load Allocations
(for point sources)</td><td>Waste load allocations (WLA) are assigned to point sources for the Ballona Creek watershed. A grouped mass-based waste load allocation is developed for the storm water permittees (Los Angeles County MS4, Caltrans, General Construction and General Industrial) by subtracting the load allocations from the total loading capacity. Concentration-based waste load allocations are developed for other point sources in the watershed.

<u>Metals Waste Load Allocations for Storm Water (kg/yr)</u>
Cadmium | Copper | Lead | Silver | Zinc
8.4 | 238.8 | 328 | 7.02 | 1,054

<u>Organics Waste Load Allocations for Storm Water (g/yr)</u>
Chlordane | DDTs | Total PCBs | Total PAHs
3.51 | 11 | 159 | 28,250</td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	The storm water waste load allocations are apportioned between the MS4 permittees, Caltrans, the general construction and the general industrial storm water permits based on an areal weighting approach.

Metals Storm Water WLAs Apportioned between Permits (kg/yr)

	Cadmium	Copper	Lead	Silver	Zinc
MS4 Permittees	8.0	227.3	312.3	6.69	1003
Caltrans	0.11	3.2	4.4	0.09	14
General Construction	0.23	6.6	9.1	0.20	29
General Industrial	0.06	1.7	2.3	0.05	7

Organics Storm Water WLAs Apportioned between Permits (g/yr)

	Chlordane	DDTs	Total PCBs	Total PAHs
MS4 Permittees	3.34	10.56	152	26,900
Caltrans	0.05	0.15	2	400
General Construction	0.10	0.31	4	800
General Industrial	0.02	0.08	1	200

Each storm water permittee enrolled under the general construction or industrial storm water permits will receive an individual waste load allocation on a per acre basis, based on the acreage of their facility.

Metals per Acre WLAs for Individual General Construction or Industrial Storm Water Permittees (g/yr/ac)

Cadmium	Copper	Lead	Silver	Zinc
0.1	3	4	0.1	13

Organics per Acre WLAs for Individual General Construction or Industrial Storm Water Permittees (mg/yr/ac)

Chlordane	DDTs	Total PCBs	Total PAHs
0.04	0.14	2	350

Concentration-based waste load allocations are assigned to the minor NPDES permits and general non-storm water NPDES permits that discharge to Ballona Creek or its tributaries. Any future minor NPDES permits or enrollees under a general non-storm water NPDES permit will also be subject to the concentration-based waste load allocations.

Metals Concentration-based Waste Load Allocations (mg/kg)

Cadmium	Copper	Lead	Silver	Zinc
1.2	34	46.7	1.0	150

Organic Concentration-based Waste Load Allocations (µg/kg)

Chlordane	DDTs	Total PCBs	Total PAHs
0.5	1.58	22.7	4,022

Element	Key Findings and Regulatory Provisions
Margin of Safety	An implicit margin of safety is applied through the use of the more protective sediment quality guideline values. The ERLs were selected over the higher ERMs as the numeric targets.

Element	Key Findings and Regulatory Provisions
Implementation	The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the State of California Department of Transportation (Caltrans) Storm Water Permit, minor NPDES permits, general NPDES permits, general industrial storm water NPDES permits, general construction storm water NPDES permits. Nonpoint sources will be regulated through the authority contained in sections 13263 and 13269 of the Water Code, in conformance with the State Water Resources Control Board's Nonpoint Source Implementation and Enforcement Policy (May 2004). Each NPDES permit assigned a WLA shall be reopened or amended at re-issuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. The Regional Board shall reconsider this TMDL in six years after the effective date of the TMDL based on additional data obtained from special studies. Table 7-14.2 presents the implementation schedule for the responsible permittees. **Minor NPDES Permits and General Non-Storm Water NPDES Permits:** The concentration-based waste load allocations for the minor NPDES permits and general non-storm water NPDES permits will be implemented through NPDES permit limits. Permit writers may translate applicable waste load allocations into effluent limits for the minor and general NPDES permits by applying applicable engineering practices authorized under federal regulations. The minor and general non-storm water NPDES permittees are allowed up to seven years from the effective date of the TMDL to achieve the waste load allocations. **General Industrial Storm Water Permit:** The Regional Board will develop a watershed specific general industrial storm water permit to incorporate waste load allocations. Concentration-based permit limits may be set to achieve the mass-based waste load allocations. These concentration-based limits would be equal to the concentration-based waste load allocations assigned to the other NPDES permits. It is expected that permit writers will translate the waste load allocations into BMPs, based on BMP performance data. However, the permit writers must provide adequate justification and documentation to demonstrate that specified BMPs are expected to result in attainment of the numeric waste load allocations. The general industrial storm water permittees are allowed up to seven years from the effective date of the TMDL to achieve the waste load allocations.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	**General Construction Storm Water Permit:** Waste load allocations will be incorporated into the State Board general permit upon renewal or into a watershed specific general construction storm water permit developed by the Regional Board. Within seven years of the effective date of the TMDL, the construction industry will submit the results of BMP effectiveness studies to determine BMPs that will achieve compliance with the waste load allocations assigned to construction storm water permittees. Regional Board staff will bring the recommended BMPs before the Regional Board for consideration within eight years of the effective date of the TMDL. General construction storm water permittees will be considered in compliance with waste load allocations if they implement these Regional Board approved BMPs. All general construction permittees must implement the approved BMPs within nine years of the effective date of the TMDL. If no effectiveness studies are conducted and no BMPs are approved by the Regional Board within eight years of the effective date of the TMDL, each general construction storm water permit holder will be subject to site-specific BMPs and monitoring requirements to demonstrate compliance with waste load allocations. **MS4 and Caltrans Storm Water Permits:** The County of Los Angeles, City of Los Angeles, Beverly Hills, Culver City, Inglewood, Santa Monica, and West Hollywood are jointly responsible for meeting the mass-based waste load allocations for the MS4 permittees. Caltrans is responsible for meeting their mass-based waste load allocations, however, they may choose to work with the MS4 permittees. The primary jurisdiction for the Ballona Creek watershed is the City of Los Angeles. Each municipality and permittee will be required to meet the waste load allocations at the designated TMDL effectiveness monitoring points. A phased implementation approach, using a combination of non-structural and structural BMPs may be used to achieve compliance with the waste load allocations. The administrative record and the fact sheets for the MS4 and Caltrans storm water permits must provide reasonable assurance that the BMPs selected will be sufficient to implement the numeric waste load allocations. We expect that reductions to be achieved by each BMP will be documented and that sufficient monitoring will be put in place to verify that the desired reductions are achieved. The permits should also provide a mechanism to adjust the required BMPs as necessary to ensure their adequate performance. The implementation schedule for the MS4 and Caltrans permittees consists of a phased approach, with compliance to be achieved in prescribed percentages of the watershed, with total compliance to be achieved within 15 years.

Element	Key Findings and Regulatory Provisions
Seasonal Variations and Critical Conditions	There is a high degree of inter- and intra-annual variability in sediments deposited at the mouth of Ballona Creek. This is a function of the storms, which are highly variable between years. Studies by the Army Corps of Engineers have shown that sediment delivery to Ballona Creek is related to the size of the storm (USACE, 2003). The TMDL is based on a long-term average deposition patterns over a 10-year period from 1991 to 2001. This time period contains a wide range of storm conditions and flows in the Ballona Creek watershed. Use of the average condition for the TMDL is appropriate because issues of sediment effects on benthic communities and potential for bioaccumulation to higher trophic levels occurs over long time periods.
Monitoring	Effective monitoring will be required to assess the condition of Ballona Creek and Estuary and to assess the on-going effectiveness of efforts by dischargers to reduce toxic pollutants loading to the Ballona Creek Estuary. Special studies may also be appropriate to provide further information about new data, new or alternative sources, and revised scientific assumptions. Below the Regional Board identifies the various goals of monitoring efforts and studies. The programs, reports, and studies will be developed in response to subsequent orders issued by the Executive Officer. **Ambient Monitoring** An ambient monitoring program is necessary to assess water quality throughout Ballona Creek and its tributaries and to assess the progress being made to remove the toxic pollutant impairments in Ballona Creek Estuary sediments. Data on background water quality for organics and sediments will help refine the numeric targets and waste load allocations and assist in the effective placement of BMPs. In addition, fish and mussel tissue data is required in Ballona Creek Estuary to confirm the fish tissue listings. Water quality samples shall be collected from Ballona Creek and Estuary monthly and analyzed for cadmium, copper, lead, silver, zinc, chlordane, dieldrin, DDT, total PCBs and total PAHs at detection limits that are at or below the minimum levels until the TMDL is reconsidered in the sixth year. The minimum levels are those published by the State Water Resources Control Board in Appendix 4 of the Policy for the Implementation of Toxic Standards for Inland Surface Water, Enclosed Bays, and Estuaries of California, March 2, 2000. Special emphasis should be placed on achieving detection limits that will allow evaluation relative to the CTR standards. If these can not be achieved with conventional techniques, then a special study should be proposed to evaluate concentrations of organics.

Element	Key Findings and Regulatory Provisions
Monitoring (continued)	Storm water monitoring conducted as part of the MS4 storm water monitoring program should continue to provide assessment of water quality during wet-weather conditions and loading estimates from the watershed to the Estuary. If analysis of chlordane, dieldrin, DDT, total PCBs or total PAHs are not currently part of the sampling programs these organics should be added. In addition, special emphasis should be placed on achieving lower detection limits for DDTs, PCBs and PAHs. The MS4 and Caltrans storm water permittees are jointly responsible for conducting bioaccumulation testing of fish and mussel tissue within the Estuary. The permittees are required to submit for approval of the Executive Officer a monitoring plan that will provide the data needed to confirm the 303(d) listing or delisting, as applicable. Representative sediment sampling locations shall be randomly selected within the Estuary and analyzed for cadmium, copper, lead, silver, zinc, chlordane, dieldrin, DDT, total PCBs and total PAHs at detection limits that are lower than the ERLs. Sediment samples shall also be analyzed for total organic carbon, grain size and sediment toxicity testing. Initial sediment monitoring should be done quarterly in the first year of the TMDL to define the baseline and semi-annually, thereafter, to evaluate effectiveness of the BMPs until the TMDL is reconsidered in the sixth year. The sediment toxicity testing shall include testing of multiple species, a minimum of three, for lethal and non-lethal endpoints. Toxicity testing may include: the 28-day and 10-day amphipod mortality test; the sea urchin fertilization testing of sediment pore water; and the bivalve embryo testing of the sediment/water interface. The chronic 28-day and shorter-term 10-day amphipod tests may be conducted in the initial year of quarterly testing and the results compared. If there is no significant difference in the tests, then the less expensive 10-day test can be used throughout the rest of the monitoring, with some periodic 28-day testing. **TMDL Effectiveness Monitoring** The water quality samples collected during wet weather as part of the MS4 storm water monitoring program shall be analyzed for total dissolved solids, settable solids and total suspended solids if not already part of the existing sampling program. Sampling shall be designed to collect sufficient volumes of settable and suspended solids to allow for analysis of cadmium, copper, lead, silver, zinc, chlordane, dieldrin, total DDT, total PCBs, total PAHs, and total organic carbon in the bulk sediment.

Element	Key Findings and Regulatory Provisions
Monitoring (continued)	Semi-annually, representative sediment sampling locations shall be randomly selected within the Estuary and analyzed for cadmium, copper, lead, silver, zinc, chlordane, dieldrin, DDT, total PCBs, and total PAHs at detection limits that are lower than the ERLs. The sediment samples shall also be analyzed for total organic carbon, grain size and sediment toxicity. The sediment toxicity testing shall include testing of multiple species, a minimum of three, for lethal and non-lethal endpoints. Toxicity testing may include: the 28-day and 10-day amphipod mortality test; the sea urchin fertilization testing of sediment pore water; and the bivalve embryo testing of the sediment/water interface. Toxicity shall be indicated by an amphipod survival rate of 70% or less in a single test. Accelerated monitoring shall be conducted to confirm toxicity at stations identified as toxic. Accelerated monitoring shall consist of six additional tests, approximately every two weeks, over a 12-week period. If the results of any two of the six accelerated tests are less than 90% survival, then the MS4 and Caltrans permittees shall conduct a Toxicity Identification Evaluation (TIE). The TIE shall include reasonable steps to identify the sources of toxicity and steps to reduce the toxicity. The Phase I TIE shall include the following treatments and corresponding blanks: baseline toxicity; particle removal by centrifugation; solid phase extraction of the centrifuged sample using C8, C18, or another media; complexation of metals using ethylenediaminetetraacetic acid (EDTA) addition to the raw sample; neutralization of oxidants/metals using sodium thiosulfate addition to the raw sample; and inhibition of organo-phosphate (OP) pesticide activation using piperonyl butoxide addition to the raw sample (crustacean toxicity tests only). Bioaccumulation monitoring of fish and mussel tissue within the Estuary shall be conducted. The permittees are required to submit for approval of the Executive Officer a monitoring plan that will provide the data needed to assess the effectiveness of the TMDL. The general industrial storm water permit shall contain a model monitoring and reporting program to evaluate BMP effectiveness. A permittee enrolled under the general industrial permit shall have the choice of conducting individual monitoring based on the model program or participating in a group monitoring effort. MS4 permittees are encouraged to take the lead in group monitoring efforts for industrial facilities within their jurisdiction because compliance with waste load allocations by these facilities will in many cases translate to reductions in contaminate loads to the MS4 system.

Element	Key Findings and Regulatory Provisions
Monitoring (continued)	**Special Studies** Special studies are recommended to refine source assessments, to provide better estimates of loading capacity, and to optimize implementation efforts. The Regional Board will re-consider the TMDL in the sixth year after the effective date in light of the findings of these studies. Special studies may include: • Evaluation and use of low detection level techniques to evaluate water quality concentrations for those contaminants where standard detection limits cannot be used to assess compliance for CTR standards or are not sufficient for estimating source loadings from tributaries and storm water. • Developing and implementing a monitoring program to collection the data necessary to apply a multiple lines of evidence approach. • Evaluation and use of sediment TIEs to evaluate causes of any recurring sediment toxicity. • Evaluate partitioning coefficients between water column and sediment to assess the contribution of water column discharges to sediment concentrations in the Estuary. • Studies to refine relationship between pollutants and suspended solids aimed at better understanding of the delivery of pollutants to the watershed. • Studies to understand transport of sediments to the estuary, including the relationship between storm flows, sediment loadings to the estuary, and sediment deposition patterns within the estuary. • Studies to evaluate effectiveness of BMPs to address pollutants and/or sediments.

1 McPherson, T.N., S.J. Burian, H.J. Turin, M.K. Stenstrom and I.H. Suffet. 2002. Comparison of Pollutant Loads in Dry and Wet Weather Runoff in a Southern California Urban Watershed. *Water Science and Technology* 45:255-261.

Table 7-14.2. Ballona Creek Estuary Toxic Pollutants TMDL: Implementation Schedule

Date	Action
Effective date of the TMDL	Regional Board permit writers shall incorporate the waste load allocations for sediment into the NPDES permits. Waste load allocations will be implemented through NPDES permit limits in accordance with the implementation schedule contained herein, at the time of permit issuance, renewal or re-opener.
Within 6 months after the effective date of the State Board adopted sediment quality objectives and implementation policy	The Regional Board will re-assess the numeric targets and waste load allocations for consistency with the State Board adopted sediment quality objectives.
5 years after effective date of the TMDL	Responsible jurisdictions and agencies shall provide to the Regional Board result of any special studies.
6 years after effective date of the TMDL	The Regional Board shall reconsider this TMDL to re-evaluate the waste load allocations and the implementation schedule.
MINOR NPDES PERMITS AND GENERAL NON-STORM WATER NPDES PERMITS	
7 years after effective date of the TMDL	The non-storm water NPDES permits shall achieve the concentration-based waste load allocations for sediment per provisions allowed for in NPDES permits.
GENERAL INDUSTRIAL STORM WATER PERMIT	
7 years after effective date of the TMDL	The general industrial storm water permits shall achieve the mass-based waste load allocations for sediment per provisions allowed for in NPDES permits. Permits shall allow an iterative BMP process including BMP effectiveness monitoring to achieve compliance with permit requirements.
GENERAL CONSTRUCTION STORM WATER PERMIT	
7 years from the effective date of the TMDL	The construction industry will submit the results of the BMP effectiveness studies to the Regional Board for consideration. In the event that no effectiveness studies are conducted and no BMPs are approved, permittees shall be subject to site-specific BMPs and monitoring to demonstrate BMP effectiveness.
8 years from the effective date of the TMDL	The Regional Board will consider results of the BMP effectiveness studies and consider approval of BMPs no later than six years from the effective date of the TMDL.
9 years from the effective date of the TMDL	All general construction storm water permittees shall implement Regional Board-approved BMPs.
MS4 AND CALTRANS STORM WATER PERMITS	
12 months after the effective date of the TMDL	In response to an order issued by the Executive Officer, the MS4 and Caltrans storm water NPDES permittees must submit a coordinated monitoring plan, to be approved by the Executive Officer, which includes both ambient monitoring and TMDL effectiveness monitoring. Once the coordinated monitoring plan is approved by the Executive Officer, ambient monitoring shall commence within 6 months.

Date	Action
5 years after effective date of TMDL (Draft Report) 5 ½ years after effective date of TMDL (Final Report)	The MS4 and Caltrans storm water NPDES permittees shall provide a written report to the Regional Board outlining how they will achieve the waste load allocations for sediment to Ballona Creek Estuary. The report shall include implementation methods, an implementation schedule, proposed milestones, and any applicable revisions to the TMDL effectiveness monitoring plan.
7 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 25% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
9 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 50% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
11 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 75% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
15 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 100% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.

7-16 Calleguas Creek Watershed Toxicity TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on July 7, 2005.

This TMDL was approved by:

The State Water Resources Control Board on September 22, 2005.
The Office of Administrative Law on December 22, 2005.
The U.S. Environmental Protection Agency on March 14, 2006.

The effective date of this TMDL is: March 24, 2006.

Table 7-16.1. Calleguas Creek Watershed Toxicity TMDL: Elements

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Problem Statement	Discharge of wastes containing chlorpyrifos, diazinon, other pesticides and/or other toxicants to Calleguas Creek, its tributaries and Mugu Lagoon cause exceedances of water quality objectives for toxicity established in the Basin Plan. Elevated levels of chlorpyrifos have been found in fish tissue samples collected from a segment of Calleguas Creek. Chlorpyrifos and diazinon are organophosphate pesticides used in both agricultural and urban settings. Excessive chlorpyrifos and diazinon can cause aquatic life toxicity in inland surface and estuarine waters such as Calleguas Creek and Mugu Lagoon. The California 2002 303(d) list of impaired waterbodies includes listings for “water column toxicity,” “sediment toxicity,” chlorpyrifos in fish tissue,” and “organophosphate pesticides in water” for various reaches of Calleguas Creek, its tributaries and Mugu Lagoon.
Numeric Targets	A water column toxicity target of 1.0 toxicity unit – chronic (1.0 TUc) is established to address toxicity in reaches where the toxicant has not been identified through a Toxicity Identification Evaluation (TIE) (unknown toxicity). TU_C = Toxicity Unit Chronic = 100/NOEC (no observable effects concentration) A sediment toxicity target was defined in the technical report for reaches where the sediment toxicant has not been identified through a TIE. The target is based on the definition of a toxic sediment sample as defined by the September 2004 Water Quality Control Policy For Developing California’s Clean Water Act Section 303(d) List (SWRCB). Chlorpyrifos Numeric Targets (ug/L) | | Chronic (4 day average) | Acute (1 hour average) | | Freshwater | 0.014 | 0.025 | | Saltwater (Mugu Lagoon) | 0.009 | 0.02 |

<table>
<tr><th>TMDL Element</th><th>Calleguas Creek Watershed Toxicity TMDL</th></tr>
<tr><td>Numeric Targets (continued)</td><td>Diazinon Numeric Targets (ug/L)

<table>
<tr><th></th><th>Chronic
(4 day average)</th><th>Acute
(1 hour average)</th></tr>
<tr><td>Freshwater</td><td>0.10</td><td>0.10</td></tr>
<tr><td>Saltwater (Mugu Lagoon)</td><td>0.40</td><td>0.82</td></tr>
</table>

Additionally, the diazinon criteria selected as numeric targets are currently under review by the USEPA. If water quality objectives become available, the Regional Board may reconsider this TMDL and revise the water toxicity numeric target.</td></tr>
<tr><td>Source Analysis</td><td>Source analysis determined that agricultural and urban uses are the largest sources of chlorpyrifos and diazinon in the watershed. Urban use of diazinon and chlorpyrifos is unlikely to be a long-term source to the Calleguas Creek Watershed (CCW) as both of these pesticides have been banned for sale for non-agricultural uses on December 31, 2005 by federal regulation. As a result, the proportion of the loading from urban sources will likely decrease after December 2005.

Chlorpyrifos – Sources by Use

<table>
<tr><th></th><th>Dry Weather</th><th>Wet Weather</th></tr>
<tr><td>Agriculture</td><td>66%</td><td>80%</td></tr>
<tr><td>Urban</td><td>23%</td><td>20%</td></tr>
<tr><td>POTW</td><td>11%</td><td><1%</td></tr>
<tr><td>Other</td><td><1%</td><td><1%</td></tr>
</table>

Diazinon – Sources by Use

<table>
<tr><th></th><th>Dry Weather</th><th>Wet Weather</th></tr>
<tr><td>Agriculture</td><td>30%</td><td>1%</td></tr>
<tr><td>Urban</td><td>13%</td><td>62%</td></tr>
<tr><td>POTW</td><td>57%</td><td>37%</td></tr>
<tr><td>Other</td><td><1%</td><td><1%</td></tr>
</table>
</td></tr>
</table>

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Linkage Analysis	Water quality modeling established the linkage of sources of chlorpyrifos and diazinon in the CCW to observed water quality data. The linkage analysis qualitatively describes the connection between water column concentrations and sediment and fish tissue concentrations. The qualitative analysis demonstrates that the water column analysis conducted by laboratories implicitly includes sediment associated diazinon and chlorpyrifos loads transported to receiving waters as almost all water quality data do not differentiate between dissolved and particulate fractions. The linkage analysis assumes a reduction in water column concentrations will result in a reduction in fish tissue as chlorpyrifos in freshwater fish tissue rapidly depurate within several days of removal from exposure. Additionally, as chlorpyrifos preferentially binds to sediment the linkage analysis suggests that sediment concentrations of chlorpyrifos will need to decrease to achieve water quality numeric targets. The modeling approach reflects the uncertainty in current conditions and the potential impacts of watershed planning actions that may affect those conditions. A detailed description of the model is provided in an Attachment to the TMDL Technical Report.
Wasteload Allocations (WLA)	**<u>Major point sources:</u>** A wasteload of 1.0 TU_c is allocated to the major point sources (POTWs) discharging to the Calleguas Creek Watershed. Additionally, the following wasteloads for chlorpyrifos and diazinon are established and based on the numeric target for POTWs. The concentration based wasteload allocations for Camarillo and Camrosa WRPs for chlopyrifos is reduced by a 5% margin of safety from the numeric targets. This margin of safety is applied to the Calleguas Creek and Revelon subwatersheds based on uncertainty in the linkages between the water column criteria and fish tissue and sediment concentrations. **<u>Chlorpyrifos WLAs, ug/L</u>** <table><tr><td>POTW</td><td>Interim WLA</td><td colspan="2">Final WLA</td></tr><tr><td></td><td>Chronic (4 day)</td><td>Acute (1hour)</td><td>Chronic (4 day)</td></tr><tr><td>Hill Canyon WWTP</td><td>0.030</td><td>0.025</td><td>0.014</td></tr><tr><td>Simi Valley WQCP</td><td>0.030</td><td>0.025</td><td>0.014</td></tr><tr><td>Ventura County (Moorpark) WTP</td><td>0.030</td><td>0.025</td><td>0.014</td></tr><tr><td>Camarillo WRP</td><td>0.030</td><td>0.024</td><td>0.0133</td></tr><tr><td>Camrosa WRP</td><td>0.030</td><td>0.024</td><td>0.0133</td></tr></table>

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Wasteload Allocations (WLA) (continued)	**<u>Diazinon WLAs, ug/L</u>** | | Interim Acute (1 hour) | Interim Chronic (4 day) | Final WLA (Acute or Chronic) | POTW Hill Canyon WWTP 0.567 0.312 0.10 Simi Valley WQCP 0.567 0.312 0.10 Ventura County (Morepark) WTP 0.567 0.312 0.10 Camarillo WRP 0.567 0.312 0.10 Camrosa WRP 0.567 0.312 0.10 A wasteload of 1.0 TU_c is allocated to Urban Stormwater Co-Permittees (MS4) discharges to the Calleguas Creek Watershed. Additionally, the following wasteloads for chlorpyrifos and diazinon are established for MS4 discharges. **<u>Chlorpyrifos WLAs, ug/L</u>** Interim WLA (4 day): 0.45 — Final WLA (4 day): 0.014 **<u>Diazinon WLAs, ug/L</u>** Interim WLA Acute (1 hour): 1.73 — Interim WLA Chronic (4 day): 0.556 — Final WLA Acute and Chronic: 0.10 **<u>Minor point sources:</u>** Minor sources include NPDES permittees other than POTWs, and Urban Stormwater Co-Permittees (MS4s) discharging to the Calleguas Creek Watershed. A wasteload of 1.0 TU_c is allocated to the minor point sources discharging to the Calleguas Creek Watershed. Additionally, the following wasteloads for chlorpyrifos and diazinon are established.

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Wasteload Allocations (WLA) (continued)	**<u>Chlorpyrifos WLAs, ug/L</u>** Interim WLA: Chronic (4 day) 0.45 Final WLA: Acute (1hour) 0.025; Chronic (4 day) 0.014 **<u>Diazinon WLAs, ug/L</u>** Interim WLA Acute (1 hour): 1.73 Interim WLA Chronic (4 day): 0.556 Final WLA Acute and Chronic: 0.10
Load Allocations	**<u>Non Point Source Dischargers:</u>** A load of 1.0 TU_c is allocated to nonpoint sources discharging to the Calleguas Creek Watershed. Additionally, the following loads for chlorpyrifos and diazinon are established and based on the numeric targets. These loads apply to dischargers in accordance with the subwatershed into which the dischargers discharge. The concentration based load allocations for the Calleguas Creek and Revelon subwatersheds for chlopyrifos is reduced by a 5% margin of safety from the numeric targets. This margin of safety is based on uncertainty in the linkages between the water column criteria and fish tissue and sediment concentrations.

<u>Chlorpyrifos Load Allocations, ug/L</u>

Subwatershed	Interim Acute (1-hour)	Interim Chronic (4-day)	Final Acute (1-hour)	Final Chronic (4-day)
Arroyo Simi	2.57	0.810	0.025	0.014
Las Posas	2.57	0.810	0.025	0.014
Conejo	2.57	0.810	0.025	0.014
Calleguas	2.57	0.810	0.024	0.0133
Revolon	2.57	0.810	0.024	0.0133
Mugu Lagoon	2.57	0.810	0.025	0.014

<u>Diazinon Load Allocations, ug/L</u>

Interim LA Acute (1 hour)	Interim LA Chronic (4 day)	Final LA Acute and Chronic
0.278	0.138	0.10

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Margin of Safety	In addition to the implicit margin of safety achieved by conservative assumptions and by using a concentration based TMDL, an explicit margin of safety of 5% has been added to the targets for chlorpyrifos in the Calleguas and Revolon subwatersheds and to the Camarillo and Camrosa WRPs to address uncertainty in the linkages between the water column criteria and fish tissue and sediment concentrations. The Calleguas and Revolon subwatersheds include those reaches listed for sediment toxicity and chlorpyrifos in fish tissue.
Future Growth	Ventura County accounts for slightly more than 2% of the state's residents with a population of 753,197 (US Census Bureau, 2000). GIS analysis of the 2000 census data yields a population estimate of 334,000 for the CCW, which equals about 44% of the county population. According to the Southern California Association of Governments (SCAG), growth in Ventura County averaged about 51% per decade from 1900-2000; with growth exceeding 70% in the 1920s, 1950s, and 1960s. The phase-out of chlorpyrifos and diazinon is expected to reduce loads from urban and POTWs significantly by 2007. Use of diazinon in agriculture has declined considerably between 1998 and 2003. Conversely, chlorpyrifos use in agriculture has remained relatively stable over the same period. The phase out of chlorpyrifos and diazinon as well as population growth will cause an increase in the use of replacement pesticides (e.g. pyrethroids) in the urban environment and may have an impact on water and/or sediment toxicity. Additionally, population growth may affect an increase in the levels of chlorpyrifos and diazinon loading in the CCW from imported products which contain residues of these pesticides.
Critical Conditions	The critical condition in this TMDL is defined as the flowrate at which the model calculated the greatest in-stream diazinon or chlorpyrifos concentration in comparison to the appropriate criterion. The critical condition for chlorpyrifos was in dry weather based on a chronic numeric target; the critical condition for diazinon was in wet weather based on an acute numeric target except in Mugu Lagoon where it was in dry weather based on the chronic numeric target.
Implementation Plan	WLAs established for the major points sources, including POTWs in the CCW will be implemented through NPDES permit effluent limits. The final WLAs will be included in NPDES permits in accordance with the compliance schedules provided. The Regional Board may revise these WLAs based on additional information as described in the Special Studies and Monitoring Section of the Technical Report. The toxicity WLAs will be implemented in accordance with US EPA, State Board and Regional Board resolutions, guidance and policy at the time of permit issuance or renewal. Currently, these WLAs would be implemented as a trigger for initiation of the TRE/TIE process as outlined in USEPA's "Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System Program" (2000) and current NPDES permits held by dischargers to the CCW.

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Implementation Plan (continued)	Stormwater WLAs will be incorporated into the NPDES permit as receiving water limits measured in-stream at the base of each subwatershed and will be achieved through the implementation of BMPs as outlined below. Evaluation of progress of the TMDL will be determined through the measurement of in-stream water quality and sediment at the base of each of the CCW subwatersheds. The Regional Board may revise these WLAs based on additional information developed through special studies and/or monitoring conducted as part of the TMDL. As shown in Table 7-16.2 the following implementation actions will be taken by the MS4s discharging to the CCW and POTWs located in the CCW: • Plan, develop, and implement an urban pesticides public education program; • Plan, develop, and implement urban pesticide education and chlorpyrifos and diazinon collection program; • Study diazinon and chlorpyrifos replacement pesticides for use in the urban environment; and, • Conduct environmental monitoring as outlined in the Monitoring Plan and NPDES Permits. LAs for chlorpyrifos and diazinon will be implemented through the State's Nonpoint Source Pollution Control Program (NPSPCP), nonpoint source pollution (i.e. Load Allocations). The LARWQCB is currently developing a Conditional Waiver for Irrigated Lands. Once adopted, the Conditional Waiver Program will implement allocations and attain numeric targets of this TMDL. Compliance with LAs will be measured at the monitoring sites approved by the Executive Officer of the Regional Board through the monitoring program developed as part of the Conditional Waiver, or through a monitoring program that is required by this TMDL. The toxicity LAs will be implemented in accordance with US EPA, State Board and Regional Board resolutions, guidance and policy at the time of permit or waiver issuance or renewal. The following implementation actions will be taken by agriculture dischargers located in the CCW: • Enroll for coverage under a waiver of waste discharge requirements for irrigated lands; • Implement monitoring required by this TMDL and the Conditional Waiver program; • Complete studies to determine the most appropriate BMPs given crop type, pesticide, site specific conditions, as well as the critical condition defined in the development of the LAs; and, • Implement appropriate BMPs and monitor to evaluate effectiveness on in-stream water and sediment quality.

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Implementation Plan (continued)	The Regional Board may revise this TMDL based on monitoring data and special studies of this TMDL. If the Regional Board revises NPDES permits or the Basin Plan to use other methods of evaluating toxicity or if other information supporting other methods becomes available, the Regional Board may reconsider this TMDL and revise the water toxicity numeric target. Additionally, the development of sediment quality guidelines or criteria and other water quality criteria revisions may call for the reevaluation of the TMDL. The Implementation Plan includes this provision for reevaluating the TMDL to consider sediment quality guidelines or criteria and revised water quality objectives and the results of implementation studies, if appropriate.

Table 7-16.2. Overall Implementation Schedule for Calleguas Creek Watershed Toxicity TMDL

Implementation Action		Responsible Party	Date
1	Interim chlorpyrifos and diazinon waste-load allocations apply.[1]	POTW permittees and MS4 Copermittees	Effective date[2]
2	Interim chlorpyrifos and diazinon load allocations apply.[1]	Agricultural Dischargers	Effective date[2]
3	Finalize and submit workplan for integrated Calleguas Creek Watershed Monitoring Program for approval by the Regional Board Executive Officer. [3]	POTW permittees, MS4 Copermittees, and Agricultural Dischargers	6 months after effective date of amendment[2]
4	Initiate Calleguas Creek Watershed Toxicity TMDL Monitoring Program developed under Task 3 workplan.	POTW permittees, MS4 Copermittees, and Agricultural Dischargers	6 months after E.O. approval of Monitoring Program (task 3) workplan.
5	Conduct Special Study #1-Investigate the pesticides that will replace diazinon and chlorpyrifos in the urban environment, their potential impact on receiving waters, and potential control measures.	POTW permittees and MS4 Copermittees	2 years after effective date[2]
6	Conduct Special Study #2 – Consider results of monitoring of sediment concentrations by source/land use type through special study required in Special Study #1 of the OC Pesticides, PCBs and siltation TMDL Implementation Plan. If the special study is not completed through the OC Pesticides, PCBs and Siltation TMDL no consideration is necessary[3]	Agricultural Dischargers[3] and MS4 Copermittees	6 months after completion of CCW OC Pesticides, PCBs and Siltation TMDL sediment concentrations special study.[2]
7	Develop and implement collection program for diazinon and chlorpyrifos and an educational program. Collection and education could occur through existing programs such as household hazardous waste collection events	POTW permittees and MS4 Copermittees	3 years after effective date[2]
8	Develop an Agricultural Water Quality Management Plan in conjunction with the Conditional Waiver for Irrigated Lands, or (if the Conditional Waiver is not adopted in a timely manner) develop an Agricultural Water Quality Management Plan as part of the Calleguas Creek WMP.	Agricultural Dischargers[3]	3 years after effective date[2]
9	Identify the most appropriate BMPs given crop type, pesticide, site specific conditions, as well as the critical condition defined in the development of the LAs.	Agricultural Dischargers[3]	3 years after effective date[2]
10	Implement educational program on BMPs identified in the Agricultural Water Quality Management Plan.	Agricultural Dischargers	1 year after E.O. approval of Plan (Task 7)[2]
11	Conduct Special Study #3-Calculation of sediment transport rates in CCW. Consider findings of transport rates developed through Special Study #1 of the OC Pesticides, PCBs and siltation TMDL Implementation Plan. If the special study is not completed through the OCs TMDL, no consideration is necessary.[3]	Agricultural Dischargers[3] and MS4 Copermittees	6 months after completion of CCW OC Pesticides, PCBa and Siltation TMDL sediment transport special study.[2]
12	Begin implementation of BMPs.	Agricultural Dischargers[3]	1 year after E.O. approval of Plan (Task 8)[2]
13	Evaluate effectiveness of BMPs.	Agricultural Dischargers[3]	3 years after E.O. approval of Plan (Task 8)[2]

Implementation Action		Responsible Party	Date
14	Reevaluate the TMDLs, interim or final WLAs and LAs, and implementation schedule based on monitoring data and on the results of Implementation Actions 1-13 and if sediment guidelines are promulgated, or water quality criteria are revised, and/or if targets are achieved without attainment of WLAs or LAs.	Stakeholders and Regional Board	2 years after the submittal of information necessary to reevaluate the TMDL
15	Achievement of Final WLAs	POTW permittees and MS4 Copermittees	2 years after the effective date of the TMDL[2]
16	Achievement of Final LAs	Agricultural Dischargers	10 years after the effective date of the TMDL[2]

1 Interim WLAs and LAs are effective immediately upon TMDL adoption. WLAs will be placed in POTW NPDES permits as effluent limits. WLAs will be placed in stormwater NPDES permits as in-stream limits. LAs will be implemented using applicable regulatory mechanisms.

2 Effective date of this TMDL.

3 The Regional Board regulatory programs addressing all discharges in effect at the time an implementation task is due may contain requirements substantially similar to the requirements of an implementation task. If such a requirement is in place in another regulatory program including other TMDLs, the Executive Officer may determine that such other requirements satisfy the requirements of an implementation task of the TMDL and thereby coordinate this TMDL implementation plan with other regulatory programs.

7-17 Calleguas Creek Organochlorine Pesticides, Polychlorinated Biphenyls, and Siltation TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on July 7, 2005.

This TMDL was approved by:

The State Water Resources Control Board on September 22, 2005.
The Office of Administrative Law on January 20, 2006.
The U.S. Environmental Protection Agency on March 14, 2006.

The effective date of this TMDL is: March 24, 2006.

The following table includes the elements of the TMDL:

Table 7-17.1. Calleguas Creek Watershed OC Pesticides, PCBs, and Siltation TMDL: Elements

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Problem Statement	Eleven of fourteen reaches in the Calleguas Creek Watershed (CCW) were identified on the 2002 303(d) list of water-quality limited segments as impaired due to elevated levels of organochlorine (OC) pesticides and/or polychlorinated biphenyls (PCBs) in water, sediment, and/or fish tissue. Additionally, Mugu Lagoon was listed as impaired for sedimentation/siltation. OC pesticides and PCBs can bioaccumulate in fish tissue and cause toxicity to aquatic life in estuarine and inland waters. Siltation may transport OC Pesticides and PCBs to surface waters and impair aquatic life and wildlife habitats.
Numeric Targets	The following tables provide the targets for water, fish tissue, and sediment for this TMDL. Water column targets were derived from the California Toxic Rule (CTR) water quality criteria for protection of aquatic life. Chronic criteria (Criteria Continuous Concentration, or CCC) were applied unless otherwise noted in the table below:

Water Quality Targets (ng/L)[1]

Constituent	Freshwater	Marine[2]
Aldrin	300.0	130.0
Chlordane	4.3	4.0
Dacthal	3,500,000.0	(a)[3]
4,4'-DDD[4]	(a)[3]	(a)[3]
4,4'-DDE[5]	(a)[3]	(a)[3]
4,4'-DDT[6]	1.0	1.0
Dieldrin	56.0	1.9
Endosulfan I	56.0	8.7
Endosulfan II	56.0	8.7
Endrin	36.0	2.3
HCH (alpha-BHC[7])	(a)[3]	(a)[3]
HCH (beta-BHC)	(a)[3]	(a)[3]
HCH (delta-BHC)	(a)[3]	(a)[3]
HCH (gamma BHC)	950.0	160.0
Heptachlor	3.8	3.6
Heptachlor Epoxide	3.8	3.6
PCBs	140.0[8]	30.0
Toxaphene	0.2	0.2

1 ng/L: nanogram per litter
2 Marine numeric targets applied to Mugu Lagoon
3 Numeric targets have not been established for these constituents
4 DDD: Dichlorodiphenyldichloroethane
5 DDE: Dichlorodiphenyldichloroethylene
6 DDT: Dichlorodiphenyltrichloroethane
7 BHC: Hexachlorocyclohexane
8 Applies to sum of all congener or isomer or homolog or Aroclor analyses

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Numeric Targets (continued)	Fish tissue targets are derived from CTR human health criteria for consumption of organisms.

Fish Tissue Targets (ng/Kg)

Constituent	
Aldrin	50.0
Chlordane	830.0
Dacthal	(a)[9]
4,4'-DDD	45,000.0
4,4'-DDE	32,000.0
4,4'-DDT	32,000.0
Dieldrin	650.0
Endosulfan I	65,000,000.0
Endosulfan II	65,000,000.0
Endrin	3,200,000.0
HCH (alpha-BHC)	1,700.00
HCH (beta-BHC)	6,000.0
HCH (delta-BHC)	(a)[9]
HCH (gamma BHC)	8,200.
Heptachlor	2,400.0
Heptachlor Epoxide	1,200.0
PCBs	5,300.0[10]
Toxaphene	9,800.0

Sediment targets were derived from sediment quality guidelines contained in National Oceanographic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQuiRT, Buchman, 1999).

Sediment Quality Targets (ng/dry Kg)

Constituent	Freshwater, TEL[11]	Marine[12], ERL[13]
Aldrin	(a)[9]	(a)[9]
Chlordane	4,500.0	500.0
Dacthal	(a)[9]	(a)[9]
4,4'-DDD	3,500.0	2,000.0
4,4'-DDE	1,400.0	2,200.0
4,4'-DDT	(a)[9]	1,000.0
Dieldrin	2,900.0	20.0
Endosulfan I	(a)[9]	(a)[9]
Endosulfan II	(a)[9]	(a)[9]
Endrin	2,700.0	(a)[9]
HCH (alpha-BHC)	(a)[9]	(a)[9]
HCH (beta-BHC)	(a)[9]	(a)[9]
HCH (delta-BHC)	(a)[9]	(a)[9]
HCH (gamma BHC)	940.0	(a)[9]
Heptachlor	(a)[9]	(a)[9]
Heptachlor Epoxide	600.0	(a)[9]
PCBs	34,000.0[10]	23,000.0
Toxaphene	(a)[9]	(a)[9]

9 Numeric targets have not been established for these constituents
10 Applies to sum of all congener or isomer or homolog or Aroclor analyses
11 TEL = Threshold Effects Level
12 Marine numeric targets applied to Mugu Lagoon
13 ERL = Effects Range-Low.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
	Siltation Targets This TMDL includes two numeric targets for siltation reduction and maintenance of existing habitat in Mugu Lagoon which are listed below: • Siltation reduction Annual average reduction in the import of silt of 5,200 tons/year, which will be measured at the US Naval Base total suspended sediment gauge at the entrance to Mugu Lagoon. • Maintenance of existing habitat in Mugu Lagoon Preservation of the existing 1400 acres of aquatic habitat in Mugu Lagoon.
Source Analysis	Monitoring data from major NPDES discharges and land use runoff were analyzed to estimate the magnitude of OC pesticides and PCBs loads to Calleguas Creek, its tributaries and Mugu Lagoon. The largest source of OC pesticides in the listed waters is agricultural runoff. Most PCB residues are due to past use of PCBs as coolants and lubricants in transformers, capacitors, and other electrical equipment. Atmospheric deposition is also a potential source of PCBs. Urban runoff and POTWs are minor sources of OC pesticides and PCBs. Data analysis suggests that groundwater, atmospheric deposition, and imported water are not significant sources of OC pesticides, PCBs, or sediment. Further evaluation of these sources is set forth in the Implementation Plan.
Linkage Analysis	The linkage analysis is based on a conceptual model for the fate, transformation, and uptake of OC pesticides and PCBs and a mass-balance model that connects the sources of OC pesticides and PCBs to their fate and transport in Calleguas Creek, its tributaries, and Mugu Lagoon. The linkage analysis indicates: 1) OC pesticides and PCBs concentrations in tissue are proportional to OC pesticides and PCBs concentrations in sediments; 2) OC pesticides and PCBs concentrations in water are a function of OC pesticides and PCBs concentrations in sediment; and 3) OC pesticides and PCBs concentrations in sediment are a function of OC pesticides and PCBs loading and sediment transport. Because sediments store, convey and serve as a source of OC pesticides and PCBs, a reduction of OC pesticides and PCBs concentrations in sediment will result in a reduction of OC pesticides and PCBs concentration in the water column and fish tissue. In this linkage analysis, DDE is used as a representative constituent, because DDE is consistently detected in monitoring and exceeds numeric targets in water, sediment, and tissue samples. Also, other OC Pesticides and PCBs possess similar physical and chemical properties to DDE.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Wasteload Allocations	**1. Interim and Final WLAs* for Pollutants in Effluent for POTWs.** The interim wasteload allocations for POTWs will be re-considered by the Regional Board on a 5-year basis. This re-consideration will be based on sufficient data to calculate Interim Wasteload Allocations in accordance with SIP procedures. **a) Interim WLAs (ng/L)**

Constituent	POTW				
	Hill Canyon	Simi Valley	Moorpark	Camarillo	Camrosa
	Daily	Daily	Daily	Daily	Daily
Chlordane	1.2	100.0	100.0	100.0	100.0
4,4-DDD	20.0	50.0	50.0	6.0	50.0
4,4- DDE	260.0	1.2	1.2	188.0	50.0
4,4-DDT	10.0	10.0	10.0	10.0	10.0
Dieldrin	10.0	10.0	10.0	10.0	10.0
PCBs	500.0	500.0	500.0	31.0	500.0
Toxaphene	500.0	500.0	500.0	500.0	500.0

* WLAs shall be applied to POTWs'effluent

b) Final WLAs (ng/L)

Constituent	POTW									
	Hill Canyon		Simi Valley		Moorpark		Camarillo		Camrosa	
	Daily	Monthly	Daily	Monthly	Daily	Monthly	Daily	Monthly	Daily	Monthly
Chlordane	1.2	0.59	1.2	0.59	1.2	0.59	1.2	0.59	1.2	0.59
4,4-DDD	1.7	0.84	1.7	0.84	1.7	0.84	1.7	0.84	1.7	0.84
4,4- DDE	1.2	0.59	1.2	0.59	1.2	0.59	1.2	0.59	1.2	0.59
4,4-DDT	1.2	0.59	1.2	0.59	1.2	0.59	1.2	0.59	1.2	0.59
Dieldrin	0.28	0.14	0.28	0.14	0.28	0.14	0.28	0.14	0.28	0.14
PCBs	0.34	0.17	0.34	0.17	0.34	0.17	0.34	0.17	0.34	0.17
Toxaphene	0.33	0.16	0.33	0.16	0.33	0.16	0.33	0.16	0.33	0.16

The final WLAs will be included in NPDES permits in accordance with schedule in the implementation plan. The Regional Board may revise final WLAs prior to the dates they are placed into permits and/or prior to the dates of final WLA achievement based on special studies and monitoring of this TMDL.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Wasteload Allocations (continued)	**2. Interim and Final WLAs for Pollutants in Sediment for Stormwater Permittees**

a) Interim WLAs (ng/g)

Constituent	Subwatershed					
	Mugu Lagoon[1]	Calleguas Creek	Revolon Slough	Arroyo Las Posas	Arroyo Simi	Conejo Creek
Chlordane	25.0	17.0	48.0	3.3	3.3	3.4
4,4-DDD	69.0	66.0	400.0	290.0	14.0	5.3
4,4- DDE	300.0	470.0	1,600.0	950.0	170.0	20.0
4,4-DDT	39.0	110.0	690.0	670.0	25.0	2.0
Dieldrin	19.0	3.0	5.7	1.1	1.1	3.0
PCBs	180.0	3,800.0	7,600.0	25,700.0	25,700.0	3,800.0
Toxaphene	22,900.0	260.0	790.0	230.0	230.0	260.0

Compliance with sediment based WLAs is measured as an in-stream annual average at the base of each subwatershed where the discharges are located.

b) Final WLAs (ng/g)

Constituent	Subwatershed					
	Mugu Lagoon[1]	Calleguas Creek	Revolon Slough	Arroyo Las Posas	Arroyo Simi	Conejo Creek
Chlordane	3.3	3.3	0.9	3.3	3.3	3.3
4,4-DDD	2.0	2.0	2.0	2.0	2.0	2.0
4,4- DDE	2.2	1.4	1.4	1.4	1.4	1.4
4,4-DDT	0.3	0.3	0.3	0.3	0.3	0.3
Dieldrin	4.3	0.2	0.1	0.2	0.2	0.2
PCBs	180.0	120.0	130.0	120.0	120.0	120.0
Toxaphene	360.0	0.6	1.0	0.6	0.6	0.6

[1] The Mugu Lagoon subwatershed includes Duck Pond/Agricultural Drain/Mugu/Oxnard Drain #2.

Compliance with sediment based WLAs is measured as an in-stream annual average at the base of each subwatershed where the discharges are located.

3. Final WLAs for Pollutants in Water Column for Minor Point Sources

WLAs for pollutants in water column are allocated below to minor point sources enrolled under NPDES permits or WDRs, which discharge to Calleguas Creek.

Constituent	Daily Maximum (ng/L)	Monthly Average (ng/L)
Chlordane	1.2	0.59
4,4-DDD	1.7	0.84
4,4- DDE	1.2	0.59
4,4-DDT	1.2	0.59
Dieldrin	0.28	0.14
PCBs	0.34	0.17
Toxaphene	0.33	0.16

4. Siltation WLA for MS4

MS4 dischargers will receive an allocation of 2,496-tons/yr. reduction in sediment yield to Mugu Lagoon. The baseline from which the load reduction will be evaluated will be determined by a special study of this TMDL. The load allocation will apply after the baseline is established, as described in the Implementation Plan.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL

Load Allocations

Compliance with sediment based LAs listed below is measured as an in-stream annual average at the base of each subwatershed.

1. Interim and Final Load Allocations

a) Interim Sediment LAs (ng/g)

Constituent	Subwatershed					
	Mugu Lagoon[1]	Calleguas Creek	Revolon Slough	Arroyo Las Posas	Arroyo Simi	Conejo Creek
Chlordane	25.0	17.0	48.0	3.3	3.3	3.4
4,4-DDD	69.0	66.0	400.0	290.0	14.0	5.3
4,4- DDE	300.0	470.0	1,600.0	950.0	170.0	20.0
4,4-DDT	39.0	110.0	690.0	670.0	25.0	2.0
Dieldrin	19.0	3.0	5.7	1.1	1.1	3.0
PCBs	180.0	3,800.0	7,600.0	25,700.0	25,700.0	3,800.0
Toxaphene	22900.0	260.0	790.0	230.0	230.0	260.0

[1] The Mugu Lagoon subwatershed includes Duck Pond/Agricultural Drain/Mugu/Oxnard Drain #2.

b) Final Sediment LAs (ng/g)

Constituent	Subwatershed					
	Mugu Lagoon[1]	Calleguas Creek	Revolon Slough	Arroyo Las Posas	Arroyo Simi	Conejo Creek
Chlordane	3.3	3.3	0.9	3.3	3.3	3.3
4,4-DDD	2.0	2.0	2.0	2.0	2.0	2.0
4,4- DDE	2.2	1.4	1.4	1.4	1.4	1.4
4,4-DDT	0.3	0.3	0.3	0.3	0.3	0.3
Dieldrin	4.3	0.2	0.1	0.2	0.2	0.2
PCBs	180.0	120.0	130.0	120.0	120.0	120.0
Toxaphene	360.0	0.6	1.0	0.6	0.6	0.6

[1] The Mugu Lagoon subwatershed includes Duck Pond/Agricultural Drain/Mugu/Oxnard Drain #2.

2. Siltation LAs

Agricultural dischargers will receive an allocation of 2,704 tons/yr. Reduction in sediment yield to Mugu Lagoon. The baseline from which the load reduction will be evaluated will be determined by a special study of this TMDL. The load allocation will apply after the baseline is established, as described in the Implementation Plan.

Margin of Safety

This TMDL relies on an implicit margin of safety, by incorporating conservative assumptions throughout its development, including:

- Basing percent reductions on the historical data set of water and fish tissue concentrations, which does not reflect the effects of attenuation the over the past ten years.
- Determining the percent reduction in sediment, by basing it on the greater percent reduction of either water or fish tissue concentrations based on available data.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Margin of Safety (continued)	▪ Reducing the allowable concentration for upstream subwatersheds, to ensure protection of those subwatersheds downstream from upstream inputs. ▪ Choosing Threshold Effects Levels (TELs) and Effects Range Lows (ERLs) as numeric targets for sediment, which are the most protective applicable sediment guidelines. ▪ Selecting the more stringent of the allowable concentration (as calculated by percent reduction methodology) or the numeric target for sediment (TEL or ERL), when available, as the WLA and LA for all reaches with 303(d) listings for sediment.
Future Growth	Ventura County accounts for slightly more than 2% of the state's residents with a population of 753,197 (US Census Bureau, 2000). GIS analysis of the 2000 census data yields a population estimate of 334,000 for the CCW, which equals about 44% of the county population. According to the Southern California Association of Governments (SCAG), growth in Ventura County averaged about 51% per decade from 1900-2000; with growth exceeding 70% in the 1920s, 1950s, and 1960s. Significant population growth is expected to occur within and near present city limits until at least 2020. Since most of the listed OCs and PCBs in the CCW are banned, this growth is not expected to increase current loads. Urban application of those OC pesticides which are still legal (dacthal and endosulfan) may increase, but overall use may decrease because urban expansion tends to reduce total acreage of agricultural land. Population growth may result in greater OC loading to POTW influent from washing food products containing OC residues. This loading may be proportional to the increase in population, if per capita domestic water use and pesticide load per household remain constant. Increased flow from POTWs should not result in impairment of the CCW as long as effluent concentration standards are met for each POTW. As urban development occurs, construction activities may have a range of effects on OC loading to the CCW. Exposure of previously vegetated or deeply buried soil might lead to increased rates of transportation and volatilization. Conversely, urbanization of open space and/or agriculture areas may cover OC pesticides bound to sediments. Future growth in the CCW may result in increased groundwater concentrations of currently used OC pesticides. This is a potential concern for dacthal, which is still used and has been found in groundwater (although current levels of dacthal are significantly lower than all available targets). The effects of future growth upon PCB loads are unknown, but not likely to prove significant, since atmospheric deposition and accidental spills are the primary loading pathways. Any increase in OCs due to population growth may be offset by decreased inputs from banned OCs, as their presence attenuates due to fate and transport processes.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Critical Conditions	The linkage analysis found correlation between concentrations of OC pesticides and PCBs in water and total suspended solids (TSS), and a potential correlation between OC pesticides and PCBs concentrations in water and seasonality (wet vs. dry season). A similar correlation between sediment loading and wet weather is also noted. OC pesticides and PCB pollutants are of potential concern in the Calleguas Creek Watershed due to possible long-term loading and food chain bioaccumulation effects. There is no evidence of short-term effects. However, pollutant loads and transport within the watershed may vary under different flow and runoff conditions. Therefore the TMDLs consider seasonal variations in loads and flows but are established in a manner which accounts for the longer time horizon in which ecological effects may occur. Wet weather events, which may occur at any time of the year, produce extensive sediment redistribution and transport downstream. This would be considered the critical condition for loading. However, the effects of organochlorine compounds are manifested over long time periods in response to bioaccumulation in the food chain. Therefore, short-term loading variations (within the time scale of wet and dry seasons each year) are not likely to cause significant variations in beneficial use effects. Therefore, although seasonal variations in loads and flows were considered, the TMDL was established in a manner which accounts for the longer time horizon in which ecological effects may occur
Implementation Plan	The final WLAs will be included in NPDES permits in accordance with the compliance schedules provided in Table 7-17.2. The Regional Board may revise these WLAs based on additional information developed through Special Studies and/or Monitoring of this TMDL. WLAs established for the five major POTWs in this TMDL will be implemented through NPDES permit limits. The proposed permit limits will be applied as end-of-pipe concentration-based effluent limits for POTWs. Compliance will be determined through monitoring of final effluent discharge as defined in the NPDES permit. The implementation plan for POTWs focuses on implementation of source control activities. Consideration of annual averaging of compliance data will be evaluated at the time of permit renewal based on available information, Regional Board policies, and US EPA approval.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Implementation Plan (continued)	In accordance with current practice, a group concentration-based WLA has been developed for MS4s, including the Caltrans MS4. The grouped allocation will apply to all NPDES-regulated municipal stormwater discharges in the CCW. Other NPDES-regulated stormwater permittees will be assigned a concentration-based WLA consistent with the interim and final WLAs set forth above. Stormwater WLAs will be incorporated into the NPDES permit as receiving water limits measured at the downstream points of each subwatershed and are expected to be achieved through the implementation of BMPs as outlined in the implementation plan. The Regional Board will need to ensure that permit conditions are consistent with the assumptions of the WLAs. If BMPs are to be used, the Regional Board will need to detail its findings and conclusions supporting the use of BMPs in the NPDES permit fact sheets. Should federal, state, or regional guidance or practice for implementing WLAs into permits be revised, the Regional Board may reevaluated the TMDL to incorporate such guidance. LAs will be implemented through the State's Nonpoint Source Pollution Control Program (NPSPCP). The LARWQCB is developing a Conditional Waiver for Irrigated Lands, which includes monitoring at sites subject to approval by the Executive Officer of the Regional Board. Should adoption of the Conditional Waiver be delayed, monitoring will be required as part of this TMDL. Studies are currently being conducted to assess the effectiveness of BMPs for reduction of pollutants from agricultural operations. Results will be used to develop Agricultural Water Quality Management Plans, including the implementation of agricultural BMPs. Additionally, an agricultural education program will be developed to inform growers of the recommended BMPs and the Management Plan. As shown in Table 7-17.2, implementation actions will be taken by agricultural dischargers located in the CCW. The implementation of agricultural BMPs will be based on a comprehensive approach to address pollutant loads discharged from agricultural operations. The Regional Board may revise these LAs based on the collection of additional information developed through special studies and/or monitoring conducted as part of this TMDL. A number of provisions in this TMDL might provide information that could result in revisions to the TMDL. Additionally, the development of sediment quality criteria and other water quality criteria revisions may require the reevaluation of this TMDL. Finally, the use of OC pesticides in other countries which may be present in imported food products, compounded with the persistence of OC pesticides and PCBs in the environment, indicate that efforts to control sources and transport of OCs to receiving waters may not result in attainment of targets and allocations due to activities that are outside the control of local agencies and agriculture. For these reasons, the Implementation Plan includes this provision for reevaluating the TMDL to consider revised water quality objectives and the results of implementation studies, if appropriate.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Implementation Plan (continued)	The siltation portion of the TMDL includes wasteload and load allocations set as an annual mass reduction from a baseline value of sediment and silt deposited in Mugu Lagoon. The baseline value of sediment and silt conveyed to Mugu Lagoon is to be determined by a TMDL Special Study and established by the Regional Board through an amendment to the TMDL. The Special Study is eight years in duration to ensure that the full range of current conditions that affect loading of sediment and siltation to Mugu Lagoon are considered. If appropriate, the Special Study may also result in a revision to the mass load reduction. The Special Study will be overseen by a Science Advisory Panel consisting of local, regional, and/or national experts in estuarine habitat biology, hydrology, and engineering. At the conclusion of the special study, the Regional Board will reconsider the TMDL to establish sustainable wasteload and load allocations recommended by the Special Study to support aquatic life and wetland habitat beneficial uses. In implementing this TMDL, staff recognize that dischargers may be implementing management measures and management practices to reduce sediment and Siltation loads through permit and waiver programs during the special studies. Further, since the effective date of the Consent Decree, reaches of Calleguas Creek have been listed due to sediment, and another TMDL may be initiated during the Special Study of this TMDL. Staff's intent is to coordinate the requirements of this TMDL with other programs that reduce sedimentation and siltation. The Special Study can consider sediment and silt load reductions through existing permits and the forthcoming conditional waiver for irrigated lands. Load and wasteload allocations become effective after the Regional Board actions based on the Special Study, nine years after the effective date of the TMDL.

Table 7-17.2 Calleguas Creek Watershed OC Pesticides, PCBs, and Siltation TMDL: Implementation Schedule

Item	Implementation Action [1]	Responsible Party	Completion Date
1	Interim organochlorine pesticide and polychlorinated biphenyls wasteload allocations apply.	NPDES Permittees	Effective date of the amendment
2	Interim organochlorine pesticide and polychlorinated biphenyls load allocations apply.	Agricultural Dischargers	Effective date of the amendment
3	Finalize and submit workplan for organochlorine pesticide and polychlorinated biphenyls TMDL monitoring, or finalize and submit a workplan for an Integrated Calleguas Creek Watershed organochlorine pesticide and polychlorinated biphenyls Monitoring Program for approval by the Executive Officer. The monitoring workplan will include, but not be limited to, appropriate water, biota, and sediment loading and monitoring to verify attainment of targets and protection of beneficial uses.	POTW Permittees, MS4 Permittees, Agricultural Dischargers, US Navy	6 months after effective date of the amendment
4	Initiate Calleguas Creek Watershed organochlorine pesticide, polychlorinated biphenyls, and siltation Monitoring Program developed under the Task 3 workplan approved by the Executive Officer.	POTW Permittees, MS4 Permittees, Agricultural Dischargers, US Navy	6 months after Executive Officer approval of Monitoring Program (Task 3) workplan
5	Submit a workplan for approval by the Executive Officer to identify urban, industrial and domestic sources of organochlorine pesticides and polychlorinated biphenyls and control methods and to implement a collection and disposal program for organochlorine pesticides and polychlorinated biphenyls .	POTW Permittees, MS4 Permittees, US Navy	1 year after effective date of the amendment
6	Submit a workplan for approval by the Executive Officer to identify agricultural sources and methods to implement a collection and disposal program for organochlorine pesticides and polychlorinated biphenyls.	Agricultural Dischargers	1 year after effective date of the amendment
7	Special Study #1 – Submit a workplan and convene a Science Advisory Panel to quantify sedimentation in Mugu Lagoon and sediment transport throughout the Calleguas Creek Watershed. Evaluate management methods to control siltation and contaminated sediment transport to Calleguas Creek, identify appropriate BMPs to reduce sediment loadings, evaluate numeric targets and wasteload and load allocations for siltation/sedimentation to support habitat related beneficial uses in Mugu Lagoon, evaluate the effect of sediment on habitat preservation in Mugu Lagoon, and evaluate appropriate habitat baseline, effectiveness of sediment and siltation load allocations on a subwatershed basis, and methods to restore habitat for approval by the Executive Officer. Additionally, this special study will evaluate the concentration of organochlorine pesticides and polychlorinated biphenyls in sediments from various sources/land use types. [2]	POTW Permittees, MS4 Permittees, Agricultural Dischargers, and US Navy	1 year after effective date of the amendment

Item	Implementation Action [1]	Responsible Party	Completion Date
8	Special study #2 – Conduct a study to identify land areas with high organochlorine pesticide and polychlorinated biphenyls concentrations, and submit a workplan including milestones and an implementation period that is as short as possible, but not to exceed 6 years, for removal to mitigate the effects of flood control practices on organochlorine pesticides, polychlorinated biphenyls, and sediment loadings to Calleguas Creek waterbodies from any high concentration areas identified. Milestones shall include proposed percentages of reductions achieved by removal. Such practices include but are not limited to management of agricultural runoff, sediment reduction practices and structures, streambank stabilization, and other projects related to stormwater conveyance and flood control improvements in the Calleguas Creek watershed. [2]	Agricultural Dischargers, MS4 Permittees, US Navy	1 years after effective date of the amendment
9	Develop an Agricultural Water Quality Management Plan in consideration of the forthcoming Conditional Waiver for Irrigated Lands, or, if the Conditional Waiver for Irrigated Lands is not adopted in a timely manner, develop an Agricultural Water Quality Management Plan as part of the Calleguas Creek WMP. Implement an educational program on BMPs identified in the Agricultural Water Quality Management Plan.	Agricultural Dischargers	3 years after effective date of the amendment
10	Based on results of the Task 5 workplan approved by Executive Officer, implement a collection and disposal program for organochlorine pesticides and polychlorinated biphenyls.	POTW Permittees, MS4 Permittees, US Navy	5 years after effective of the amendment
11	Based on results of the Task 6 workplan approved by Executive Officer implement a collection and disposal program for organochlorine pesticides and polychlorinated biphenyls.	Agricultural Dischargers	5 years after effective of the amendment
12	Re-evaluation of POTW Interim wasteload allocations for organochlorine pesticides and polychlorinated biphenyls based on State Implementation Plan procedures.	Regional Board	5 years, 10 years and 15 years after the effective date of the amendment
13	Special Study #1 – Submit results of Special Study #1, including recommendations for refining the siltation load and wasteload allocations.	POTW Permittees, MS4 Permittees, Agricultural Dischargers, and US Navy	8 years after effective date of the amendment
14	Re-evaluation of siltation and sediment load and wasteload allocations based on Special Study #1.	Regional Board	9 years after effective date of the amendment
15	Effective date of siltation load allocation and wasteload allocation.	Agricultural dischargers, US Navy, MS4 permittees	9 years after effective date of the amendment

Item	Implementation Action [1]	Responsible Party	Completion Date
16	Special Study #3 – Evaluate natural attenuation rates and evaluate methods to accelerate organochlorine pesticide and polychlorinated biphenyl attenuation and examine the attainability of wasteload and load allocations in the Calleguas Creek Watershed. [2, 3]	POTW Permittees , Agricultural Dischargers, MS4 Permittees, and US Navy	10 years after effective date of the amendment
17	Special Study #4 (optional) – Examine of the food web and bioconcentration relationships throughout the watershed to evaluate assumptions contained in the Linkage Analysis and ensure that protection of beneficial uses is achieved. [2]	Interested Parties	12 years after effective date of the amendment
18	Based on the results of Implementation Items 1-17, if sediment guidelines are promulgated or water quality criteria are revised, and/or if fish tissue and water column targets are achieved without attainment of WLAs or LAs, the Regional Board will consider revisions to the TMDL targets, allocations, and schedule for expiration of Interim Wasteload and Interim Load Allocations.[3]	Regional Board	10 years after effective date of the amendment
19	Achieve Final WLAs and LAs	Agricultural Dischargers, POTW Permittees, and MS4 Permittees	20 years after effective date of the amendment

1 The Regional Board regulatory programs addressing all discharges in effect at the time an implementation task is due may contain requirements substantially similar to the requirements of an implementation task. If such a requirement is in place in another regulatory program including other TMDLs, the Executive Officer may determine that such other requirements satisfy the requirements of an implementation task of this TMDL and thereby coordinate this TMDL implementation plan with other regulatory programs.

2 Special studies included in the Implementation Plan are based on the TMDL Technical Documents.

3 After completion of this special study, the TMDL will be reopened in order to enable the Regional Board to evaluate whether a shorter time period is appropriate for the achievement of the final WLAs and LAs.

7-18 Marina del Rey Harbor Toxic Pollutants TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on October 6, 2005.

This TMDL was approved by:

The State Water Resources Control Board on January 13, 2006.
The Office of Administrative Law on March 13, 2006.
The U.S. Environmental Protection Agency on March 16, 2006.

The effective date of this TMDL is: March 22, 2006.

The following tables include the elements of this TMDL.

Table 7-18.1. Marina del Rey Harbor Toxic Pollutants TMDL: Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	The back basins of Marina del Rey Harbor are on the Clean Water Act Section 303(d) list of impaired waterbodies for chlordane, copper, lead, zinc, PCBs, DDT, dieldrin, sediment toxicity and a fish consumption advisory. Review of available data during the development of this TMDL indicated that dieldrin and DDT are no longer causes of impairment. The following designated beneficial uses are impaired by chlordane, copper, lead, zinc, PCBs, and toxicity: water contact recreation (REC1); marine habitat (MAR); wildlife habitat (WILD); commercial and sport fishing (COMM); and shellfish harvesting (SHELL).
Numeric Target (Interpretation of the narrative and numeric water quality objective, used to calculate the allocations)	Numeric targets for the harbor sediments are based on the sediment quality guidelines compiled by the National Oceanic and Atmospheric Administration, which are used in evaluating waterbodies within the Los Angeles Region for development of the 303(d) list. The Effects Range-Low (ERLs) guidelines are established as the numeric targets for sediments in Marina del Rey Harbor. **Numeric Targets for Metals in Sediment (mg/kg)** Copper: 34; Lead: 46.7; Zinc: 150 **Numeric Targets for Organic Compounds in Sediment (µg/kg)** Chlordane: 0.5; Total PCBs: 22.7 In addition to the sediment numeric target, water column and fish tissue targets are set for the PCB impairment in fish tissue.

Element	Key Findings and Regulatory Provisions
Numeric Target (Interpretation of the narrative and numeric water quality objective, used to calculate the allocations) (continued)	The California Toxics Rule (CTR) Criterion for the protection of human health from the consumption of aquatic organisms is selected as the final numeric target for total PCBs in the water column. However, given the inability of current analytical methods to detect concentrations at this low level, an interim numeric target will be applied. The CTR Chronic Criterion for the protection of aquatic life in saltwater is selected as the interim numeric target for the fish tissue impairment by PCBs. This numeric target will remain in effect until advances in technology allow for analysis of PCBs at lower detection limits. **Interim Target for total PCBs in the Water Column:** 0.03μg/L **Final Target for total PCBs in the Water Column:** 0.00017 μg/L The numeric Target for PCBs in fish tissue is the Threshold Tissue Residue Level that is derived from CTR human health criteria, which are adopted criteria for water designated to protect humans from consumption of contaminated fish or other aquatic organisms. **Numeric Target for total PCBs in Fish Tissue:** 5.3 μg/Kg
Source Analysis	Urban storm water has been recognized as a substantial source of metals. Numerous researchers have documented that the most prevalent metals in urban storm water (i.e., copper, lead, and zinc) are consistently associated with suspended solids. Because metals are typically associated with fine particles in storm water runoff, they have the potential to accumulate in marine sediments where they may pose a risk of toxicity. Similar to metals, the majority of organic constituents in storm water are associated with particulates. Passive leaching of copper-based anti-fouling paints is a potential source of copper loading to the sediment. However, there is insufficient information available to quantify the contribution of boat discharges to the sediment pollutant load. This TMDL requires a study designed to estimate copper partitioning between the water column and sediment in Marina del Rey harbor, in order to determine the impact of passive leaching on the marine sediment. Direct deposition of airborne particles to the water surface may be responsible for contributing copper, lead and zinc to the Marina del Rey back basins. The estimated contribution from this source is minor. Indirect atmospheric deposition reflects the process by which metals deposited on the land surface may be washed off during storm events and delivered to Marina del Rey Harbor. The loading of metals associated with indirect atmospheric deposition are accounted for in the storm water runoff.

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Loading Capacity</td><td>TMDLs are developed for copper, lead, zinc, chlordane, and PCBs within the sediments of Marina del Rey Harbor’s back basins.

The loading capacity for Marina del Rey Harbor is calculated by multiplying the numeric targets by the average annual total suspended solids (TSS) loading to the harbor sediment. The average annual TSS discharged to the back basins of the harbor is 64,166 kilograms per year (kg/yr). The TMDL is set equal to the loading capacity.

<u>Metals Loading Capacity (kilograms/year)</u>
Copper / Lead / Zinc
2.18 / 3.0 / 9.6

<u>Organics Loading Capacity (grams/year)</u>
Chlordane / Total PCBs
0.03 / 1.46</td></tr>
<tr><td>Load Allocations
(for nonpoint sources)</td><td>Load allocations (LA) are developed for nonpoint sources in Marina del Rey Harbor, which includes direct atmospheric deposition. The load allocations are not assigned to a particular nonpoint source or group of nonpoint sources.

The mass-based load allocation for direct atmospheric deposition is equal to the percentage of the watershed covered by water (5.4%) multiplied by the total loading capacity.

<u>Metals Load Allocations for Direct Atmospheric Deposition (kg/yr)</u>
Copper / Lead / Zinc
0.12 / 0.16 / 0.52

<u>Organics Load Allocations for Direct Atmospheric Deposition(g/yr)</u>
Chlordane / Total PCBs
0.002 / 0.079</td></tr>
<tr><td>Waste Load Allocations
(for point sources)</td><td>Waste load allocations (WLA) are assigned to point sources for the Marina del Rey watershed. A grouped mass-based waste load allocation is developed for the storm water permittees (Los Angeles County MS4, Caltrans, General Construction and General Industrial) by subtracting the load allocations from the total loading capacity. Concentration-based waste load allocations are developed for other point sources in the watershed.

<u>Metals Waste Load Allocations for Storm Water (kg/yr)</u>
Copper / Lead / Zinc
2.06 / 2.83 / 9.11

<u>Organics Waste Load Allocations for Storm Water (g/yr)</u>
Chlordane / Total PCBs
0.03 / 1.38</td></tr>
</table>

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Waste Load Allocations (for point sources) (continued)</td><td>
The storm water waste load allocations are apportioned between the MS4 permittees, Caltrans, the general construction and the general industrial storm water permits based on an estimate of the percentage of land area covered under each permit.
<u>Metals Storm Water WLAs Apportioned between Permits (kg/yr)</u>
<table>
<tr><th></th><th>Copper</th><th>Lead</th><th>Zinc</th></tr>
<tr><td>MS4 Permittees</td><td>2.01</td><td>2.75</td><td>8.85</td></tr>
<tr><td>Caltrans</td><td>0.022</td><td>0.03</td><td>0.096</td></tr>
<tr><td>General Construction</td><td>0.033</td><td>0.045</td><td>0.144</td></tr>
<tr><td>General Industrial</td><td>0.004</td><td>0.006</td><td>0.018</td></tr>
</table>
<u>Organics Storm Water WLAs Apportioned between Permits (g/yr)</u>
<table>
<tr><th></th><th>Chlordane</th><th>Total PCBs</th></tr>
<tr><td>MS4 Permittees</td><td>0.0295</td><td>1.34</td></tr>
<tr><td>Caltrans</td><td>0.0003</td><td>0.015</td></tr>
<tr><td>General Construction</td><td>0.0005</td><td>0.022</td></tr>
<tr><td>General Industrial</td><td>0.0001</td><td>0.003</td></tr>
</table>
Each storm water permittee enrolled under the general construction or industrial storm water permits will receive an individual waste load allocation on a per acre basis, based on the acreage of their facility.
Metals per Acre WLAs for Individual General Construction or Industrial Storm Water Permittees (g/yr/ac)
<table>
<tr><th>Copper</th><th>Lead</th><th>Zinc</th></tr>
<tr><td>2.3</td><td>3.1</td><td>10</td></tr>
</table>
Organics per acre WLAs for Individual General Construction or Industrial Storm Water Permittees (mg/yr/ac)
<table>
<tr><th>Chlordane</th><th>Total PCBs</th></tr>
<tr><td>0.03</td><td>1.5</td></tr>
</table>
Concentration-based waste load allocations are assigned to the minor NPDES permits and general non-storm water NPDES permits that discharge to Marina del Rey Harbor. Any future minor NPDES permits or enrollees under a general non-storm water NPDES permit will also be subject to the concentration-based waste load allocations.
Metals Concentration-based Waste Load Allocations (mg/kg)
<table>
<tr><th>Copper</th><th>Lead</th><th>Zinc</th></tr>
<tr><td>34</td><td>46.7</td><td>150</td></tr>
</table>
<u>Organic Concentration-based Waste Load Allocations (µg/kg)</u>
<table>
<tr><th>Chlordane</th><th>Total PCBs</th></tr>
<tr><td>0.5</td><td>22.7</td></tr>
</table>
</td></tr>
<tr><td>Margin of Safety</td><td>An implicit margin of safety is applied through the use of the more protective sediment quality guideline values. The ERLs were selected over the higher ERMs as the numeric targets.</td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Implementation	The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the State of California Department of Transportation (Caltrans) Storm Water Permit, minor NPDES permits, general NPDES permits, general industrial storm water NPDES permits, general construction storm water NPDES permits. Nonpoint sources will be regulated through the authority contained in sections 13263 and 13269 of the Water Code, in conformance with the State Water Resources Control Board's Nonpoint Source Implementation and Enforcement Policy (May 2004). Each NPDES permit assigned a WLA shall be reopened or amended at re-issuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. The Regional Board shall reconsider this TMDL in six years after the effective date of the TMDL based on additional data obtained from special studies. Table 7-18.2 presents the implementation schedule for the responsible permittees. **Minor NPDES Permits and General Non-Storm Water NPDES Permits:** The concentration-based waste load allocations for the minor NPDES permits and general non-storm water NPDES permits will be implemented through NPDES permit limits. Permit writers may translate applicable waste load allocations into effluent limits for the minor and general NPDES permits by applying applicable engineering practices authorized under federal regulations. The minor and existing general non-storm water NPDES permittees are allowed up to seven years from the effective date of the TMDL to achieve the waste load allocations. **General Industrial Storm Water Permit:** The Regional Board will develop a watershed specific general industrial storm water permit to incorporate waste load allocations. Concentration-based permit limits may be set to achieve the mass-based waste load allocations. These concentration-based limits would be equal to the concentration-based waste load allocations assigned to the other NPDES permits. It is expected that permit writers will translate the waste load allocations into BMPs, based on BMP performance data. However, the permit writers must provide adequate justification and documentation to demonstrate that specified BMPs are expected to result in attainment of the numeric waste load allocations. The general industrial storm water permittees are allowed up to seven years from the effective date of the TMDL to achieve the waste load allocations.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	**General Construction Storm Water Permit:** Waste load allocations will be incorporated into the State Board general permit upon renewal or into a watershed specific general construction storm water permit developed by the Regional Board. Within seven years of the effective date of the TMDL, the construction industry will submit the results of BMP effectiveness studies to determine BMPs that will achieve compliance with the waste load allocations assigned to construction storm water permittees. Regional Board staff will bring the recommended BMPs before the Regional Board for consideration within eight years of the effective date of the TMDL. General construction storm water permittees will be considered in compliance with waste load allocations if they implement these Regional Board approved BMPs. All general construction permittees must implement the approved BMPs within nine years of the effective date of the TMDL. If no effectiveness studies are conducted and no BMPs are approved by the Regional Board within eight years of the effective date of the TMDL, each general construction storm water permit holder will be subject to site-specific BMPs and monitoring requirements to demonstrate compliance with waste load allocations. **MS4 and Caltrans Storm Water Permits:** The County of Los Angeles, City of Los Angeles, and Culver City are jointly responsible for meeting the mass-based waste load allocations for the MS4 permittees. Caltrans is responsible for meeting their mass-based waste load allocations, however, they may choose to work with the MS4 permittees. The primary jurisdiction for the Marina del Rey Harbor watershed is the County of Los Angeles. Each municipality and permittee will be required to meet the waste load allocations at the designated TMDL effectiveness monitoring points. A phased implementation approach, using a combination of non-structural and structural BMPs may be used to achieve compliance with the waste load allocations. The administrative record and the fact sheets for the MS4 and Caltrans storm water permits must provide reasonable assurance that the BMPs selected will be sufficient to implement the numeric waste load allocations. We expect that reductions to be achieved by each BMP will be documented and that sufficient monitoring will be put in place to verify that the desired reductions are achieved. The permits should also provide a mechanism to adjust the required BMPs as necessary to ensure their adequate performance.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	The implementation schedule for the MS4 and Caltrans permittees consists of a phased approach, with compliance to be achieved in prescribed percentages of the watershed, with total compliance to be achieved within 10 years. However, the Regional Board may extend the implementation period up to 15 years if an integrated water resources approach is employed. The waste load allocations and load allocations have been developed to achieve the numeric targets in the back basins of Marina del Rey Harbor by the end of the compliance period. However, the Regional Board is aware of toxic pollutants bound up in sediment. To the extent that the Regional Board or another responsible jurisdiction or agency determines that toxic pollutants bound in sediments are still preventing the attainment of numeric targets, the Regional Board will issue appropriate investigatory orders or cleanup and abatement orders to achieve attainment of the numeric targets.
Seasonal Variations and Critical Conditions	There is a high degree of inter- and intra-annual variability in total suspended solids discharged to Marina del Rey Harbor. This is a function of the storms, which are highly variable between years. The TMDL is based on a TSS load derived from long-term average rainfall over a 52-year period from 1948 to 2000. This time period contains a wide range of storm conditions and drain discharges to Marina del Rey Harbor. Use of the average condition for the TMDL is appropriate because issues of sediment effects on benthic communities and potential for bioaccumulation to higher trophic levels occurs over long time periods.
Monitoring	Effective monitoring will be required to assess the condition of Marina del Rey Harbor and to assess the on-going effectiveness of efforts by dischargers to reduce toxic pollutants loading from the Marina del Rey Watershed. Special studies may also be appropriate to provide further information about new data, new or alternative sources, and revised scientific assumptions. Below the Regional Board identifies the various goals of monitoring efforts and studies that shall be developed in a coordinated manner. The programs, reports, and studies will be developed in response to subsequent orders issued by the Executive Officer. **Ambient Component** A monitoring program is necessary to assess water quality throughout Marina del Rey Harbor and to assess fish tissue and sediment quality in the harbor's back basins. Data on background water quality for copper will help refine the numeric targets and waste load allocations and assist in the effective placement of BMPs. In addition, fish tissue data is required in Marina del Rey's back basins to confirm continued impairment.

Element	Key Findings and Regulatory Provisions
Monitoring (continued)	Water quality samples shall be collected monthly and analyzed for chlordane and total PCBs at detection limits that are at or below the minimum levels until the TMDL is reconsidered in the sixth year. The minimum levels are those published by the State Water Resources Control Board in Appendix 4 of the Policy for the Implementation of Toxic Standards for Inland Surface Water, Enclosed Bays, and Estuaries of California, March 2, 2000. Special emphasis should be placed on achieving detection limits that will allow evaluation relative to the CTR standards. If these can not be achieved with conventional techniques, then a special study should be proposed to evaluate concentrations of organics. Water quality samples shall also be collected monthly and analyzed for copper, lead, and zinc until the TMDL is reconsidered in the sixth year. For metals water column analysis, methods that allow for (1) the removal of salt matrix to reduce interference and avoid inaccurate results prior to the analysis; and (2) the use of trace metal clean sampling techniques, should be applied. Examples of such methods include EPA Method 1669 for sample collection and handling, and EPA Method 1640 for sample preparation and analysis. Storm water monitoring shall be conducted for metals (copper, lead. and zinc) and organics (chlordane and total PCBs) to provide assessment of water quality during wet-weather conditions and loading estimates from the watershed to the harbor. Special emphasis should be placed on achieving lower detection limits for organochlorine compounds. The MS4 and Caltrans storm water permittees are jointly responsible for conducting bioaccumulation testing of fish and mussel tissue within the Harbor. The permittees are required to submit for approval of the Executive Officer a monitoring plan that will provide the data needed to confirm the 303(d) listing or de-listing, as applicable. Representative sediment sampling shall be conducted quarterly within the back basins of the harbor for copper, lead, zinc, chlordane, and total PCBs at detection limits that are lower than the ERLs. Sediment samples shall also be analyzed for total organic carbon, grain size and sediment toxicity.

Element	Key Findings and Regulatory Provisions
Monitoring (continued)	Initial sediment toxicity monitoring should be conducted quarterly in the first year of the TMDL to define the baseline and semi-annually, thereafter, to evaluate effectiveness of the BMPs until the TMDL is reconsidered in the sixth year. The sediment toxicity testing shall include testing of multiple species, a minimum of three, for lethal and non-lethal endpoints. Toxicity testing may include: the 28-day and 10-day amphipod mortality test; the sea urchin fertilization testing of sediment pore water; and the bivalve embryo testing of the sediment/water interface. The chronic 28-day and shorter-term 10-day amphipod tests may be conducted in the initial year of quarterly testing and the results compared. If there is no significant difference in the tests, then the less expensive 10-day test can be used throughout the rest of the monitoring, with some periodic 28 day testing. **Effectiveness Component** The water quality samples collected during wet weather, defined as rainfall of 0.1 inch or more plus the 3 days following the rain event, shall be analyzed for total dissolved solids, settleable solids and total suspended solids if not already part of the sampling program. Sampling shall be designed to collect sufficient volumes of settable and suspended solids to allow for analysis of copper, lead, zinc, chlordane, total PCBs, and total organic carbon in the sediment. Monthly representative sediment sampling shall be conducted at existing monitoring locations throughout the harbor, and analyzed for copper, lead, zinc, chlordane, and total PCBs at detection limits that are lower than the ERLs. The, sediment samples shall also be analyzed for total organic carbon and grain size. Sediment toxicity testing shall be conducted semi-annually, and shall include testing of multiple species (a minimum of three) for lethal and non-lethal endpoints. Toxicity testing may include: the 28-day or10-day amphipod mortality test; the sea urchin fertilization testing of sediment pore water; and the bivalve embryo testing of the sediment/water interface.

Element	Key Findings and Regulatory Provisions
Monitoring (continued)	Toxicity shall be indicated by an amphipod survival rate of 70% or less in a single test, in conjunction with a statistically significant decrease in amphipod survival relative to control organisms (significance determined by T-test, a=0.05). Accelerated monitoring maybe conducted to confirm toxicity at stations identified as toxic. Accelerated monitoring shall consist of six additional tests, approximately every two weeks, over a 12-week period. If the results of any two of the six accelerated tests are less than 90% survival, then the MS4 and Caltrans permittees shall conduct a Toxicity Identification Evaluation (TIE). Alternatively, responsible parties have the option of foregoing accelerated toxicity testing and conducting a TIE directly following an indication of toxicity. The TIE shall include reasonable steps to identify the sources of toxicity and steps to reduce the toxicity. The Phase I TIE shall include the following treatments and corresponding blanks: baseline toxicity; particle removal by centrifugation; solid phase extraction of the centrifuged sample using C8, C18, or another media; complexation of metals using ethylenediaminetetraacetic acid (EDTA) addition to the raw sample; neutralization of oxidants/metals using sodium thiosulfate addition to the raw sample; and inhibition of organo-phosphate (OP) pesticide activation using piperonyl butoxide addition to the raw sample (crustacean toxicity tests only). Bioaccumulation monitoring of fish and mussel tissue within the Harbor shall be conducted annually. The permittees are required to submit for approval of the Executive Officer a monitoring plan that will provide the data needed to assess the effectiveness of the TMDL. The general industrial storm water permit shall contain a model monitoring and reporting program to evaluate BMP effectiveness. A permittee enrolled under the general industrial permit shall have the choice of conducting individual monitoring based on the model program or participating in a group monitoring effort. MS4 permittees are encouraged to take the lead in group monitoring efforts for industrial facilities within their jurisdiction because compliance with waste load allocations by these facilities will in many cases translate to reductions in contaminate loads to the MS4 system.

Element	Key Findings and Regulatory Provisions
Monitoring (continued)	**Special Studies** Special studies are necessary to refine source assessments, to provide better estimates of loading capacity, and to optimize implementation efforts. The Regional Board will re-consider the TMDL in the sixth year after the effective date in light of the findings of these studies. Studies required for this TMDL include: • Evaluate partitioning coefficients between water column and sediment to assess the contribution of water column discharges to sediment concentrations in the harbor, and • Evaluate the use of low detection level techniques to determine water quality concentrations for those contaminants where standard detection limits cannot be used to assess compliance for CTR standards or are not sufficient for estimating source loadings from tributaries and storm water. Studies recommended for this TMDL include: • Develop and implement a monitoring program to collect the data necessary to apply a multiple lines of evidence approach; • Refine the relationship between pollutants and suspended solids aimed at better understanding of the delivery of pollutants to the watershed, and • Evaluate the effectiveness of BMPs to address pollutants and/or sediments.

Table 7-18.2. Marina del Rey Harbor Toxic Pollutants TMDL: Implementation Schedule

Date	Action
Effective date of the TMDL	Regional Board permit writers shall incorporate the waste load allocations for sediment into the NPDES permits. Waste load allocations will be implemented through NPDES permit limits in accordance with the implementation schedule contained herein, at the time of permit issuance, renewal or re-opener.
On-going	The Executive Officer shall promptly issue appropriate investigatory and clean up and abatement orders to address any toxicity hotspots within sediments identified as a result of data submitted pursuant to this TMDL, any U.S. Army Corps of Engineer dredging activity, or any other investigation.
Within 6 months after the effective date of the State Board adopted sediment quality objectives and implementation policy	The Regional Board will re-assess the numeric targets and waste load allocations for consistency with the State Board adopted sediment quality objectives.
5 years after effective date of the TMDL	Responsible jurisdictions and agencies shall provide to the Regional Board result of any special studies.
6 years after effective date of the TMDL	The Regional Board shall reconsider this TMDL to re-evaluate the waste load allocations and the implementation schedule.
MINOR NPDES PERMITS AND GENERAL NON-STORM WATER NPDES PERMITS	
7 years after effective date of the TMDL	The non-storm water NPDES permits shall achieve the concentration-based waste load allocations for sediment per provisions allowed for in NPDES permits.
GENERAL INDUSTRIAL STORM WATER PERMIT	
7 years after effective date of the TMDL	The general industrial storm water permits shall achieve the mass-based waste load allocations for sediment per provisions allowed for in NPDES permits. Permits shall allow an iterative BMP process including BMP effectiveness monitoring to achieve compliance with permit requirements.
GENERAL CONSTRUCTION STORM WATER PERMIT	
7 years from the effective date of the TMDL	The construction industry will submit the results of the BMP effectiveness studies to the Regional Board for consideration. In the event that no effectiveness studies are conducted and no BMPs are approved, permittees shall be subject to site-specific BMPs and monitoring to demonstrate BMP effectiveness.
8 years from the effective date of the TMDL	The Regional Board will consider results of the BMP effectiveness studies and consider approval of BMPs no later than eight years from the effective date of the TMDL.
9 years from the effective date of the TMDL	All general construction storm water permittees shall implement Regional Board-approved BMPs.

Date	Action
MS4 AND CALTRANS STORM WATER PERMITS	
12 months after the effective date of the TMDL	In response to an order issued by the Executive Officer, the MS4 and Caltrans storm water NPDES permittees must submit a coordinated monitoring plan, to be approved by the Executive Officer, which includes both ambient monitoring and TMDL effectiveness monitoring. Once the coordinated monitoring plan is approved by the Executive Officer, monitoring shall commence within 6 months. The draft monitoring report shall be made available for public comment and the Executive Officer shall accept public comments for at least 30 days.
5 years after effective date of TMDL (Draft Report) 5 ½ years after effective date of TMDL (Final Report)	The MS4 and Caltrans storm water NPDES permittees shall provide a written report to the Regional Board outlining how they will achieve the waste load allocations for sediment to Marina del Rey Harbor. The report shall include implementation methods, an implementation schedule, proposed milestones, and any applicable revisions to the TMDL effectiveness monitoring plan. The draft report shall be made available for public comment and the Executive Officer shall accept public comments for at least 30 days.
Schedule for MS4 and Caltrans Permittees if Pursuing a TMDL Specific Implementation Plan	
8 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 50% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
10 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 100% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
Schedule for MS4 and Caltrans Permittees if Pursuing an Integrated Resources Approach, per Regional Board Approval	
7 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 25% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
9 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 50% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
11 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 75% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
15 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 100% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.

7-19 Calleguas Creek Watershed Metals and Selenium TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on June 8, 2006.

This TMDL was approved by:

The State Water Resources Control Board on October 25, 2006.
The Office of Administrative Law on February 2, 2007.
The U.S. Environmental Protection Agency on March 26, 2007.

The effective date of this TMDL is March 26, 2007.

The elements of the TMDL are presented in Table 7-19.1 and the Implementation Plan in Table 7-19.2

Table 7-19.1. Calleguas Creek Watershed Metals and Selenium TMDL: Elements

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Problem Statement	Three of fourteen reaches in the Calleguas Creek Watershed (CCW) including Revolon Slough, Lower Calleguas Creek – Reach 2, and Mugu Lagoon are identified on the 2002 Clean Water Act Section 303(d) list of water-quality limited segments as impaired due to elevated levels of metals and selenium in water. The 303(d) listings, which were approved by the State Water Resources Control Board in February 2003, require the development of Total Maximum Daily Loads (TMDLs) to establish the maximum amount of pollutants a water body can receive without exceeding water quality standards. TMDLs for listed metals and selenium are presented herein in one document because, as a class of compounds, they possess similar physical and chemical properties that influence their persistence, fate, and transport in the environment.
Numeric Targets	This TMDL establishes four types of numeric targets: (1) California Toxics Rule (40 CFR Part 131) (CTR) criteria in dissolved fraction for copper, nickel, and zinc, and in total recoverable form for mercury and selenium; (2) fish tissue targets for mercury; (3) bird egg targets for mercury and selenium; and (4) sediment quality guidelines for copper, nickel, and zinc for 303(d) listed reaches. Attainment of sediment quality targets will be evaluated in combination with sediment toxicity data, if available.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Numeric Targets (continued)	**Copper Targets**

Subwatershed	Water Quality Target (ug dissolved Copper/L)		Sediment Target[3] (SQuiRTs, ERL) (ppb dry weight)
	Dry Weather CCC	Wet Weather CMC	
Mugu Lagoon	3.1*WER[1]	4.8*WER[1]	34000
Calleguas Creek 2	3.1*WER[1]	4.8*WER[1]	34000
Calleguas Creek 3	25.9	26.3	NA[2]
Revolon/Beardsley	3.1*WER[1]	4.8*WER[1]	NA[2]
Conejo	27.9	41.6	NA[2]
Arroyo Simi/Las Posas	29.3	29.8	NA[2]

[1] The water quality targets for copper in the TMDL are expressed as the copper water quality criteria from the federal California Toxics Rule (CTR). Those criteria include a numerical threshold multiplied by a water-effect ratio (WER). The WER has a default value of 1.0 unless a site-specific WER is approved. To use a WER other than the default of 1.0, a study must be conducted consistent with USEPA's WER guidance and adopted by the Regional Board through the state's basin plan amendment process. A WER study for Mugu Lagoon (Reach 1), lower Calleguas Creek (Reach 2), Revolon Slough (Reach 4) and Beardsley Wash (Reach 5) has been submitted to the Regional Board. If the Regional Board approves site-specific WERs for copper in these waterbodies, the TMDL targets will be modified in accordance with all legal and regulatory requirements and implemented in accordance with the approved WERs using the equations set forth above.

[2] Sediment targets were not selected as alternative target for this reach as it is not on the 303(d) list.

[3] Sediment targets are based on screening levels endorsed by the National Oceanic and Atmospheric Administration (NOAA) in their Screening Quick Reference Tables (SQuiRTs) (Buchman, 1999)

Mercury Targets

Media	Target
Fish Tissue (Human Health)	0.3 mg methylmercury/kg wet weight
Fish Tissue (Wildlife)	
*** Trophic Level (TL) 3[1] <50 mm**	0.03 mg methylmercury/kg wet weight
*** TL3 50-150 mm**	0.05 mg methylmercury/kg wet weight
*** TL3 150-350 mm**	0.1 mg methylmercury/kg wet weight
Bird Egg (Wildlife)	less than 0.5 mg total mercury/kg wet weight
Water Column	0.051 ug total mercury/L

[1] Trophic Level 3: Predators (e.g., minnows, sunfish) on trophic level 2 organism (e.g., copepods and water fleas)

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Numeric Targets (continued)	**Nickel Targets**

Subwatershed	Water Quality Target (ug dissolved Nickel/L)		Sediment Target[1] (SQuiRTs, ERL) (ppb dry weight)
	Dry Weather CCC	Wet Weather CMC	
Mugu Lagoon	8.2	74	20900
Calleguas Creek 2	8.2	74	NA[2]
Calleguas Creek 3	149	856	NA[2]
Revolon/Beardsley	8.2	74	NA[2]
Conejo	160	1292	NA[2]
Arroyo Simi/Las Posas	168	958	NA[2]

[1] Sediment targets are based on screening levels endorsed by the National Oceanic and Atmospheric Administration (NOAA) in their Screening Quick Reference Tables (SQuiRTs) (Buchman, 1999)

[2] Sediment targets were not selected as alternative target for this reach as it is not listed on the 303(d) list.

A study to support a site specific objective (SSO) for nickel has been submitted to the Regional Board and is currently under reviewed by the Regional Board and U.S. EPA staff. If a SSO for nickel is approved, the Regional Board will consider revision to the numeric targets for nickel based on the approved SSO.

Selenium Targets

Subwatershed	Water Quality Target (ug total selenium/L)		Bird Egg (ug/g)
	Dry Weather CCC	Wet Weather CMC	
Mugu Lagoon	71	290	6
Calleguas Creek 2	5	290	6
Calleguas Creek 3	5	NA[1]	6
Revolon/Beardsley	5	290	6
Conejo	5	NA[1]	6
Arroyo Simi/Las Posas	5	NA[1]	6

[1] "NA" indicates that a target is not available for this constituent because criterion for fresh water is not defined in the CTR.

<table>
<tr><th>TMDL Element</th><th>Calleguas Creek Watershed Metals and Selenium TMDL</th></tr>
<tr><td>Numeric Targets (continued)</td><td>

Zinc Targets

Subwatershed	Water Quality Target (ug dissolved Zinc/L)		Sediment Target[1] (SQuiRTs, ERL) (ppb dry weight)
	Dry Weather CCC	Wet Weather CMC	
Mugu Lagoon	81	90	150000
Calleguas Creek 2	81	90	NA[2]
Calleguas Creek 3	338	214	NA[2]
Revolon/Beardsley	81	90	NA[2]
Conejo	365	324	NA[2]
Arroyo Simi/Las Posas	382	240	NA[2]

[1] Sediment targets are based on screening levels endorsed by the National Oceanic and Atmospheric Administration (NOAA) in their Screening Quick Reference Tables (SQuiRTs) (Buchman, 1999)

[2] Sediment targets were not selected as alternative target for this reach because it is not on the 303(d) list.

</td></tr>
<tr><td>Source Analysis</td><td>Significant sources of metals and selenium include urban runoff, agricultural runoff, groundwater seepage, and POTW effluent. For mercury, open space was also a significant source. Sources were also analyzed as a function of wet and dry weather. Higher loads were delivered during wet weather for all constituents, due to the association between metals and particulate matter.

The source analysis indicates naturally occurring mercury in soil may be a significant source, and that naturally occurring nickel, copper, zinc, and selenium in soil may be a contributing source, and that naturally occurring selenium in groundwater may be a significant source. The TMDL Implementation Plan includes special studies to further assess natural sources of metals in soil.</td></tr>
<tr><td>Linkage Analysis</td><td>Linkage between sources and instream pollutant concentrations was established through a dynamic water quality Hydrologic Simulation Program – FORTRAN (HSPF). The model output generally resulted in a conservative estimate of receiving water concentrations for metals. The model was used to calculate load reductions necessary to meet the numeric targets.The load reductions were used to calculate the load and waste load allocations.</td></tr>
<tr><td>Waste Load Allocations</td><td>In the case of copper, nickel, and selenium, waste load allocations (WLAs) were developed for both wet and dry-weather. The dry-weather WLAs apply to days when flows in the stream are less than the 86th percentile flow rate for each reach. The wet-weather WLAs apply to days when flows in the stream exceed the 86th percentile flow rate for each reach. Annual mass loads of mercury in suspended sediment were developed according to low, medium, and high annual flow categories.</td></tr>
</table>

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Waste Load Allocations (continued)	**<u>Publicly Owned Treatment Works (POTWs)</u>**

Concentration-based and mass-based WLAs are established for copper, and nickel, in total recoverable forms, and are applied to POTWs during both wet and dry weather. Mass-based WLAs are developed for mercury for POTWs. Zinc allocations are not set because current information indicate that numeric targets for zinc are attained. The TMDL Implementation Plan includes a task to provide State Board data to support delisting of zinc. Waste load allocations for selenium are not set for POTWs because POTWs do not discharge to reaches listed for selenium. Interim limits are included to allow time for dischargers to put in place implementation measures necessary to achieve final waste load allocations. The daily maximum and monthly average interim limits are set equal to the 99th and 95th percentile of available discharge data, respectively.

Interim and Final WLAs for Total Recoverable Copper in Water Column

POTW	Interim		Final[1]		
	Daily Maximum (ug/L)	Monthly Average (ug/L)	Daily Maximum (ug/L)[2]	Monthly Average (ug/L)[2]	lb/day
Hill Canyon WWTP	20.0	16.0	(a)	(a)	0.11*WER - 0.04
Simi Valley WQCP	(b)	(b)	31.0	30.5	(c)
Moorpark WTP	(b)	(b)	31.0	30.5	(d)
Camarillo WRP	57.0	20.0	(a)	(a)	0.12*WER - 0.04
Camrosa WRP	(b)	(b)	27.4	27.0	(d)

1 If site-specific WERs are approved by the Regional Board, TMDL waste load allocations shall be implemented in accordance with the approved WERs using the equations set forth above. Regardless of the final WERs, total copper loading shall not exceed current loading. In addition, effluent concentrations shall not exceed the performance standards of current treatment technologies.

2 Concentration-based targets have been converted to total recoverable allocations using the CTR default translator of 0.96

(a) Concentration-based final limits will be included in the permits in accordance with NPDES guidance and requirements, but are not calculated as part of the TMDL.

(b) Interim limits are not required because the discharger is meeting the final limits.

(c) Discharges from Simi Valley WQCP do not reach lower Calleguas Creek and Mugu lagoon during dry weather. Monitoring will be conducted and mass-based WLAs will be evaluated if targets are not met in Arroyo Simi/Las Posas or downstream reaches.

(d) Discharger does not contribute loading during dry weather. Concentration-based WLAs apply during wet weather when discharges occur. Monitoring will be conducted and mass-based WLAs will be evaluated if targets are not met in receiving water and/or downstream reaches.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Waste Load Allocations (continued)	(see below)

Interim and Final WLAs for Total Recoverable Nickel in Water Column

POTW	Interim		Final		
	Daily Maximum (ug/L)	Monthly Average (ug/L)	Daily Maximum (ug/L)1	Monthly Average (ug/L)2	lb/day
Hill Canyon WWTP	8.3	6.4	(a)	(a)	0.3
Simi Valley WQCP	(b)	(b)	960.0	169.0	(c)
Moorpark WTP	(b)	(b)	960.0	169.0	(d)
Camarillo WRP	16.0	6.2	(a)	(a)	0.2
Camrosa WRP	(b)	(b)	858.0	149.0	(d)

[1] Concentration-based targets have been converted to total recoverable allocations using the CTR default translator of 0.998.
[2] Concentration-based targets have been converted to total recoverable allocations using the CTR default translator of 0.997.
(a) Concentration-based final limits will be included in the permits in accordance with NPDES guidance and requirements, but are not calculated as part of the TMDL.
(b) Interim limits are not required because the discharger is meeting the final limits.
(c) Discharges from Simi Valley WQCP do not reach lower Calleguas Creek and Mugu lagoon during dry weather. Monitoring will be conducted and mass-based WLAs will be evaluated if targets are not met in Arroyo Simi/Las Posas or downstream reaches.
(d) Discharger does not contribute loading during dry weather. Concentration-based WLAs apply during wet weather when discharges occur. Monitoring will be conducted and mass-based WLAs will be evaluated if targets are not met in receiving water and/or downstream reaches.

A study to support a SSO for nickel has been submitted to the Regional Board and is currently under reviewed by the Regional Board and U.S. EPA staff. If a SSO for nickel is approved, the Regional Board will consider revision to the final WLAs for nickel based on the approved SSO.

Interims and Final WLAs for Mercury in Suspended Sediment

POTW	Interim (lb/month)	Final (lb/month)
Hill Canyon WWTP	0.23	0.022
Simi Valley WQCP	0.18	0.031
Moorpark WTP	N/A	N/A
Camarillo WRP	0.03	0.015
Camrosa WRP	N/A	N/A

Waste load allocations for POTWs are based on the median monthly mercury effluent concentrations multiplied by the design flow where the total load in water is assumed equal to the suspended sediment load. Interim WLAs for mercury are based on the 90^{th} percentile concentration observed in effluent discharge and multiplied by the design flow, and apply to all flow conditions.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL

Waste Load Allocations (continued)

<u>Permitted Stormwater Dischargers (PSDs)</u>

PSDs include mass-based WLAs established for copper, nickel, and selenium in total recoverable forms. Mass-based WLAs are developed for mercury in suspended sediment. Interim limits are included to allow time for dischargers to put in place implementation measures necessary to achieve final waste load allocations. The daily maximum and monthly average interim limits are set equal to the 99th and 95th percentile of available discharge data.

Interim Limits and Final WLAs for Total Recoverable Copper, Nickel, and Selenium

Interim limits and waste load allocations are applied to receiving water.

A. Interim Limits

Constituents	Calleguas and Conejo Creek			Revolon Slough		
	Dry Daily Maximum (ug/L)	Dry Monthly Average (ug/L)	Wet Daily Maximum (ug/L)	Dry Daily Maximum (ug/L)	Dry Monthly Average (ug/L)	Wet Daily Maximum (ug/L)
Copper	23	19	204	23	19	204
Nickel	15	13	(a)	15	13	(a)
Selenium	(b)	(b)	(b)	14 (c)	13 (c)	(a)

(a) The current loads do not exceed the TMDL under wet conditions; interim limits are not required.
(b) Selenium allocations have not been developed for this reach as it is not on the 303(d) list.
(c) Attainment of interim limits will be evaluated in consideration of background loading data, if available.

B. Final WLAs for Total Recoverable Copper, Nickel, and Selenium

Dry-Weather WLAs in Water Column

Flow Range	Calleguas and Conejo Creek			Revolon Slough		
	Low Flow	Average Flow	Elevated Flow	Low Flow	Average Flow	Elevated Flow
Copper1 (lbs/day)	0.04*WER - 0.02	0.12*WER - 0.02	0.18*WER - 0.03	0.03*WER - 0.01	0.06*WER - 0.03	0.13*WER - 0.02
Nickel (lbs/day)	0.100	0.120	0.440	0.050	0.069	0.116
Selenium (lbs/day)	(a)	(a)	(a)	0.004	0.003	0.004

[1] If site-specific WERs are approved by the Regional Board, TMDL waste load allocations shall be implemented in accordance with the approved WERs using the equations set forth above. Regardless of the final WERs, total copper loading shall not exceed current loading.
(a) Selenium allocations have not been developed for this reach as it is not on the 303(d) list

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Waste Load Allocations (continued)	**Wet-Weather WLAs in Water Column**

Constituent	Calleguas Creek	Revolon Slough
Copper[1] (lbs/day)	(0.00054*Q^2*0.032*Q - 0.17)*WER - 0.06	(0.0002*Q2+0.0005*Q)*WER
Nickel[2] (lbs/day)	0.014*Q^2+0.82*Q	0.027*Q^2+0.47*Q
Selenium[2] (lbs/day)	(a)	0.027*Q^2+0.47*Q

[1] If site-specific WERs are approved by the Regional Board, TMDL waste load allocations shall be implemented in accordance with the approved WERs using the equations set forth above. Regardless of the final WERs, total copper loading shall not exceed current loading.

[2] Current loads do not exceed loading capacity during wet weather. Sum of all loads cannot exceed loads presented in the table

(a) Selenium allocations have not been developed for this reach as it is not on the 303(d) list.

Q: Daily storm volume.

Interim Limits and Final WLAs for Mercury in Suspended Sediment

Final WLAs are set at 80% reduction of HSPF load estimates. Interim limits for mercury in suspended sediment are set equal to the highest annual load within each flow category, based on HSPF output for the years 1993-2003.

Flow Range	Calleguas Creek		Revolon Slough	
	Interim (lbs/yr)	Final (lbs/yr)	Interim (lbs/yr)	Final (lbs/yr)
0-15,000 MGY	3.3	0.4	1.7	0.1
15,000-25,000 MGY	10.5	1.6	4	0.7
Above 25,000 MGY	64.6	9.3	10.2	1.8

MGY: million gallons per year.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL

Waste Load Allocations (continued)

<u>Final WLAs for Other NPDES Dischargers</u>

Final WLAs for Total Recoverable Copper, Nickel, and Selenium

Reach	Copper[1]		Nickel		Selenium	
	Dry Monthly Everage (ug/L)[2]	Wet Daily Maximum (ug/L)[2]	Dry Monthly Average (ug/L)[3]	Wet Daily Maximum (ug/L)[3]	Dry Monthly Average (ug/L)	Wet Daily Maximum (ug/L)
1	3.7*WER	5.8*WER	8.2	74	(b)	(b)
2	3.7*WER	5.8*WER	8.2	74	(b)	(b)
3	27.0	27.4	149	859	(b)	(b)
4	3.7*WER	5.8*WER	8.3	75	5	290
5	3.7*WER	5.8*WER	8.3	75	5	290
6	(a)	31.0	(a)	958	(b)	(b)
7	(a)	31.0	(a)	958	(b)	(b)
8	(a)	31.0	(a)	958	(b)	(b)
9	29.1	43.3	160	1296	(b)	(b)
10	29.1	43.3	160	1296	(b)	(b)
11	29.1	43.3	160	1296	(b)	(b)
12	29.1	43.3	160	1296	(b)	(b)
13	29.1	43.3	160	1296	(b)	(b)

[1] If site-specific WERs are approved by the Regional Board, TMDL waste load allocations shall be implemented in accordance with the approved WERs using the equations set forth above. Regardless of the final WERs, total copper loading shall not exceed current loading. In addition, effluent concentrations shall not exceed the performance standards of current treatment technologies

[2] Concentration-based targets have been converted to total recoverable allocations using the CTR default translator of 0.96 for freshwater reaches and 0.83 for saltwater reaches.

[3] Concentration-based targets have been converted to total recoverable allocations using the CTR default translator of 0.997 for freshwater reaches and 0.99 for saltwater reaches.

(a) Discharges from these reaches do not reach lower Calleguas Creek and Mugu Lagoon during dry weather. Allocations are not required for these reaches.

(b) Selenium waste load allocations have not been developed for this reach as it is not on the 303(d) list.

Final WLAs for Mercury

There is insufficient information to assign mass based WLAs to these sources. Therefore concentration-based waste loads allocations are set equal to 0.051 ug/L for other NPDES dischargers based on the CTR water column target for protection of human health from consumption organism only.

Load Allocation

Mass-based load allocations (LAs) for agriculture, and open space are developed for copper, nickel, and selenium in total recoverable forms. Open space represents background loads from ambient sources (i.e. natural soil concentrations, atmospheric deposition, and natural groundwater seepage) discharged from undeveloped open space, but not ambient sources that are discharged from developed land, such as agricultural and urban areas. LAs are developed for both wet and dry-weather. The dry-weather LAs apply to days when flows in the stream are less than 86th percentile flow rate for each reach. The wet-weather LAs apply to days when flows in the stream exceed 86th percentile flow rate for each reach. Annual mass loads of mercury in suspended sediment were developed according to low, medium, and high annual flow categories.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Load Allocation	See below

Interim and Final Load Allocations for Total Recoverable Copper, Nickel, and Selenium

Interim limits are included to allow time for dischargers to put in place implementation measures necessary to achieve final load allocations. The daily maximum and monthly average interim limits are set equal to the 99th and 95th percentile of available discharge data. Interim limits and final load allocations are applied in receiving water at the compliance points.

A. Interim Limits

Constituents	Calleguas and Conejo Creek			Revolon Slough		
	Dry Daily Maximum (ug/L)	Dry Monthly Average (ug/L)	Wet Daily Maximum (ug/L)	Dry Daily Maximum (ug/L)	Dry Monthly Average (ug/L)	Wet Daily Maximum (ug/L)
Copper	24	19	1390	24	19	1390
Nickel	43	42	(a)	43	42	(a)
Selenium	(b)	(b)	(b)	6.7 (c)	6 (c)	(a)

(a) The current loads do not exceed the TMDL under wet conditions, interim limits are not required.
(b) Selenium allocations have not been developed for this reach as it is not on the 303(d) list. Implementation actions includes consideration of watershed-wide selenium impacts.
(c) Attainment of interim limits will be evaluated in consideration of background loading data, if available.

B. Final Load Allocation

Dry Weather LAs in Water Column

Constituent		Calleguas Creek			Revolon Slough		
		Low Flow	Average Flow	Elevated Flow	Low Flow	Average Flow	Elevated Flow
Copper[1] (lbs/day)	**Agriculture**	0.07*WER-0.03	0.12*WER-0.02	0.31*WER-0.05	0.07*WER-0.03	0.14*WER-0.07	0.35*WER-0.07
	Open Space	0.150	0.080	0.130	0.050	0.120	0.110
Nickel (lbs/day)	**Agriculture**	0.420	0.260	0.970	0.390	0.690	1.600
	Open Space	0.450	0.420	0.560	0.010	0.020	0.020
Selenium (lbs/day)	**Agriculture**	(a)	(a)	(a)	0.008	0.007	0.018
	Open Space	(a)	(a)	(a)	0.180	0.310	0.490

[1] If site-specific WERs are approved by the Regional Board, TMDL load allocations shall be implemented in accordance with the approved WERs using the equations set forth above.
(a) Selenium allocations have not been developed for this reach as it is not on the 303(d) list. Implementation actions include consideration of the watershed-wide selenium impacts.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL

Load Allocation (continued)

Wet Weather LAs in Water Column

Constituent		Calleguas Creek	Revolon Slough
Copper[1] (lbs/day)	**Agriculture**	(0.00017*Q^2*0.01*Q - 0.05)*WER - 0.02	(0.00123*Q^2+0.0034*Q)* WER
	Open Space	0.0000537*Q^2+0.00321*Q	0.0000432*Q^2+0.000765*Q
Nickel[2] (lbs/day)	**Agriculture**	0.014*Q^2+0.82*Q	0.027*Q^2+0.47*Q
	Open Space	0.014*Q^2+0.82*Q	0.027*Q^2+0.47*Q
Selenium[2] (lbs/day)	**Agriculture**	(a)	0.1*Q^2+1.8*Q
	Open Space	(a)	0.027*Q^2+0.47*Q

1 If site-specific WERs are approved by the Regional Board, TMDL load allocations shall be implemented in accordance with the approved WERs using the equations set forth above.

2 Current loads do not exceed loading capacity during wet weather. Sum of all loads cannot exceed loads presented in the table

(a) Selenium allocations have not been developed for this reach as it is not on the 303(d) list.

Q Daily storm volume

Interim and Final LAs for Mercury in Suspended Sediment

Final LAs are set at 80% reduction of HSPF load estimates. Interim limits for mercury in suspended sediment are set equal to the highest annual load within each flow category, based on HSPF output for the years 1993-2003

Flow Range	Calleguas Creek				Revolon Slough			
	Agriculture		Open Space		Agriculture		Open Space	
	Interim (lbs/yr)	Final (lbs/yr)	Interim (lbs/yr)	Final (lbs/yr)	Interim (lbs/yr)	Final (lbs/yr)	Interim (lbs/yr)	Final (lbs/yr)
0-15,000 MGY[1]	3.9	0.5	5.5	0.7	2	.	2.9	0.2
15,000-25,000 MGY	12.6	1.9	17.6	2 .7	4.8	0.8	6.7	1.1
Above 25,000 MGY	77.5	11.2	108.4	17.9	12.2	2.2	17.1	2

MGY: million gallons per year.

Margin of Safety

A margin of safety (MOS) for the TMDL is designed to address any uncertainty in the analysis that could result in targets not being achieved in the water bodies. Both implicit and explicit MOS are included for this TMDL. The implicit MOS stems from 1) the use of conservative assumptions made during development of multiple numeric targets to ensure sufficient protection under all conditions, and 2) conservative methods employed in developing the TMDL. Background loads are assigned to the TMDL and assumed to remain constant throughout implementation of the TMDL. This results in higher required reductions for the other sources. Calculation of allocations is based on never exceeding numeric target concentrations more than once in three years as specified in the CTR. Calculations of current loads and loading capacity for Mugu Lagoon are based on the combined discharges from Calleguas Creek and Revolon Slough (without any dilution provided by tidal flushing), which over predicts actual concentrations in the Lagoon. A 15% explicit MOS is also included for copper and nickel to account for the uncertainty resulting from the calculation of the allowable load based on the median flow rate and translator of each flow category. The 15% explicit MOS is determined sufficient to address the elevated flow category, but still account for the more conservative nature of low and average category.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Future Growth	Ventura County accounts for slightly more than 2% of the state's residents with a population of 753,197 (US Census Bureau, 2000). GIS analysis of the 2000 census data yields a population estimate of 334,000 for the CCW, which equals about 44% of the county population. According to the Southern California Association of Governments (SCAG), growth in Ventura County averaged about 51% per decade from 1900-2000; with growth exceeding 70% in the 1920s, 1950s, and 1960s. Significant population growth is expected to occur within and near present city limits until at least 2020. Future growth may initially increase loadings as construction activities expose bare soil and increase erosion-related discharges to receiving water. However, once development has been completed the presence of impermeable land surface and landscaped areas may reduce the amount of natural soils that are eroded and carried to the stream. For copper, future growth could increase loadings from urban areas and POTWs due to increased traffic (i.e., brake pad residues), architectural copper use and corrosion of copper pipes. Selenium loading may increase if increased irrigation raises the groundwater table and increases high selenium groundwater seepage to surface waters. However, if increased growth results in increased water demand and high selenium groundwater is pumped and treated to supply this demand, the selenium could decrease.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed for copper, nickel, and selenium by developing separate allocations for wet and dry weather. Critical conditions for copper, nickel, and selenium were developed using model results to calculate the maximum observed 4-day average dry weather concentration and the associated flow condition. Wet weather, as a whole, is defined as a critical condition. For mercury, there is no indication that mercury contamination in Mugu Lagoon is consistently exacerbated at any particular time of the year. Since the potential effects of mercury are related to bioaccumulation in the food chain over a long period time, any other short term variations in concentration which might occur are not likely to cause significant impacts upon beneficial uses. Therefore, seasonal variations do not affect critical conditions for the Calleguas Creek watershed mercury TMDL.
Special Studies and Monitoring Plan	<u>Special Studies</u> Several special studies are planned to improve understanding of key aspects related to achievement of WLAs and LAs for the Metals and Selenium TMDL ***1. Special Study #1 (Optional) – Evaluation and Initiation of Natural Sources Exclusion*** The TMDL technical report has identified ambient sources as the primary significant selenium and mercury loadings in the watershed and as potentially significant sources of copper and nickel. The portion of all ambient sources associated with open space runoff and natural groundwater seepage is accounted for in this TMDL as "background load." This special study will evaluate whether or not background loads for each constituent qualify for natural source exclusion.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Special Studies and Monitoring Plan (continued)	This study will also consider whether any portion of the ambient source contribution for agricultural or urban runoff loads qualify for natural source exclusions and/or provide a basis for site specific objectives. The presence of natural sources makes achievement of selenium and mercury targets during all conditions unlikely. For copper, achievement of the CTR targets or the WER based targets (if approved) in Revolon Slough may not be feasible due to the magnitude of background loads. Completion of site specific objectives and/or a use attainability analysis shall be required to review any potential change to water quality objectives for these constituents. This special study will be used to develop the necessary information to revise the water quality objectives for selenium and mercury and possibly for copper and nickel. ***2. Special Study #2 – Identification of selenium contaminated Groundwater Sources*** The purpose of this special study will be to identify groundwater with high concentrations of selenium that is either being discharged directly to the stream or used as irrigation water. The investigation will focus on areas where groundwater has a high probability of reaching the stream and identify practical actions to reduce the discharge of the groundwater to the stream. The analysis will include an assessment of the availability of alternative water supplies for irrigation water, the costs of the alternative water supplies and the costs of reducing groundwater discharges. ***3. Special Study #3– Investigation of Soil Concentrations and Identification of "Hot Spots"*** The purpose of this special study will be to identify terrestrial areas with high concentrations of metals and/or selenium, either due to anthropogenic sources or resulting from high natural concentrations in soils. Use of detailed soil maps for the watershed in combination with field survey and soil sampling may lead to identification of areas important for reducing overall loads reaching the stream. Identification of any areas with elevated soil concentrations of metals and/or selenium would create an opportunity for efficient and targeted implementation actions, such as remediation or erosion control. ***4. Special Study #4 (Optional) – Determination of Water Effect Ratio for Copper in Revolon Slough*** The purpose of this optional special study would be to calculate a WER for copper that is specific to Revolon Slough. A WER was not previously developed for Revolon Slough because it was not listed for copper. Subsequent monitoring demonstrated that the saltwater copper CTR criterion was exceeded in Revolon Slough. This Study would parallel the developed WER for Mugu Lagoon and Calleguas Creek. This is an optional special study to be conducted if desired by the stakeholders or determined necessary by the Executive Officer.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Special Studies and Monitoring Plan (continued)	***5. Special Study #5 (Optional) – Determination of Site-Specific Objectives for Mercury and Selenium*** Special Study #1 will evaluate whether a natural source exclusion is appropriate for background loads of mercury and selenium or any portion of the ambient source contributions to non-background loads in the Calleguas Creek watershed. This special study will develop any SSOs deemed necessary to account for the background conditions and/or site-specific impacts of mercury and selenium (and possibly for copper and nickel) on wildlife and humans in the watershed. This is an optional special study to be conducted if desired by the stakeholders or determined necessary for establishing a natural source exclusion. **<u>Monitoring Plan</u>** The Calleguas Creek Watershed TMDL Monitoring Plan (CCWTMP) is designed to monitor and evaluate the implementation of this TMDL and refine the understanding of metal and selenium loads. CCWTMP is intended to parallel efforts of the Calleguas Creek Watershed Nutrients TMDL, Toxicity TMDL, and OC Pesticide, PCBs, and Sediment TMDL monitoring programs. The proposed CCWTMP shall be made available for public review before approval by the Executive Officer. The goals of the CCWTMP include: (1) to determine compliance with copper, mercury, nickel, and selenium numeric targets at receiving water monitoring stations and at POTWs discharges; (2) to determine compliance with waste load and load allocations for copper, mercury, nickel, and selenium at receiving water monitoring stations and at POTWs discharges; (3) to monitor the effect of implementation action by PSDs, POTW, agricultural dischargers, and other NPDES permittees on in-stream water quality; and (4) to implement the CCWTMP in a manner consistent with other TMDL implementation plans and regulatory actions within the Calleguas Creek watershed. Monitoring conducted through the Conditional Waiver for Disharges from Irrigated Lands (Conditional Waiver Program) may meet part of the needs of the CCWTMP. To the extent monitoring required by the Metals and Selenium TMDL Implementation Plan parallels monitoring required by the Conditional Waiver Program, monitoring shall be coordinated with monitoring conducted by individuals and groups subject to the term and conditions of the Conditional Waiver Program.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Special Studies and Monitoring Plan (continued)	Monitoring will begin within one year of the effective date of the TMDL. For the first year, in-stream water column samples will be collected monthly for analysis of general water quality constituents (GWQC), copper, mercury, nickel, selenium, and zinc. After the first year, the Executive Officer will review the monitoring report and revise the monitoring frequency as appropriate. In-stream water column samples will be generally be collected at the base of Revolon Slough and Calleguas Creek, and in Mugu Lagoon (collection of flow-based samples will occur above the tidal prism). Additionally, sediment samples will be collected semi-annually in Mugu Lagoon and analyzed for sediment toxicity resulting from copper, mercury, nickel, selenium, and zinc. At such a time as numeric targets are consistently met at these points, an additional site or sites will be considered for monitoring to ensure numeric targets are met throughout the lower watershed. Additional samples will be collected concurrently at stations that are representative of agricultural and urban runoff as well as at POTWs in each of the subwatersheds and analyzed for GWQCs, copper, mercury, nickel, selenium, and zinc. The location of these stations will be determined before initiation of the CCWTMP. Environmentally relevant detection limits will be used for metals and selenium (i.e. detection limits lower than applicable target), if available at a commercial laboratory. Compliance sampling station locations:

Subwatershed	Station ID	Station Location	Constituent
Mugu Lagoon	01-11-BR	11th Street Bridge	Water Column: Cu, Ni, Hg, Se, Zn
			Bird Egg: Hg, Se
			Fish Tisue: Hg, Se
			Sediment: Cu, Ni, Hg, Se, Zn
Revolon Slough	04-WOOD	Revolon Slough East Side of Wood Road	Water Column: Cu, Ni, Hg, Se, Zn
			Fish Tisue: Hg, Se
Calleguas Creek	03-CAMAR	Calleguas Creek at University Drive	Water Column: Cu, Ni, Hg, Se, Zn
	03D-CAMR	Camrosa Water Reclamation Plant	Water Column: Cu, Ni, Hg, Se, Zn
	9AD-CAMA	Camarillo Water Reclamation Plant	Water Column: Cu, Ni, Hg, Se, Zn
Conejo Creek	10D-HILL	Hill Canyon Wastewater Treatment Plant	Water Column: Cu, Ni, Hg, Se, Zn

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Implementation Plan	The final WLAs will be included for permitted stormwater discharges, POTWs, and other NPDES discharges in accordance with the compliance schedules provided in Table 7-19.2. The Regional Board may revise these WLAs based on additional information developed through special studies and/or monitoring conducted as part of this TMDL. In addition, the implementation schedule was developed with the assumption that a WER for copper and a SSO for nickel will proceed following the TMDL. Should adoption and approvals of the WER and SSO not proceed, additional implementation actions could be required. The implementation plan includes discussion of implementation actions to address these conditions. WLAs established for Simi Valley WQCP, Camrosa WRP, and Moorpark WTP in this TMDL will be implemented through NPDES permit limits. Compliance will be determined through monitoring of final effluent discharge as defined in the NPDES permit. The Hill Canyon and Camarillo WRPs are working towards discontinuing the discharge of effluent to Conejo Creek. If this plan is implemented, the POTW allocations for the watershed will be achieved by reduction of effluent discharges to the stream. The implementation plan includes sufficient time for this plan to be implemented. However, if this plan is altered, the POTWs will need to meet allocations through other methods such as source control activities. The Regional Board will need to ensure that permit conditions are consistent with the assumptions of the WLAs. Should federal, state, or regional guidance or practice for implementing WLAs into permits be revised, the Regional Board may reevaluate the TMDL to incorporate such guidance. In accordance with current practice, a group concentration-based WLA has been developed for all permitted stormwater discharges, including municipal separate storm sewer systems (MS4s), Caltrans, general industrial and construction stormwater permits, and Naval Air Weapons Station Point Mugu. MS4 WLAs will be incorporated into the NPDES permit as receiving water limits measured in-stream at the base of Revolon Slough and Calleguas Creek, and in Mugu Lagoon and will be achieved through the implementation of BMPs as outlined in the implementation plan. The Regional Board will need to ensure that permit conditions are consistent with the assumptions of the WLAs. If BMPs are to be used, the Regional Board will need to detail its findings and conclusions supporting the use of BMPs in the NPDES permit fact sheets. Should federal, state, or regional guidance or practice for implementing WLAs into permits be revised, the Regional Board may reevaluate the TMDL to incorporate such guidance. The Regional Board may revise these WLAs based on the collection of additional information developed through special studies and/or monitoring conducted as part of this TMDL.

TMDL Element	Calleguas Creek Watershed Metals and Selenium TMDL
Implementation Plan (continued)	LAs will be implemented through the State's Nonpoint Source Pollution Control Program (NPSPCP) and Conditional Waiver for Discharges from Irrigated Lands adopted by the Los Angeles Regional Water Quality Control Board on November 3, 2005. Compliance with LAs will be measured in-stream at the base of Revolon Slough and Calleguas Creek and in Mugu Lagoon and will be achieved through the implementation of BMPs consistent with the NPSPCP and the Conditional Waiver Program. The Conditional Waiver Program requires the development of an agricultural water quality management plan (AWQMP) to address pollutants that are exceeding receiving water quality objectives as a result of agricultural discharges. Therefore, implementation of the load allocations will be through the development of an AWQMP for metals and selenium. Implementation of the load allocations will also include the coordination of BMPs being implemented under other required programs to ensure metal discharges are considered in the implementation. Additionally, agricultural dischargers will participate in educational seminars on the implementation of BMPs as required under the Conditional Waiver Program. Studies are currently being conducted to assess the extent of BMP implementation and provide information on the effectiveness of BMPs for agriculture. This information will be integrated into the AWQMP that will guide the implementation of agricultural BMPs in the Calleguas Creek watershed. After implementation of these actions, compliance with the allocations and TMDL will be evaluated and the allocations reconsidered if necessary based on the special studies and monitoring plan section of the implementation plan Agricultural and PSDs dischargers will have a required 25%, 50% and 100% reduction in the difference between the current loadings and the load allocations at 5, 10 and 15 years after the effective date, respectively. Achievement of required reductions will be evaluated based on progress towards BMP implementation as outlined in the UWQMPs, AWQMP, Conditional Waiver Program, and in consideration of background loading information, if available. If the interim reductions are not met, the dischargers will submit a report to the Executive Officer detailing why the reductions were not met and the steps that will be taken to meet the required reductions. As shown in Table 7-19.2, implementation of LAs will be conducted over a period of time to allow for implementation of the BMPs, as well as coordination with special studies and implementation actions resulting from other TMDL Implementation Plans for the Calleguas Creek watershed. The Regional Board may revise the LAs based on the collection of additional information developed through special studies and/or monitoring conducted as part of this TMDL.

Table 7-19.2 Calleguas Creek Watershed Metals and Selenium TMDL: Implementation Schedule

Item	Implementation Action[1]	Responsible Party	Completion Date
1	Effective date of interim Metals and Selenium TMDL waste load allocation (WLAs), and final WLAs for other NPDES permittees	POTWs, Permitted Stormwater Dischargers[2] (PSD), Other NPDES Permittees	Effective date of the amendment
2	Effective date of interim Metals and Selenium TMDL load allocation (LAs)	Agricultural Dischargers	Effective date of the amendment
3a	Submit Calleguas Creek Watershed Metals and Selenium Monitoring Program	POTWs, PSD, Agricultural Dischargers	Within 3 months after the effective date of the amendment
3b	Implement Calleguas Creek Watershed Metals and Selenium Monitoring Program	POTWs, PSD, Agricultural Dischargers	Within 3 months of Executive Officer approval of the monitoring program
3c	Re-calibrate HSPF water quality model based on first year of monitoring data	POTWs, PSD, Agricultural Dischargers	1 year after submittal of first annual monitoring report
4a	Conduct a source control study, develop and submit an Urban Water Quality Management Program (UWQMP) for copper, mercury, nickel, and selenium	MS4s	Within 2 years after the effective date of the amendment
4b	Conduct a source control study, develop and submit an UWQMP for copper, mercury, nickel, and selenium	Caltrans	Within 2 years after the effective date of the amendment
4c	Conduct a source control study, develop and submit an UWQMP for copper, mercury, nickel, and selenium	NAWS point Mugu (US Navy)	Within 2 years after the effective date of the amendment
5	Implement UWQMP	PSD	Within 1 year of approval of UWQMP by the Executive Officer
6	Develop and submit an Agricultural Water Quality Management Program (AWQMP) as described in the Conditional Waiver Program	Agricultural Dischargers	Within 2 years after the effective date of the amendment
7	Implement AWQMP	Agricultural Dischargers	Within 1 year of approval of AWQMP by the Executive Officer
8	Develop WLAs and LAs for zinc if impairment for Mugu Lagoon is maintained on the final 2006 303(d) list	Regional Board or USEPA	Within 1 year of the final 2006 303(d) list
9	Submit progress report on salinity management plan, including status of reducing WRP effluent discharges to Conejo and Calleguas Creek reaches of the watershed	POTWs	Within 3 years after the effective date of the amendment
10	If progress report identifies the effluent discharges reduction is not progressing, develop and implement source control activities for copper, mercury, nickel, and selenium	POTWs	Within 4 years after the effective date of the amendment

Item	Implementation Action[1]	Responsible Party	Completion Date
11	Re-evaluation of POTW interim waste load allocations for copper, mercury, and nickel	POTWs	Within 5 years after the effective date of the amendment
12a	Evaluate the results of the OCs TMDL, Special Study – Calculation of sediment transport rates in the Calleguas Creek watershed for applicability to the metals and selenium TMDL	Agricultural Dischargers, PSD	Within 6 months of completion of the study
12b	Include monitoring for copper, mercury, nickel, and selenium in the OC pesticides TMDL, special Study – Monitoring of sediment by source and land use type	Agricultural Dischargers, PSD	Within 2 years after the effective date of the amendment
12c	Expand scope of the OC Pesticide TMDL, Special Study – Examination of food webs and accumulation in the Calleguas Creek watershed to ensure protection of wildlife to include mercury	Interested parties	If necessary, prior to end of the implementation period
12d	Evaluate the results of the OC Pesticides TMDL, Special Study – Effects of BMPs on Sediment and Siltation to determine the impacts on metals and selenium	Agricultural Dischargers, PSD	Within 6 months of completion of the study
13a	Submit work plan for Special Study #1 (Optional) – Identification of Natural Sources Exclusion	Agricultural Dischargers, PSD	Within 1 year after the effective date of the amendment
13b	Submit results of Special Study #1 (Optional) – Identification of Natural Sources Exclusion	Agricultural Dischargers, PSD	Within 3 years of approval of workplan by Executive Officer
14a	Submit work plan for Special Study #2 – Identification of selenium Contaminated Groundwater Sources	POTWs, PSD, and Agricultural Dischargers	Within 1 year after the effective date of the amendment
14b	Submit results of Special Study #2 – Identification of selenium Contaminated Groundwater Sources	POTWs, PSD, and Agricultural Dischargers	Within 1 year of approval of workplan by Executive Officer
15a	Submit work plan for Special Study #3 – Investigation of Metals' "Hot Spot" and Natural Soil	PSD and Agricultural Discharger	Within 1 year after the effective date of the amendment
15b	Submit results of Special Study #3 – Investigation of metals' "Hot Spot" and Natural Soil	PSD and Agricultural Discharger	Within 2 years of approval of workplan by Executive Officer
16	Special Study #4 (Optional) – Determination of WER for copper in Revolon Slough	PSD and Agricultural Dischargers	If necessary, prior to end of the implementation period
17	Special Study #5 (Optional) – Determination of Site Specific Objective for Mercury and Selenium	PSD and Agricultural Dischargers	If necessary, prior to end of the implementation period
18	Evaluate effectiveness of BMPs implemented under the AWQMP and UWQMP in controlling metals and selenium discharges	PSD and Agricultural Dischargers	6 years after the effective date of the amendment
19	Evaluate the results of implementation actions 14 and 15 (Special Study #2 & #3) and implement actions identified by the studies	POTWs, PSD, and Agricultural Dischargers	Within 1 year after the completion of the studies

Item	Implementation Action[1]	Responsible Party	Completion Date
20	If needed, implement additional BMPs or revise existing BMPs to address any issues not covered by implementation efforts of related Calleguas Creek watershed TMDLs (Nutrients, Toxicity, OC Pesticides, PCBs, and Siltation) and the Conditional Waiver Program	Agricultural Dischargers	7 years after the effective date of the amendment
21	Consider nickel SSO proposed by stakeholders	Regional Board	1 years after the effective date of the amendment
22	Publicly notice tentative copper water effects ratio for Regional Board consideration, if deemed appropriate based on peer review	Regional Board Staff	Within 2 months of receipt of peer review comments
23	Based on the result from items 1-23, Regional Board will consider re-evaluation of the TMDLs, WLAs, and LAs if necessary	Regional Board	2 years from submittal of information necessary for re-evaluation
24	POTWs will be required to reduce loadings by 50%, and 100% of the difference between the current loading and the WLAs at 8 and 10 years after the effective date, respectively.	POTWs	8 and 10 years after the effective date of the amendment
25	Re-evaluation of Agricultural and Urban load and waste load allocations for copper, mercury, nickel, and selenium based on the evaluation of BMP effectiveness. Agricultural and urban dischargers will have a required 25%, 50%, and 100% reduction in the difference between the current loadings and the load allocations at 5, 10, and 15 years after the effective date, respectively.	Agricultural and PSDs	5, 10, and 15 years after the effective date of the amendment
26	Stakeholders and Regional Board staff will provide information items to the Regional Board, including: progress toward meeting TMDL load reductions, water quality data, and a summary of implementation activities completed to date	Regional Board	2 years after the effective date, and every 2 years following
27	Achievement of Final WLAs and attainment of water quality standards for copper, mercury, nickel, and selenium	POTWs	Within 10 years after the effective date of the amendment[3]
28	Achievement of Final WLAs and LAs and attainment of water quality standards for copper, nickel, mercury and selenium	Agricultural Dischargers, PSD	Within 15 years after the effective date of the amendment[3]

1 The Regional Board regulatory programs addressing all discharges in effect at the time this implementation task is due may contain requirements substantially similar to the requirements of these implementation tasks. If such requirements are in place in another regulatory program including other TMDLs, the Executive Officer may revise or eliminate this implementation task to coordinate this TMDL implementation plan with other regulatory programs.

2 Permitted Stormwater Dischargers (PSD) include MS4s, Caltrans, the Naval Air Weapons Station at Point Mugu, and general industrial and construction permittees.

3 Date of achievement of WLAs and LAs based on the estimated timeframe for educational programs, special studies, and implementation of appropriate BMPs and associated monitoring. The Conditional Waiver Program will set timeframes for the BMP management plans.

7-21 Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on June 8, 2006.

This TMDL was approved by:
The State Water Resources Control Board on November 15, 2006.
The Office of Administrative Law on February 20, 2007.
The U.S. Environmental Protection Agency on March 26, 2007.

The effective date of this TMDL is: April 27, 2007.

The following table includes all the elements of this TMDL.

Table 7-21.1. Ballona Creek, Estuary, and Tributaries Bacteria TMDL: Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use designated for Ballona Estuary and Sepulveda Channel, limited water contact recreation (LREC) designated for Ballona Creek Reach 2, and non-contact recreation (REC-2) beneficial uses of Ballona Creek Reach 1. Recreating in waters with elevated bacterial indicator densities has long been associated with adverse human health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations)	The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine and fresh water to protect the contact and non-contact recreation uses. These targets are the most appropriate indicators of public health risk in recreational waters. These bacteriological objectives are set forth in Chapter 3 of the Basin Plan.[1] The objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives that serve as the numeric targets for this TMDL are: **In Marine Waters Designated for Water Contact Recreation (REC-1)** 1. Geometric Mean Limits a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. c. Enterococcus density shall not exceed 35/100 ml. 2. Single Sample Limits a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

Element	Key Findings and Regulatory Provisions
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations) (continued)	**In Fresh Waters Designated for Water Contact Recreation (REC-1)** 1. Geometric Mean Limits a. *E. coli* density shall not exceed 126/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. 2. Single Sample Limits a. *E. coli* density shall not exceed 235/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. In Fresh Waters Designated for Limited Water Contact Recreation (LREC-1)[2] 1. Geometric Mean Limits a. *E. coli* density shall not exceed 126/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. 2. Single Sample Limits a. *E. coli* density shall not exceed 576/100 ml. **In Fresh Waters Designated for Non-Contact Water Recreation (REC-2)** 1. Geometric Mean Limits a. Fecal coliform density shall not exceed 2000/100 ml. 2. Single Sample Limits a. Fecal coliform density shall not exceed 4000/100 ml. The targets apply throughout the year. Determination of attainment of the targets will be at in-stream monitoring sites to be specified in the compliance monitoring report. Implementation of the above REC-1 and LREC-1 bacteria objectives and the associated TMDL numeric targets is achieved using a 'reference system/anti-degradation approach' rather than the alternative 'natural sources exclusion approach subject to antidegradation policies' or strict application of the single sample objectives. As required by the CWA and Porter-Cologne Water Quality Control Act, Basin Plans include beneficial uses of waters, water quality objectives to protect those uses, an anti-degradation policy, collectively referred to as water quality standards, and other plans and policies necessary to implement water quality standards. This TMDL and its associated waste load allocations, which shall be incorporated into relevant permits, and load allocations are the vehicles for implementation of the Region's standards.

Element	Key Findings and Regulatory Provisions
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load allocations) (continued)	The 'reference system/anti-degradation approach' means that on the basis of historical exceedance levels at existing monitoring locations, including a local reference beach within Santa Monica Bay, a certain number of daily exceedances of the single sample bacteria objectives are permitted. The allowable number of exceedance days is set such that (1) bacteriological water quality at any site is at least as good as at a designated reference site within the watershed and (2) there is no degradation of existing bacteriological water quality. This approach recognizes that there are natural sources of bacteria that may cause or contribute to exceedances of the single sample objectives and that it is not the intent of the Regional Board to require treatment or diversion of natural coastal creeks or to require treatment of natural sources of bacteria from undeveloped areas. The geometric mean targets may not be exceeded at any time. The rolling 30-day geometric means will be calculated on each day. If weekly sampling is conducted, the weekly sample result will be assigned to the remaining days of the week in order to calculate the daily rolling 30-day geometric mean. For the single sample targets, each existing monitoring site is assigned an allowable number of exceedance days for three time periods (1) summer dry-weather (April 1 to October 31), (2) winter dry-weather (November 1 to March 31), and (3) wet-weather (defined as days with 0.1 inch of rain or greater and the three days following the rain event.) Implementation of the REC-2 target will be as specified in the Basin Plan. The REC-2 bacteria objectives allow for a 10% exceedance frequency of the single sample limit in samples collected during a 30-day period. This allowance, which is based on an acceptable level of health risk, will be applied in lieu of the allowable exceedance days discussed earlier. As with the other REC-1 and LREC-1 objectives, the geometric mean target for REC-2, which is based on a rolling 30-day period, will be strictly adhered to and may not be exceeded at any time.
Source Analysis	The major contributors of flows and associated bacteria loading to Ballona Creek and Estuary, are dry- and wet-weather urban runoff discharges from the storm water conveyance system. Run-off to Ballona Creek is regulated as a point source under the Los Angeles County MS4 Permit, the Caltrans Storm Water Permit, and the General Construction and Industrial Storm Water Permits. In addition to these regulated point sources, the Ballona Estuary receives input from the Del Rey Lagoon and Ballona Wetlands through connecting tide gates.

Element	Key Findings and Regulatory Provisions
Source Analysis (continued)	Preliminary data suggest that the Ballona Wetlands are a sink for bacteria from Ballona Creek and it is therefore not considered a source in this TMDL. Inputs to Ballona Estuary from Del Rey Lagoon, are considered non-point sources of bacterial contamination. This waterbody may be considered for a natural source exclusion if its contributing bacteria loads are determined to be as a result of wildlife in the area, as opposed to anthropogenic inputs. The TMDL will require a source identification study for the lagoon in order to apply the natural source exclusion. Other nonpoint sources in Ballona Creek and Estuary include natural sources from birds, waterfowl and other wildlife. Data do not currently exist to quantify the extent of the impact of wildlife on bacteria water quality in the Estuary.
Loading Capacity	The loading capacity is defined in terms of bacterial indicator densities, which is the most appropriate for addressing public health risk, and is equivalent to the numeric targets, listed above.
Waste Load Allocations (for point sources)	The Los Angeles County MS4 and Caltrans storm water permittees and co-permittees are assigned waste load allocations (WLAs) expressed as the number of daily or weekly sample days that may exceed the single sample targets equal to the TMDLs established for the impaired reaches (see Table 7.21.2a), and Waste Load Allocations assigned to waters tributary to impaired reaches (Table 7.21.2b). Waste load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. For each monitoring site, allowable exceedance days are set on an annual basis as well as for three time periods. These three periods are: 1. summer dry-weather (April 1 to October 31) 2. winter dry-weather (November 1 to March 31) 3. wet-weather days (defined as days of 0.1 inch of rain or more plus three days following the rain event). The County of Los Angeles, Caltrans, and the Cities of Los Angeles, Culver City, Beverly Hills, Inglewood, West Hollywood, and Santa Monica are the responsible jurisdictions and responsible agencies[3] for the Ballona Creek Watershed. The responsible jurisdictions and responsible agencies within the watershed are jointly responsible for complying with the waste load allocation in each reach.

Element	Key Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	For the single sample objectives of the impaired REC-1 and LREC-1 reaches, the proposed WLA for summer dry-weather are zero (0) days of allowable exceedances, and those for winter dry-weather and wet-weather are three (3) days and seventeen (17) days of exceedance, respectively. In the instances where more than one single sample objective applies, exceedance of any one of the limits constitutes an exceedance day. The proposed waste load allocation for the rolling 30-day geometric mean for the responsible agencies and jurisdictions is zero (0) days of allowable exceedances. For the single sample objectives of the impaired REC-2 reach, the proposed WLA for all periods is a 10% exceedance frequency of the REC-2 single sample water quality objectives. The proposed waste load allocation for the rolling 30-day geometric mean for the responsible agencies and jurisdictions is zero (0) days of allowable exceedances. In addition to assigning TMDLs for the impaired reaches, Waste Load Allocations and Load Allocations are assigned to the tributaries to these impaired reaches. These WLAs and LAs are to be met at the confluence of each tributary and its downstream reach (see Table 7.21.2b).
Load Allocations (for nonpoint sources)	Load allocations are expressed as the number of daily or weekly sample days that may exceed the single sample targets identified under “Numeric Target” at a monitoring site, along with a rolling 30-day geometric mean. Load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. Del Rey Lagoon is considered a nonpoint source and is therefore subject to load allocations. The proposed LA for summer dry-weather are zero (0) days of allowable exceedances, and those for winter dry-weather and wet-weather are three (3) days and seventeen (17) days of exceedance, respectively. In the instances where more than one single sample objective applies, exceedance of any one of the limits constitutes an exceedance day. The proposed load allocation for the rolling 30-day geometric mean for the responsible agencies and jurisdictions is zero (0) days of allowable exceedances (see Table 7.21.2a). The City of Los Angeles is the responsible jurisdiction for the Del Rey lagoon, and is responsible for complying with the assigned load allocations presented in Table 7.21.2b at the tide gate(s) between the Lagoon and the Estuary. If other unidentified nonpoint sources are directly impacting bacteriological water quality and causing an exceedance of the numeric targets, within the Estuary, the permittee(s) under the Municipal Storm Water NPDES Permits are not responsible through these permits. However, the jurisdiction or agency adjacent to the monitoring location may have further obligations to identify such sources.

Element	Key Findings and Regulatory Provisions
Implementation	The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the Caltrans Storm Water Permit, general NPDES permits, general industrial storm water permits, general construction storm water permits, and the authority contained in Sections 13263 and 13267 of the Water Code. Each NPDES permit assigned a WLA shall be reopened or amended at re-issuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. Each responsible jurisdictions and agency will be required to meet the storm water waste load allocations shared by the LA County MS4 and Caltrans permittees at the designated TMDL effectiveness monitoring points. An iterative implementation approach using a combination of non-structural and structural BMPs may be used to achieve compliance with the waste load allocations. The administrative record and the fact sheets for the MS4 and Caltrans storm water permits must provide reasonable assurance that the BMPs selected will be sufficient to implement the waste load allocation. Load allocations for nonpoint sources will be incorporated into Waste Discharge Requirements and MOUs with the responsible jurisdictional agencies. This TMDL will be implemented in two phases over a ten-year period (see Table 7-21.3). Within six years of the effective date of the TMDL, compliance with the allowable number of summer dry-weather (April 1 to October 31), winter dry-weather exceedance days (November 1 to March 31) and the rolling 30-day geometric mean targets for both periods must be achieved. Within ten years of the effective date of the TMDL, compliance with the allowable number of wet-weather exceedance days and rolling 30-day geometric mean targets must be achieved. In order to clearly justify an extended implementation schedule beyond 10 years and up to 14 years from the effective date of the TMDL, the responsible agencies are required to submit additional quantifiable analyses as described below to demonstrate (1) the proposed plans will meet the final WLAs and (2) the proposed implementation actions will achieve multiple water quality benefits and other public goals. The types of approaches proposed coupled with quantifiable estimates of the integrated water resources benefits of the proposed structural and non-structural BMPs included in the Implementation Plan would provide the obligatory demonstration that an integrated water resources approach is being pursued. This demonstration shall include numeric estimates of the benefits, including but not limited to reductions in other pollutants, groundwater recharged, acres of multi-use projects and water (e.g. urban runoff) beneficially reused.

Element	Key Findings and Regulatory Provisions
Implementation (continued)	The responsible jurisdictions and the responsible agencies must submit a report to the Executive Officer (see Table 7-21.3) describing how they intend to comply with the dry-weather and wet-weather WLAs. As the primary jurisdiction, the City of Los Angeles is responsible for submitting the implementation plan report described above. In addition, as the responsible agency for Del Rey Lagoon, the City of Los Angeles must submit a report detailing how it intends to comply with the load allocations assigned to this waterbody. Alternatively, the City of Los Angeles may submit data clearly demonstrating that Del Rey Lagoon is not a source, for the Regional Board's consideration.. The Regional Board intends to reconsider this TMDL, within 4 years of its effective date to incorporate modifications to the WLAs based on results of the scheduled reconsideration of the Santa Monica Bay (SMB) beaches TMDLs. The SMB beaches TMDLs are scheduled to be reconsidered in four years to re-evaluate the allowable winter dry-weather and wet-weather exceedance days based on additional data on bacterial indicator densities in the wave wash; to re-evaluate the reference system selected to set allowable exceedance levels; to re-evaluate the reference year used in the calculation of allowable exceedance days, and to re-evaluate the need for revision of the geometric mean implementation provision. The Regional Board also intends to re-asses the WLAs for Benedict Canyon Channel, Sepulveda Channel, and Centinela Creek based on results of the required compliance monitoring, and/or any voluntary beneficial use investigations.
Margin of Safety	By directly applying the numeric water quality standards and implementation procedures as Waste Load Allocations, there is little uncertainty about whether meeting the TMDLs will result in meeting the water quality standards.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for three time periods (summer dry-weather, winter-dry weather, and wet-weather) based on public health concerns and observed natural background levels of exceedance of bacterial indicators. The critical condition for bacteria loading to the Ballona Creek, Ballona Estuary, and Sepulveda Channel is during wet weather when monitoring data indicate greater exceedance probabilities of the single sample bacteria objectives than during dry-weather.

Element	Key Findings and Regulatory Provisions
Seasonal Variations and Critical Conditions (continued)	The Santa Monica Bay Beaches Bacteria TMDL identified the critical condition within wet weather more specifically, in order to set the allowable number of exceedances of the single sample limit days. The 90th percentile storm year in terms of wet days was used as the reference year. The 90th percentile year was selected for several reasons. First, selecting the 90th percentile year avoids an untenable situation where the reference system is frequently out of compliance. Second, selecting the 90th percentile year allows responsible jurisdictions and responsible agencies to plan for a 'worst-case scenario', as a critical condition is intended to do.
Monitoring	The TMDL effectiveness monitoring program will assess attainment of the allowable exceedances for Ballona Creek, Ballona Estuary, and Sepulveda Channel, and the WLAs for the tributaries. Responsible jurisdictions and responsible agencies shall conduct daily or systematic weekly sampling at a minimum of two locations within Ballona Estuary and Reach 2 of Ballona Creek, at least one location each in Reach 1 of Ballona Creek and Sepulveda Channel, and at the confluence with Centinela Creek and Benedict Canyon Channel, to determine compliance. Similar monitoring at the connecting tide gates of Del Rey Lagoon is also required. Where monitoring locations are located at or close to the boundary of two reaches, data from sampling points will also be used to assess the immediate downstream reach. This will ensure that the downstream reaches, which have more stringent water quality objectives, are adequately protected. If the number of exceedance days is greater than the allowable number of exceedance days in the REC-1 and LREC-1 waters, and/or the frequency of exceedance is greater than 10% in the REC-2 waters, the responsible jurisdictions and/or responsible agencies shall be considered not to be attaining the TMDLs and/or assigned allocations (non-attaining). Responsible jurisdictions or agencies shall not be deemed non-attaining if the investigation described in the paragraph below demonstrates that bacterial sources originating within the jurisdiction of the responsible agency have not caused or contributed to the exceedance. If an in-stream location is non-attaining as determined in the previous paragraph, the Regional Board shall require responsible agencies to initiate an investigation, which at a minimum shall include daily sampling at the existing monitoring location until all single sample events meet bacteria water quality objectives.

Element	Key Findings and Regulatory Provisions
Special Studies	Should the jurisdictional agency for Del Rey Lagoon opt for the natural source exclusion, the TMDL requires that a separate bacteria source identification study be conducted to determine its eligibility. The study should identify all probable sources of bacteria loads, their estimated contributions to the Lagoon, and a determination of the frequency of exceedances of the single sample bacteria objectives caused by the identified natural sources.

1 The bacteriological objectives were revised by a Basin Plan amendment adopted by the Regional Board on October 25, 2001, and subsequently approved by the State Water Resources Control Board, the Office of Administrative Law and finally by U.S. EPA on September 25, 2002.

2 The bacteriological objectives for the LREC-1 use designation were provided in a Basin Plan Amendment adopted by State Board on January 20, 2005, and subsequently approved by the Office of Administrative Law and finally by U.S. EPA on February 17, 2006.

3 For the purposes of this TMDL, "responsible jurisdictions and responsible agencies" are defined as (1) local agencies that are permittees or co-permittees on a municipal storm water permit, (2) local or state agencies that have jurisdiction over Ballona Creek and Estuary, and (3) the California Department of Transportation pursuant to its storm water permit.

Table 7-21.2a: Ballona Creek, Ballona Estuary and Sepulveda Channel Bacteria TMDL: Final Allowable Exceedance Days by Reach

Time Period	Ballona Estuary, Ballona Creek Reach 2, and Sepulveda Channel *	Ballona Creek Reach 1**
Summer Dry-Weather (April 1 to October 31)	Zero (0) exceedance days based on the applicable Single Sample Bacteria Water Quality Objectives Zero (0) exceedance days based on the Rolling 30-Day Geometric Mean Bacteria Water Quality Objectives	No more than 10% of the Single Sample Bacteria Water Quality Objectives Zero (0) exceedance days based on the Rolling 30-Day Geometric Mean Bacteria Water Quality Objectives
Winter Dry-Weather (November 1-March 31)	Three (3) exceedance days based on the applicable Single Sample Bacteria Water Quality Objectives Zero (0) exceedance days based on the Rolling 30-Day Geometric Mean Bacteria Water Quality Objectives	No more than 10% of the Single Sample Bacteria Water Quality Objectives Zero (0) exceedance days based on the Rolling 30-Day Geometric Mean Bacteria Water Quality Objectives
Wet-Weather (days with ≥0.1 inch of rain + 3 days following the rain event)	17*** exceedance days based on the applicable Single Sample Bacteria Water Quality Objectives Zero (0) exceedance days based on the Rolling 30-Day Geometric Mean Bacteria Water Quality Objectives	No more than 10% of the Single Sample Bacteria Water Quality Objectives Zero (0) exceedance days based on the Rolling 30-Day Geometric Mean Bacteria Water Quality Objectives

* Exceedance days for Ballona Estuary based on REC-1 marine water numeric targets; for Ballona Creek Reach 2 based on LREC-1 freshwater numeric targets; and for Sepulveda Channel, based on fresh water REC-1 numeric targets

** Exceedance frequency for Ballona Creek Reach 1 based on freshwater REC-2 numeric targets

*** In Reach 2, the greater of the allowable exceedance days under the reference system approach or high flow suspension shall apply.

Table 7-21.2b: Ballona Creek, Ballona Estuary and Sepulveda Channel Bacteria TMDL: WLAs and LAs for tributaries to the Impaired Reaches.

Tributary	**Point of Application**	**Water Quality Objectives**	**Waste Load Allocation** (No. exceedance days)
Ballona Creek Reach 1	At confluence with Reach 2	LREC-1 Freshwater	For single sample objectives: *(0) summer dry weather,* *(3) winter dry weather* *(17*) winter wet weather* For geometric mean objectives: *(0) for all periods*
Benedict Canyon Channel	At confluence with Reach 2	LREC-1 Freshwater	For single sample objectives: *(0) summer dry weather,* *(3) winter dry weather* *(17*) winter wet weather* For geometric mean objectives: *(0) for all periods*
Ballona Creek Reach 2	At confluence with Ballona Estuary	REC-1 Marine water	For single sample objectives: *(0) summer dry weather,* *(3) winter dry weather* *(17) winter wet weather* For geometric mean objectives: *(0) for all periods*
Centinela Creek	At confluence with Ballona Estuary	REC-1 Marine water	For single sample objectives: *(0) summer dry weather,* *(3) winter dry weather* *(17) winter wet weather* For geometric mean objectives: *(0) for all periods*
Del Rey Lagoon	At confluence with Ballona Estuary	REC-1 Marine water	For single sample objectives: *(0) summer dry weather,* *(3)winter dry weather* *(17) winter wet weather* For geometric mean objectives: *(0) for all periods*

* At the confluence with Reach 2, the greater of the allowable exceedance days under the reference system approach or high flow suspension shall apply.

Sepulveda Channel was not assigned a waste load allocation at its confluence with Reach 2 since the TMDL requires the more stringent REC-1 objectives to be met in this waterbody, which should lead to the attainment of the less stringent LREC-1 objectives of the downstream reach.

Table 7-21.3 Ballona Creek, Ballona Estuary and Sepulveda Channel Bacteria TMDL: Significant Dates

Date	Action
	Responsible Jurisdictions for the Waste Load Allocations
12 months after the effective date of the TMDL	Responsible jurisdictions and responsible agencies must submit, for Regional Board approval, a comprehensive bacteria water quality monitoring plan for the Ballona Creek Watershed. The plan must be approved by the Executive Officer before the monitoring data can be considered during the implementation of the TMDL. The plan must provide for analyses of all applicable bacteria indicators for which the Basin Plan and subsequent amendments have established objectives The plan must also include a minimum of two sampling locations (mid-stream and downstream) in Ballona Estuary, Ballona Creek (Reach 1 and 2), and their tributaries. The draft monitoring report shall be made available for public comment and the Executive Officer shall accept public comments for at least 30 days. Once the coordinated monitoring plan is approved by the Executive Officer, monitoring shall commence within 6 months.
$2^1/_2$ years after the effective date of the TMDL	Responsible jurisdictions and agencies must provide a draft Implementation Plan to the Regional Board outlining how each intends to cooperatively achieve compliance with the dry-weather and wet-weather TMDL Waste Load Allocations. The report shall include implementation methods, an implementation schedule, and proposed milestones. The description of the implementation methods and milestones shall include a technically defensible quantitative linkage to the interim and final waste load allocations (WLAs). The linkage should include target reductions in stormwater runoff and/or fecal indicator bacteria. The plan shall include quantitative estimates of the water quality benefits provided by the proposed structural and non-structural BMPs. Estimates should address reductions in exceedance days, bacteria concentration and loading, and flow in the drain and at each beach compliance monitoring location. As part of the draft plan, responsible agencies must submit results of all special studies and/or Environmental Impact Assessments, designed to determine feasibility of any strategy that requires diversion and/or reduction of Creek flows. If a responsible jurisdiction or agency is requesting a longer schedule for wet-weather compliance based on an integrated approach, the plan must include a clear demonstration that the plan meets the criteria of an IWRA, and a clear demonstration of the need for the proposed schedule. Compliance with the wet-weather allocations shall be as soon as possible but under no circumstances shall it exceed the time frame adopted in the TMDL for non-integrated approaches or for an integrated approach.

Date	Action
$2^1/_2$ years after the effective date of the TMDL (continued)	The draft Plan shall be made available for public comment and the Executive Officer shall accept public comments for at least 30 days.
3 months after receipt of Regional Board comments on the draft plan	Responsible jurisdictions and agencies submit a Final Implementation Plan to the Regional Board.
Responsible agencies for Load Allocations	
1 year after the effective date of the TMDL	Responsible agencies must submit, for Regional Board approval, separate comprehensive bacteria water quality monitoring plans for inputs from Del Rey Lagoon and the Ballona Wetlands to the Ballona Estuary. Each plan must be approved by the Executive Officer before the monitoring data can be considered during the implementation of the TMDL. The plan must provide for analyses of all applicable bacteria indicators for which the Basin Plan and subsequent amendments have established objectives The plan must also include a minimum of one sampling location at the connecting tide gate(s). The draft monitoring reports shall be made available for public comment and the Executive Officer shall accept public comments for at least 30 days. Once a coordinated monitoring plan is approved by the Executive Officer, monitoring shall commence within 6 months.
3 years after the effective date of the TMDL	If the responsible agency for the Del Rey Lagoon intends to pursue a natural source exclusion, it shall submit the results of separate natural source study for the Lagoon to the Executive Officer of the Regional Board. The study shall include a comprehensive assessment of all sources of bacteria loads to the Lagoon and estimates of their individual contributions. In addition, a determination of the number of exceedance days caused by these sources should be made. These studies shall be made available for public comment and the Executive Officer shall accept public comments for at least 30 days.

Date	Action
Responsible Agencies for WLAs and LAs* *(*Only if not eligible for natural source exclusion(s)*	
4 years after the effective date of the TMDL	The Regional Board shall reconsider this TMDL to: (1) Re-assess the allowable winter dry-weather and wet-weather exceedance days based on a re-evaluation of the selected reference watershed and consideration of other reference watersheds that may better represent reaches of Ballona Creek and Estuary, (2) Consider whether the allowable winter dry-weather and wet-weather exceedance days should be adjusted annually dependent on the rainfall conditions and an evaluation of natural variability in exceedance levels in the reference system(s), (3) Re-evaluate the reference year used in the calculation of allowable exceedance days, and (4) Re-evaluate whether there is a need for further clarification or revision of the geometric mean implementation provision. (5) Consider natural source exclusions for bacteria loading from Del Rey Lagoon and the Ballona Wetlands based on results of the source identification study. (6) Re-assess WLAs for Benedict Canyon Channel, Sepulveda Channel, and Centinela Creek based on results of the required compliance monitoring, and/or any voluntary beneficial use investigations.
6 years after the effective date of the TMDL:	Achieve compliance with the allowable exceedance days for summer and winter dry-weather as set forth in Table 6-1 and rolling 30-day geometric mean targets.
10 years after effective date of the TMDL or, if an Integrated Water Resources Approach is implemented, up to July 15, 2021.*	Achieve compliance with the allowable exceedance days as set forth in Table 6-1 and rolling 30-day geometric mean targets during wet-weather.

* July 15, 2021 is the final compliance date of the Santa Monica Bay Beaches Bacteria Wet-Weather TMDL.

7-22 Calleguas Creek Watershed Salts TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on October 4, 2007.

This TMDL was approved by:

The State Water Resources Control Board on May 20, 2008.
The Office of Administrative Law on November 6, 2008.
The U.S. Environmental Protection Agency on December 2, 2008.

The effective date of this TMDL is: December 2, 2008.

The elements of the TMDL are presented in Table 7-22.1 and the Implementation Plan in Table 7-22.2

Table 7-22.1. Calleguas Creek Watershed Salts TMDL: Elements

<table>
<tr><th>TMDL Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Problem Statement</td><td>Eleven of fourteen reaches in the Calleguas Creek Watershed (CCW) are identified on the 2002 Clean Water Act Section 303(d) list of water-quality limited segments as impaired due to elevated levels of boron, chloride, sulfate, or total dissolved solids (TDS) (these constitutions are commonly referred to as salts). Salts primarily impact two beneficial uses: agricultural supply and groundwater recharge. Below is 2002 303(d) list of water quality limited segments of the Calleguas Creek watershed:
<table>
<tr><th>Reach Name</th><th>Pollutant/Stressor</th></tr>
<tr><td>Calleguas Creek Reach 3</td><td>Chloride, TDS</td></tr>
<tr><td>Calleguas Creek Reach 6</td><td>Chloride, Sulfate, TDS</td></tr>
<tr><td>Calleguas Creek Reach 7</td><td>Boron, Chloride, Sulfate, TDS</td></tr>
<tr><td>Calleguas Creek Reach 8</td><td>Boron, Chloride, Sulfate, TDS</td></tr>
<tr><td>Calleguas creek Reach 9A</td><td>Sulfate, TDS</td></tr>
<tr><td>Calleguas Creek Reach 9B</td><td>Chloride, Sulfate, TDS</td></tr>
<tr><td>Calleguas Creek Reach 10</td><td>Chloride, Sulfate, TDS</td></tr>
<tr><td>Calleguas Creek Reach 11</td><td>Sulfate, TDS</td></tr>
<tr><td>Calleguas Creek Reach 12</td><td>Sulfate, TDS</td></tr>
<tr><td>Calleguas Creek Reach 13</td><td>Chloride, Sulfate, TDS</td></tr>
</table>
The list of impaired segments of the Calleguas Creek watershed in the 2002 303(d) list was maintained in the 2006 303(d) list.
The segment of Reach 4 below Laguna Road is tidally influenced and therefore not impaired for chloride, boron, sulfate, and TDS. Consequently, the waste load and load allocations developed for Reach 4 in this TMDL do not apply below Laguna Road.
The goal of this TMDL is to protect and restore the water quality in the Calleguas Creek watershed by controlling the loading and accumulation of salts. </td></tr>
</table>

TMDL Element	Key Findings and Regulatory Provisions
Numeric Targets	Numeric targets are based on the site-specific numeric water quality objectives (WQOs) provided in the Basin Plan.

1. Surface Water Quality Objectives

Site-specific surface water quality objectives for the Calleguas Creek watershed are applicable upstream of Potrero Road. Site specific objectives have not been determined for Calleguas Creek below Potrero Road because the reach is tidally influenced. Below are WQOs for Calleguas Creek upstream of Potrero Road.

Constituent	Water Quality Objective Upstream Potrero Road (mg/L)
Boron	1
Chloride	150
Sulfate	250
TDS	850

2. Groundwater Quality Objectives

Groundwater Basin[1]			Boron (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)
DWR Basin No.	**Groundwater Basin as Listed in the 1994 Basin Plan**	**Implementation Areas for Salts TMDL**				
4-6	Pleasant Valley	Conejo and Calleguas/Pleasant Valley	1.0	150	300	700
4-7	Arroyo Santa Rosa	Arroyo Santa Rosa and Conejo/Arroyo Santa Rosa	1.0	150	300	900
4-8	Las Posas Valley – East of Grimes Canyon and Hitch Blvd	Arroyo Simi/South Las Posas	3.0	400	1200	2500
4-8	Las Posas Valley – South of LA Ave between Somis Rd & Hitch Blvd	Arroyo Las Posas/ South Las Posas	1.0	250	700	1500
4-8	Las Posas Valley – North Las Posas Area	Arroyo Las Posas/ North Las Posas	1.0	150	250	500
4-9	Simi Valley	Arroyo Simi/Simi Valley	1.0	150	600	1200
4-10	Conejo Valley	Arroyo Conejo/ Conejo Valley	1.0	150	250	800
4-15	Tierra Rejada	Arroyo Santa Rosa/ Tierra Rejada	0.5	100	250	700
4-19	Thousand Oaks	Arroyo Conejo/ Thousand Oaks	1.0	150	700	1400

[1]The groundwater quality objectives specified in this table are equivalent to the groundwater quality objectives in the 1994 Basin Plan. Groundwater basins are numbered in the first column according to Bulletin 118-80 (Department of Water Resources, 1980). Designated groundwater basins in the 1994 Basin Plan are specified in the second column and groundwater basin descriptions of Calleguas Creek used in this TMDL are listed in the third column of the table.

TMDL Element	Key Findings and Regulatory Provisions
Source Analysis	Sources of salts in the watershed include water supply (water imported from the State Water Project or Freeman Diversion and deep aquifer groundwater pumping), water softeners that discharge to publicly owned treatment works (POTWs), POTW treatment chemicals, atmospheric deposition, pesticides and fertilizers, and indoor water use (chemicals, cleansers, food, etc.). These salts are then transported through POTW discharges and runoff to surface water, shallow groundwater, and/or stranded on the watershed in the soils. Salts transported in the surface water to the ocean are currently the only salts that are exported from the watershed. While the concentration of salts in the introduced water is usually below the Basin Plan Objectives, the quantity of water brought into the watershed is sufficient to rank introduced water as the greatest source of salts to the watershed. Salts that are transported during dry weather to the surface water are quantified via the following mechanisms: groundwater pumping, groundwater exfiltration, POTWs, dry weather urban and agricultural runoff. Wet weather loadings from each of these sources have the potential to be significant, but tend to be lower in concentration and do not occur during the critical conditions for salts. Wet weather loads are significant from the perspective of transporting stranded salts off the watershed.
Linkage Analysis	The linkage analysis for salts focuses on the surface water concentrations of salts. However, surface water concentrations are only one component of the watershed salts issue. Because it is difficult to model other aspects of the salt problem (i.e. surface water and groundwater interactions, stranded salts), two simplified approaches have been used to demonstrate that salts will be removed from the watershed, which should have a correspondingly positive impact on surface water and groundwater salts concentrations. First, a surface water model was developed to provide a linkage between sources and surface water quality and to demonstrate the impact of projects on receiving water quality in the watershed. Second, a salt balance was developed to quantify the removal of salts from the watershed with the goal of achieving a mass balance in which the mass of boron, sulfate, TDS and chloride imported into Calleguas Creek subwatersheds is no more than the mass of boron, sulfate, TDS and chloride exported from the Calleguas Creek subwatershed. Achieving a salt balance in the watershed will prevent additional build-up of salts in any medium in the watershed and protect ground water supplies from increasing in salt concentrations. The Calleguas Creek Modeling System is a mass balance based model that was developed for the surface water to provide a linkage between sources and surface water quality. To estimate the salts balance in the watershed, a simple chloride mass balance was developed by the Camrosa Water District (Hajas, 2003a) and modified to address the other salts.

TMDL Element	Key Findings and Regulatory Provisions
Waste Load Allocations	**<u>A. POTWs</u>** The TMDL includes waste load allocations (WLAs) for five POTWs in the Calleguas Creek watershed: Simi Valley Water Quality Control Plant (WQCP), Hill Canyon Wastewater Treatment Plan (WWTP), Moorpark WWTP, Camarillo Water Reclamation Plant (WRP), and Camrosa Water Reclamation Facility (WRF). At the end of the implementation period, only Simi Valley WQCP and the Hill Canyon WWTP are expected to discharge to surface waters. Moorpark WWTP and Camrosa WRF currently discharge directly to ponds under dry weather conditions. As part of the TMDL implementation, the Renewable Water Resources Management Program (RWRMP) will introduce treated wastewater from the Camarillo WRP into the Camrosa recycled water storage and distribution system. Surplus treated wastewater from Camarillo WRP and Camrosa WRF will be discharged at a point downstream of Potrero Road Bridge to Calleguas Creek. Dry weather WLAs are included for the case when Camarillo WRP, Camrosa WRF, and Moorpark WWTP need to discharge to the stream (for example, if there is insufficient recycled water demand during the wet season). Including WLAs for these POTWs ensures that water quality objectives are not exceeded as a result of their discharge. POTW mass-based WLAs are calculated as the POTW effluent flow rate multiplied by the water quality objective and include a mass-based adjustment factor (AF) that is subtracted from the product of the flow-rate and the water quality objective. The adjustment factor is used to link POTW allocations to the required reductions in background loads. The adjustment factors are implemented through mechanisms that export salts out of the subwatershed, such as groundwater pumping, to meet the salt balance requirements. To ensure that the loading capacity is achieved in surface water and the reductions in background loads are achieved, minimum salt exports shown below are required for POTWs and are included in WLAs as a component of the adjustment factors. If the background load reductions are not achieved, POTWs shall be responsible for providing additional load reductions to achieve water quality standards. The AF is set equal to the difference between the minimum salts export requirement to attain a salt balance in the subject reaches and the actual salts export. If the calculated annual dry weather salt exports from the subwatershed to which the POTW discharges are less than the minimum required exports for the previous year and the annual average receiving water concentration at the base of the subwatershed to which the POTW discharges exceeds water quality objectives for the previous year, the POTW allocations will be reduced using the adjustment factor.

TMDL Element	Key Findings and Regulatory Provisions
Waste Load Allocations (continued)	The adjustment factors are also used to address unusual conditions in which the inputs to the POTWs from the water supply may challenge the POTWs ability to meet the assigned WLAs. The adjustment factor allows for the additional POTW loading only when the water quality objectives are met in the receiving waters. POTW allocations can be adjusted upwards when imported water supply chloride concentrations exceed 80 mg/L and discharges from the POTW exceed the WLA. In order to apply the AF to the assigned WLAs, the POTW is required to submit documentation of the water supply chloride concentrations, receiving water chloride concentration, the effluent mass, and evidence of increased salt exports to offset the increased discharges from the POTW to the RWQCB for approval. WLAs shown in table below apply to POTWS during dry weather when the flows in the receiving water are below the 86th percentile flow. During wet weather, the loading capacity of the stream is significantly increased by stormwater flows with very low salt concentrations. Any discharges from the POTWs during wet weather would be assimilated by these large storm flows and would not cause exceedances of water quality objectives. Boron is only listed in the Simi and Pleasant Valley (Revolon) subwatersheds and exceedances of boron do not occur in other portions of the watershed. Therefore, boron allocations are only included for the Simi Valley WQCP. Interim limits are included to allow time for dischargers to put in place implementation measures necessary to achieve final waste load allocations. The monthly average interim limits are set equal to the 95th percentile of available discharge data.

1. Minimum Salt Export Requirements for Adjustment Factor [a]

POTW	Minimum Chloride Export (lb/day)	Minimum TDS Export (lb/day)	Minimum Sulfate Export (lb/day)	Minimum Boron Export (lb/day)
Simi Valley WQCP	460	3220	9120	3.3
Moorpark WWTP	460	3220	9120	3.3
Hill Canyon WWTP	1060	7920	4610	0
Camrosa WRF	1060	7920	4610	0
Camarillo WRP	1060	7920	4610	0

[a] Minimum export requirements include a 10% Margin of Safety.

TMDL Element	Key Findings and Regulatory Provisions
Waste Load Allocations (continued)	**2. Interim Monthly Average WLAs for POTWs**

POTW	Chloride (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Boron (mg/L)
Simi Valley WQCP	183	955	298	N/A
Hill Canyon WWTP	189	N/A	N/A	N/A
Moorpark WWTP	171	N/A	267	N/A
Camarillo WRP	216	1012	283	N/A
Camrosa WRF*	N/A	N/A	N/A	N/A

* Camrosa WRF has not discharged to surface water during the period under which interim limits were calculated. When effluent data are available, the Regional Board may adopt interim WLAs for Camrosa WRF.
N/A: The 95th percentile concentration is below the Basin Plan objective so interim limits are not necessary.

3. Final WLAs for POTWs[a,d]

POTW	Chloride (lb/day) [c]	TDS (lb/day) [c]	Sulfate (lb/day) [c]	Boron (lb/day) [c]
Simi Valley WQCP	150*Q-AF	850*Q-AF	250*Q-AF	1.0*Q-AF
Hill Canyon WWTP	150*Q-AF	850*Q-AF	250*Q-AF	N/A
Moorpark WWTP[b]	150*Q-AF	850*Q-AF	250*Q-AF	N/A
Camarillo WRP[b]	150*Q-AF	850*Q-AF	250*Q-AF	N/A
Camrosa WRF[b]	150*Q-AF	850*Q-AF	250*Q-AF	N/A

a. The allocations shown only apply during dry weather (as defined in this TMDL). During wet weather discharges from the POTWs do not cause exceedances of water quality objectives.
b. These POTWs are not expected to discharge after the end of the implementation period.
c. AF is the adjustment factor and equals the difference between the minimum salts export requirement and the actual salts export.
d. Q represents the POTW flow at the time the water quality measurement is collected and a conversion factor to lb/day based on the units of measurement for the flow.
N/A Boron is not listed in the reaches to which the POTW discharges. No WLA is required.

B. Urban Runoff

Permitted stormwater dischargers that are responsible parties to this TMDL include the Municipal Stormwater Dischargers (MS4s) of the Cities of Camarillo, Moorpark, Thousand Oaks, County of Ventura, Ventura County Watershed Protection District, and general industrial and construction permittees. Permitted stormwater dischargers are assigned a dry weather wasteload allocation equal to the average dry weather critical condition flow rate multiplied by the numeric target for each constituent. Waste load allocations apply in the receiving water at the base of each subwatershed. Because wet weather flows transport a large mass of salts at low concentrations, these dischargers meet water quality objectives during wet weather. Dry weather allocations apply when instream flow rates are below the 86th percentile flow and there has been no measurable precipitation in the previous 24 hours.

TMDL Element	Key Findings and Regulatory Provisions
Waste Load Allocations (continued)	Interim limits are assigned for dry weather discharges from areas covered by NPDES stormwater permits to allow time to implement appropriate actions. The interim limits are assigned as concentration based receiving water limits set to the 95th percentile of the discharger data as a monthly average limit except for chloride. The 95th percentile for chloride was 267 mg/L which is higher than the recommended criteria set forth in the Basin Plan for protection of sensitive beneficial uses including aquatic life. Therefore, the interim limit for chloride for Permitted Stormwater Dischargers is set equal to 230 mg/L to ensure protection of sensitive beneficial uses in the Calleguas Creek watershed.

1. Interim Dry Weather WLAs for Permitted Stormwater Dischargers

Constituent	Interim Limit (mg/L)
Boron Total	1.3
Chloride Total	230
Sulfate Total	1289
TDS Total	1720

2. Final Dry Weather WLAs for Permitted Stormwater Dischargers

Subwatershed	Critical Condition Flow Rate (mgd)	Chloride Allocation (lb/day)	TDS Allocation (lb/day)	Sulfate Allocation (lb/day)	Boron Allocation (lb/day)
Simi	1.39	1,738	9,849	2,897	12
Las Posas	0.13	157	887	261	N/A
Conejo	1.26	1,576	8,931	2,627	N/A
Camarillo	0.06	72	406	119	N/A
Pleasant Valley (Calleguas)	0.12	150	850	250	N/A
Pleasant Valley (Revolon)	0.25	314	1,778	523	2

C. Final WLAs for Other NPDES Dischargers

Concentration-based WLAs are assigned at the Basin Plan objectives for other NPDES dischargers.

Constituent	Allocation (mg/L)
Chloride	150
TDS	850
Sulfate	250
Boron[a]	1.0

TMDL Element	Key Findings and Regulatory Provisions
Waste Load Allocations (continued)	Other NPDES dischargers include, but are not limited to, permitted groundwater cleanup projects that could have significant salt concentrations as a result of the stranded salts in the shallow groundwater basins being treated. To facilitate the cleanup of the basins prior to alternative discharge methods (such as the brine line) being available, interim limits for other NPDES dischargers will be developed on a case-by-case basis and calculated as a monthly average using the 95th percentile of available discharge data.
Load Allocations	Dry weather load allocations are assigned as a group allocation to irrigated agricultural discharges. The load allocation (LA) is equal to the average dry weather critical condition flow rate multiplied by the numeric target for each constituent. Load allocations apply in the receiving water at the base of each subwatershed. Because wet weather flows transport a large mass of salts at a typically low concentration, these dischargers should meet water quality objectives during wet weather. Dry weather allocations apply when instream flow rates are below the 86th percentile flow and there has been no measurable precipitation in the previous 24 hours. Interim limits are assigned for dry weather discharges from irrigated agricultural areas to allow time to implement appropriate actions. The interim limits are assigned as concentration based receiving water limits set to the 95th percentile of the discharger data as a monthly average limit except for chloride. The 95th percentile for chloride was 499 mg/L which is higher than the recommended criteria set forth in the Basin Plan for protection of sensitive beneficial uses including aquatic life. Therefore, the interim limit for chloride for Irrigated Agricultural Dischargers is set equal to 230 mg/L to ensure protection of sensitive beneficial uses in the Calleguas Creek watershed.

I. Interims Load Allocations for Irrigated Agricultural Dischargers

Constituent	Interim Limit (mg/L)
Boron Total	1.8
Chloride Total	230
Sulfate Total	1962
TDS Total	3995

II. Final Load Allocations for Irrigated Agricultural Dischargers

Subwatershed	Chloride Allocation (lb/day)	TDS Allocation (lb/day)	Sulfate Allocation (lb/day)	Boron Allocation (lb/day)
Simi	641	3,631	1,068	4
Las Posas	2,109	11,952	3,515	N/A
Conejo	743	4,212	1,239	N/A
Camarillo	59	336	99	N/A
Pleasant Valley	305	1,730	509	N/A
Revolon	7,238	41,015	12,063	48

TMDL Element	Key Findings and Regulatory Provisions
Margin of Safety	A margin of safety (MOS) for the TMDL is designed to address uncertainties in the analysis that could result in targets not being achieved in the waterbodies. The primary uncertainties associated with this TMDL include the impact of implementing a salt balance on receiving water quality. The effect of the salt balance is estimated by the mass-balance and subject to the following uncertainties: 1) the flow rates used to determine the loading capacity may change due to TMDL implementation, 2) the use of a daily load for determining allocations and an annual mass balance to attain water quality objectives, and 3) the sources of salts may not be completely known. Both implicit and explicit MOS are included for this TMDL. The implicit MOS stems from the use of conservative assumptions made during development of the TMDL. The mass of salts transported out of the watershed during wet weather is on average over 15% of the annual mass of salts introduced to the watershed for all constituents. The salt export during wet weather ranges from 7% to 41% for TDS, 9% to 48% for chloride, and 13% to 89% for sulfate of the export required to meet a salt balance in the watershed. This mass is not used to determine compliance with the salt balance and represents a significant implicit margin of safety. The model also contains a component that serves to model the impact of “stranded” salts in the watershed. The component assumes low irrigation efficiencies and the ability of all salts applied as irrigation water anywhere in the watershed to be discharged to receiving water in critical years. This likely overestimates the impact of “stranded” salts and results in a higher concentration of salts due to irrigation in the receiving water. An explicit MOS of 10% is applied to the adjustment factors for the POTWs to account for the uncertainties in the TMDL analysis. By applying the margin of safety to the adjustment factor, more salts are required to be exported than are necessary to offset the background loads in the watershed. This additional salt export provides a margin of safety on the salt balance to address uncertainties that the salt balance will result in compliance with water quality objectives. The 10% explicit MOS is determined sufficient to address the uncertainties associated with the estimated impact of the salt balance on receiving water loadings.
Future Growth	Ventura County accounts for slightly more than 2% of the state’s residents with a population of 753,197 (US Census Bureau, 2000). GIS analysis of the 2000 census data yields a population estimate of 334,000 for the CCW, which equals about 44% of the county population. According to the Southern California Association of Governments (SCAG), growth in Ventura County averaged about 51% per decade from 1900-2000; with growth exceeding 70% in the 1920s, 1950s, and 1960s. Significant population growth is expected to occur within and near present city limits until at least 2020. Increased growth requires additional water. Therefore, future growth could result in increased loads of salts being imported into the watershed. However, the TMDL implementation plan is designed to maintain a salts balance in the watershed. If additional salts are imported into the watershed, a larger volume of salts will also be exported out of the watershed to maintain the balance. Consequently, increased imports from future growth are not expected to result in higher concentrations in receiving waters.

TMDL Element	Key Findings and Regulatory Provisions
Seasonal Variations and Critical Conditions	The critical condition for salts is during dry weather periods. During wet weather, stormwater flows dilute the salt discharges and receiving water concentrations are significantly lower than water quality objectives. Dry weather, defined as days with flows lower than the 86th percentile flow and no measurable precipitation, is a critical condition regardless of the dry weather flows in the stream. The driving conditions for exceedances of water quality objectives are the concentrations in the water supply (which is driven by surface water concentrations in Northern California) and the previous year's annual precipitation and corresponding flows. Elevated salts concentrations during dry weather occur when stranded salts are discharged into the surface water after higher than average rainfall years. The elevated concentrations occur during years when the previous annual flow is greater than the 75th percentile of the annual flows for the watershed (critical year). The higher concentrations occur during the dry periods of critical years regardless of whether the annual flow for the critical year is an average flow year, higher than average year, or lower than average year. The key parameter determining a critical year is the total annual flow volume for the previous year. Based on model results, four critical years were defined based on modeled results that resulted in receiving water concentrations greater than the 99th percentile concentration during at least 10% of the dry period. The critical years identified from the model occur with conditions similar to what occurred in 1978, 1979, 1983 and 1998.
Special Studies and Monitoring Plan	<u>**Special Studies**</u> Several special studies are planned to improve understanding of key aspects related to achievement of WLAs and LAs for the Salts TMDL. ***1. Special Study #1 (Optional) – Develop Averaging Periods and Compliance Points*** The TMDL technical report has provided information that shows instantaneous salts objectives may not be required to protect groundwater recharge and agricultural beneficial uses. It is possible that the beneficial uses will be protected and a salt balance achieved without achieving instantaneous water quality objectives in all reaches of the watershed. This optional special study is included to allow an investigation of averaging periods for the salts objectives in the CCW. Additionally, this study will investigate the locations of beneficial uses and the possibility of identifying compliance points for the salts objectives at the point of beneficial use impacts. The use of compliance points would alleviate the need to develop site-specific objectives for the reaches of the watershed upstream of the POTW discharges (described in Special Study #3) while still ensuring the protection of beneficial uses. Sensitive beneficial uses are not present in the upper reaches and POTW discharges dilute the salts from the upper reaches and may allow compliance with the objectives at the point of groundwater recharge downstream. This is an optional special study to be conducted if desired by the stakeholders or determined necessary or appropriate by the Executive Officer.

TMDL Element	Key Findings and Regulatory Provisions
Special Studies and Monitoring Plan (continued)	***2. Special Study #2 (Optional) – Develop Natural Background Exclusion*** Discharges of groundwater from upstream of the Simi Valley WQCP (Reaches 7 and 8) and Hill Canyon WWTP (Reaches 12 and 13) and downstream of the Camrosa WRF (Reach 3) contain high salts concentrations. Natural marine sediments may contribute to the high concentrations in those discharges. This special study would evaluate whether or not the groundwater discharges in these areas would qualify for a natural sources exclusion. The special study could follow a 'reference system/anti-degradation approach' and/or a 'natural sources exclusion approach' for any allocations included in this TMDL that are proven unattainable due to the magnitude of natural sources. The purpose of a 'reference system/anti-degradation approach' is to ensure water quality is at least as good as an appropriate reference site and no degradation of existing water quality occurs where existing water quality is better than that of a reference site. The intention of a 'natural sources exclusion approach' is to ensure that all anthropogenic sources of salts are controlled such that they do not cause exceedances of water quality objectives. These approaches are consistent with state and federal anti-degradation policies (State Board Resolution No. 68-16 and 40 C.F.R. 131.12). This is an optional special study to be conducted if desired by the stakeholders or determined necessary for establishing a natural sources exclusion by the Executive Officer. ***3. Special Study #3 (Optional) – Develop Site-Specific Objectives*** The TMDL implementation plan provides for actions to protect the agricultural and groundwater recharge beneficial uses in the CCW. As shown in the linkage analysis, some downstream reaches may not achieve the water quality objectives through implementation of this TMDL because of the transport of salts out of the watershed through those reaches. Consequently, an optional special study is included to allow the CCW stakeholders to pursue development of site-specific objectives for salts for reaches upstream of the Hill Canyon WWTP and Simi Valley WQCP (Reaches 7, 8, 12, and 13), Calleguas Creek Reach 3, Revolon Slough (Reach 4) and Beardsley Wash (Reach 5). These alternative numeric water quality objectives would be developed based on the beneficial uses to be protected in a reach and the attainability of the current water quality objectives. This is an optional special study to be conducted if desired by the stakeholders or determined necessary or appropriate by the Executive Officer. ***4. Special Study #4 (Optional) – Develop Site-Specific Objectives for Drought Conditions*** During drought conditions, the load of salts into the watershed increases as a result of increasing concentrations in imported water. Stakeholders in the CCW cannot control the increased mass entering the watershed from the water supply. However, the stakeholders do have the ability to manage the salts within the watershed to protect beneficial uses and export the additional mass of salts out of the watershed.

TMDL Element	Key Findings and Regulatory Provisions
Special Studies and Monitoring Plan (continued)	If necessary, site-specific objectives may be developed to address situations that result in higher imported water salt concentrations to allow management of the salts and protection of beneficial uses. This special study may be combined with Special Study #3 if desired. This is an optional special study to be conducted if desired by the stakeholders or determined necessary or appropriate by the Executive Officer of the Regional Board. ***5. Special Study #5 (Optional) – Develop Site-Specific Objectives for Sulfate*** Sulfate is a necessary nutrient for plant growth and sulfate containing products are often applied to agriculture as fertilizers and pesticides. Therefore, site-specific objectives may be investigated and developed for sulfate that more accurately protects agricultural supply beneficial uses. Additionally, this study could evaluate whether or not a sulfate balance is necessary to maintain in the watershed. This special study may be combined with Special Study #3 and/or #4 if desired. This is an optional special study to be conducted if desired by the stakeholders or determined necessary or appropriate by the Executive Officer of the Regional Board. **<u>Monitoring Plan</u>** To ensure that the goal of a salts balance in the watershed is being achieved and water quality objectives are being met, a comprehensive method of tracking inputs and outputs to the watershed will be developed. A monitoring plan will be submitted to the RWQCB for Executive Officer approval within six months of the effective date of the CCW Salts TMDL. Monitoring will begin one year after Executive Officer approval of the monitoring plan to allow time for the installation of automated monitoring equipment. ***1. Input Tracking*** Inputs to the watershed are tracked through four mechanisms:1) Information on the import of State Water Project water is readily available and provides information on the mass of salts brought into the watershed; 2) Groundwater pumping records provide information on the mass of salts imported into the watershed from deep aquifer pumping; 3) Import records of water supply form the Santa Clara River can be obtained to determine the mass of salts imported through this source; 4) Monitoring data on imported water quality can be compared to monitoring of effluent quality to estimate the amount of salts added through human use of the water.

TMDL Element	Key Findings and Regulatory Provisions
Special Studies and Monitoring Plan (continued)	***2. Output Tracking and Determining Compliance with Water Quality Objectives*** Outputs from the watershed will be tracked through surface water monitoring at key locations in the watershed and monitoring of discharges to the brine line. Monitoring will include both flow and quality. Compliance with water quality objectives will be determined at key locations where beneficial uses occur in the watershed. The stations used for output tracking will also be used to determine compliance with water quality objectives. The monitoring program will determine if the TMDL compliance points are protective of the beneficial uses for the subwatershed. If the monitoring determines that the compliance points are not protective of beneficial uses, an alternative compliance point will be selected. The Executive Officer may revise the TMDL compliance point based on the result of the monitoring. Additionally, if other places in the watershed are identified where sensitive beneficial uses occur, water quality monitoring stations can be added to determine compliance with water quality objectives. For the RWRMP, three new or upgraded automated flow measuring and sample collection stations will be installed at three points on the stream system to continuously record flow and various water quality parameters during dry weather. Preliminary monitoring locations include Arroyo Conejo in Hill Canyon, Conejo Creek at Baron Brothers Nursery and Calleguas Creek at University Drive. For the NRRWMP, one new or upgraded automated flow measuring and sample collection station will be added downstream of Simi Valley at the point at which groundwater recharge begins. A preliminary monitoring location is at Hitch Blvd. where an existing flow gauging station exists. However, the amount of groundwater recharge upstream of this site will need to be evaluated to determine the exact monitoring location. For Revolon Slough, the existing monitoring station at Wood Road. will be used to monitor quality and flow on Revolon Slough to determine the outputs from the Revolon portion of the Pleasant Valley subwatershed. Additional land use monitoring will be conducted concurrently at representative agricultural and urban runoff discharge sites as well as at POTWs in each of the subwatersheds and analyzed for chloride, TDS, sulfate, and boron. The location of the land use stations will be determined before initiation of the Calleguas Creek Watershed TMDL Monitoring Program (CCWTMP). All efforts will be made to include at least two wet weather sampling events during the wet season (October through April) during a targeted storm event. ***3. Reporting and Modification of the Calleguas Creek Watershed TMDL Monitoring Program*** A monitoring report will be prepared annually within six months after completion of the final event of the sampling year. An adaptive management approach to the CCWTMP will be adopted as it may be necessary to modify aspects of the CCWTMP. Results of sampling carried out through the CCWTMP and other programs within the CCW may be used to modify this plan, as appropriate. These modifications will be summarized in the annual report. Possible modifications could include, but are not limited to the, following:

TMDL Element	Key Findings and Regulatory Provisions
Special Studies and Monitoring Plan (continued)	▪ The inclusion of additional land use stations to accurately characterize loadings; ▪ The removal of land use stations if it is determined they are duplicative (*i.e.,* a land use site in one subwatershed accurately characterize the land use in other subwatersheds); ▪ The inclusion of additional in-stream sampling stations; and ▪ The elimination of analysis for constituents no longer identified in land use and/or instream samples. If a coordinated and comprehensive monitoring plan is developed and meets the goals of this monitoring plan that plan should be considered as a replacement for the CCWTMP. ***4. Other Monitoring*** Other surface water and groundwater monitoring will be implemented as necessary to assess the impacts of the implementation actions and adjust the activities as necessary to protect beneficial uses and achieve the salts balance. Examples of additional monitoring that may be conducted include: ▪ Monitoring under Phase 2 and 3 of the RWRMP to evaluate the effects of replenishment water releases and groundwater treatment and releases. ▪ Monitoring to assess the impacts of management of the Simi Basin groundwater dewatering wells under Phase 1 of the NRRWMP.
Implementation Plan	The identified implementation actions provided in this TMDL will result in a salt balance in the stream and are expected to result in compliance with the allocations. The implementation plan is comprised of actions that directly impact discharges to the receiving water and actions that will indirectly impact discharges to receiving water. Responsible agencies and jurisdictions shall consider minimum flow requirements that may be imposed by federal or state regulatory agencies when implementing actions to comply with this TMDL. Should the proposed implementation actions not result in compliance with objectives and site-specific objective are not adopted, additional implementation actions may be required to achieve the water quality objectives. Any plans or programs for implementation of the TMDL for the Southern Reaches of the CCW upstream of the Conejo Creek Diversion and the Northern Reaches of the CCW, that would result in significant reduction in instream flow, including but not limited to, an application for Water Reclamation Requirements (WRRs) shall include an analysis of potential impacts to instream beneficial uses that could result from the reclamation of wastewater or extracted groundwater. For Phase 1 of the Southern Reaches of the CCW Renewable Water Resource Management Program (RWRMP), Water Rights Decision 1638 from SWRCB satisfies these requirements and establishes the minimum flow requirements for Conejo and Calleguas Creek downstream of the Conejo Creek Diversion Project.

TMDL Element	Key Findings and Regulatory Provisions
Implementation Plan (continued)	Any WRRs shall require that timely written notice be given to the Regional Board, and to any regulatory agency whose instream flow is at issue, if diversion or reclamation of waste water or extraction of groundwater results or threatens to result in (or contributes to) insufficient flows to maintain beneficial uses. The Executive Officer shall issue an order pursuant to Water Code section 13267, which requires responsible agencies and jurisdictions to file a technical report if reclamation of waste water or extraction of groundwater results or threatens to result in (or contributes to) insufficient flows to maintain beneficial uses. The order shall require that the technical report identify the causes of the impairments or threatened impairments, and identifies options to abate the conditions. The Regional Board shall reconsider this TMDL if adequate flows to protect instream beneficial uses are not maintained. The implementation actions described in the TMDL represent a range of activities that could be conducted to achieve a salts balance in the watershed. Future considerations may result in other actions being implemented rather than the options presented. However, any proposed actions will be reviewed using the salt balance model to ensure the action does not adversely impact other implementation actions in the watershed or the salt balance of a downstream subwatershed. Currently, the implementation plan is presented in phases with a tentative schedule for each phase. The implementation of projects may occur earlier than planned or begin during an earlier phase. Additionally, many of the implementation actions require the use of the Regional Salinity Management Conveyance (RSMC or brine line). As such, the implementation schedule for those actions will be linked the construction schedule for the RSMC. The implementation plan for the Salts TMDL includes regional and subwatershed specific implementation actions. There are four key structural elements to the regional implementation: Regional Salinity Management Conveyance (RSMC), Water Conservation, Water Softeners, and Best Management Practices for Irrigated Agriculture. Subwatershed implementation includes Renewable Water Resource Management Program (RWRMP) for the Southern Reaches and Northern Reach Renewable Water Management Plan (NRRWMP). Detailed discussion for each implementation element including description of the action, status and schedule for implementing the action, and a summary of the expected contribution to achievement of the salts balance are provided in the Staff Report and Technical Report for this TMDL. Proposed implementation actions in the watershed, responsible agencies, and the estimated completion date based on the effective date of the TMDL are summarized below.

TMDL Element	Key Findings and Regulatory Provisions
Implementation Plan (continued)	**Summary of Proposed Implementation Actions**

Action	Responsible Agency/ies	Schedule for Completion
Water Conservation	POTWs, Permitted Stormwater Dischargers, and Other NPDES Permittees	3 years
Water Softeners	POTWs and Permitted Stormwater Dischargers	10 years
Best Management Practice for Agricultural Dischargers	Agricultural Dischargers	2 years
RMSC Phase 1	Calleguas Municipal Water District	2 year
RMSC Phase 2	Calleguas Municipal Water District	5 year
RMSC Phase 3	Calleguas Municipal Water District	10 years
RWRMP Phase 1	CamrosaWater District, Camarillo Sanitation District	3 years
RWRMP Phase 2	Camrosa Water District, City of Thousand Oaks	6 years
RWRMP Phase 3	Camrosa Water District, City of Thousand Oaks	10 years
RWRMP Phase 4	To Be Determined	15 years
NRRWMP Phase 1	Calleguas Municipal Water District, City of Simi Valley, Ventura County Water Work-District No.1	3 years
NRRWMP Phase 2	Calleguas Municipal Water District, Ventura County Water Work-District No.1, City of Camarillo	7 years
NRRWMP Phase 3	City of Camarillo, City of Simi Valley	10 years
NRRWMP Phase 4	To Be Determined	15 years
Final Completion Date		15 years

The sections below provide discussion of the application of the final WLAs for POTWs, specific permitted stormwater discharges, other NPDES dischargers, and agricultural dischargers.

I. POTWs, permitted stormwater discharges, and other NPDES discharges

The final WLAs will be included for permitted stormwater discharges, POTWs, and other NPDES discharges in accordance with the compliance schedules provided in Table 7-22.2. The Regional Board may revise these WLAs based on additional information developed through special studies and/or monitoring conducted as part of this TMDL.

TMDL Element	Key Findings and Regulatory Provisions
Implementation Plan (continued)	▪ **POTWs** WLAs established for the POTWs in this TMDL will be implemented through NPDES permit limits. Compliance will be determined through monitoring of final effluent discharge as defined in the NPDES permit. The proposed permit limits will be applied as end-of-pipe mass-based monthly average effluent limits. Daily maximum effluent limit is not required because chloride is not expected to have an immediate or acute effect on the beneficial uses. Compliance with the minimum salt export requirements for POTWs will be based on the salt export from the subwatershed to which they discharge. The mechanisms for meeting the minimum salt export requirements and for monitoring progress towards meeting those requirements will be included in the monitoring program work plan and approved by the Executive Officer. At the end of each year, the amount of salt exported will be compared to the minimum required salt export. POTW allocations will be reduced using the adjustment factor if both of the following conditions occur: • The annual dry weather salt exports from the subwatershed to which the POTW discharges are below the minimum required exports for the previous year; and • The water quality objectives were exceeded in the receiving water at the base of the subwatershed The POTW allocations will be reduced for the following year by the difference between the minimum required salt export and the actual amount exported. The discharger shall be notified by the Regional Board that the assigned WLAs are reduced and the reduced effluent limits shall be applied for the next year. If the POTW allocations are reduced, the POTW will need to increase the amount of salt export or reduce the mass of salts discharged from the POTW before the end of the following year when the adjustment will be evaluated again. POTWs can only request to adjust the assigned WLAs upwards using the adjustment factor under limited conditions provided below: • Water quality objectives are met in the receiving waters; • Imported water supply chloride concentrations exceed 80 mg/L; and • Discharges from the POTW exceed the allocation.

TMDL Element	Key Findings and Regulatory Provisions
Implementation Plan (continued)	When imported water supply chloride concentrations exceed 80 mg/L, the POTW will monitor the effluent to determine if the wasteload allocation is exceeded. If the wasteload allocation is exceeded and the POTW desires an adjustment to the allocation, the POTW will submit documentation of the water supply chloride concentrations, the receiving water chloride concentration, the effluent mass, and the evidence of increased salt exports to offset the increased discharges from the POTW to the Regional Board for approval. The adjustment factor will apply for three months and the POTW must submit the evidence outlined above every three months to keep the adjustment factor active. As long as the required information is submitted, the adjustment factor will be in effect upon notification in writing from the RWQCB. ▪ **Urban Stormwater Discharger** A group mass-based dry weather WLA has been developed for all permitted stormwater discharges, including municipal separate storm sewer systems (MS4s), and general industrial and construction stormwater permits. USEPA regulation allows allocations for NPDES-regulated stormwater discharges from multiple point sources to be expressed as a single categorical WLA when the data and information are insufficient to assign each source or outfall individual WLAs (40 CFR 130). The grouped allocation will apply to all NPDES-regulated municipal stormwater discharges in the CCW. MS4 WLAs will be incorporated into the NPDES permit as receiving water limits measured in-stream at the base of each subwatershed. ▪ **Other NPDES Dischargers** WLAs established for other NPDES permitted dischargers in this TMDL, including minor non-stormwater permittees (other than Camrosa WRP) and general non-stormwater permittees, will be implemented through NPDES permit limits. The proposed permit limits will be applied as end-of-pipe concentration-based effluent limits, and compliance determined through monitoring of final effluent discharge as defined in the NPDES permit.

TMDL Element	Key Findings and Regulatory Provisions
Implementation Plan (continued)	**II. Agriculture** Load allocations for salts will be implemented through Conditional Waiver of Discharges from Irrigated Lands (Conditional Waiver Program) adopted by the LARWQCB on November 3, 2005. Compliance with LAs will be measured in-stream at the base of the subwatersheds and will be achieved through the implementation of Best Management Practices (BMPs) consistent with the Conditional Waiver Program. The Conditional Waiver Program requires the development of an agricultural water quality management plan (AWQMP) to address pollutants that are exceeding receiving water quality objectives as a result of agricultural discharges. Therefore, implementation of the load allocations will be through the development of an agricultural management plan for salts. Implementation of the load allocations will also include the coordination of BMPs being implemented under other required programs to ensure salts discharges are considered in the implementation. Additionally, agricultural dischargers will participate in educational seminars on the implementation of BMPs as required under the Conditional Program. Studies are currently being conducted to assess the extent of BMP implementation and provide information on the effectiveness of BMPs for agriculture. This information will be integrated into the AWQMP that will guide the implementation of agricultural BMPs in the Calleguas Creek watershed. After implementation of these actions, compliance with the allocations and TMDL will be evaluated and the allocations reconsidered if necessary based on the special studies and monitoring plan section of the implementation plan. As shown in Table 7-22.2, implementation of LAs will be conducted over a period of time to allow for implementation of the BMPs, as well as coordination with special studies and implementation actions resulting from other TMDL Implementation Plans (Nutrient, Historic Pesticides and PCBs, Sediment, Metals, Bacteria, etc.).

Table 7-22.2 Calleguas Creek Watershed Salts TMDL: Implementation Schedule

Item	Implementation Action	Responsible Party	Completion Date
1	Effective date of interim Salts TMDL waste load allocations (WLAs)	POTWs, Permitted Stormwater Dischargers[1] (PSD), and Other NPDES Permittees	Effective date of the amendment
2	Effective date of interim Salts TMDL load allocations (LAs)	Agricultural Dischargers	Effective date of the amendment
3	Responsible jurisdictions and agencies shall submit compliance monitoring plan to the Los Angeles Regional Board for Executive Officer approval.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	6 months after effective date of the TMDL
4	Responsible jurisdictions and agencies shall begin monitoring as outlined in the approved monitoring plan.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	1 year after monitoring plan approval by Executive Officer
5	Responsible jurisdictions and agencies shall submit workplans for the optional special studies.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	Within 10 years of effective date of the TMDL
6	Responsible jurisdictions and agencies shall submit results of the special studies.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	2 years after workplan approval by Executive Officer
7	Re-evaluation of the interim WLAs and interim LAs for boron, chloride, sulfate, and TDS based on new data. Responsible jurisdictions and agencies shall demonstrate that implementation actions have reduced the boron, sulfate, TDS, and chloride imbalance by 20%.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	3 years after effective date of the TMDL
8	Re-evaluation of the interim WLAs and interim LAs for boron, chloride, sulfate, and TDS based on new data. Responsible jurisdictions and agencies shall demonstrate that implementation actions have reduced the boron, sulfate, TDS and chloride imbalance by 40%.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	7 years after effective date of the TMDL
9	Re-evaluation of the interim WLAs and interim LAs for boron, chloride, sulfate, and TDS based on new data. Responsible jurisdictions and agencies shall demonstrate that implementation actions have reduced the boron, sulfate, TDS, and chloride imbalance by 70%.	POTWs, Permitted Stormwater Dischargers (PSD), Other NPDES Permittees, and Agricultural Dischargers	10 years after effective date of the TMDL
10	The Los Angeles Regional Board shall reconsider this TMDL to re-evaluate numeric targets, WLAs, LAs and the implementation schedule based on the results of the special studies and/or compliance monitoring.	The Regional Board	12 years after effective date of the TMDL
11	Responsible jurisdictions and agencies shall demonstrate that the watershed has achieved an annual boron, sulfate, TDS, and chloride balance.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	15 years after effective date of the TMDL
12	The POTWs and non-storm water NPDES permits shall achieve WLAs, which shall be expressed as NPDES mass-based effluent limitation specified in accordance with federal regulations and state policy on water quality control.	POTWs and Other NPDES Permittees	15 years after effective date of the TMDL

Item	Implementation Action	Responsible Party	Completion Date
13	Irrigated agriculture shall achieve LAs, which will be implemented through the Conditional Waiver for Irrigated Lands as mass-based receiving water limits.	Agricultural Dischargers	15 years after effective date of the TMDL
14	The permitted stormwater dischargers shall achieve WLAs, which shall be expressed as NPDES mass-based limits specified in accordance with federal regulations and state policy on water quality control.	Permitted Stormwater Dischargers	15 years after effective date of the TMDL
15	Water quality objectives will be achieved at the base of the subwatersheds designated in the TMDL.	POTWs, PSD, Other NPDES Permittees, and Agricultural Dischargers	15 years after effective date of the TMDL

1 Permitted stormwater dischargers that are responsible parties to this TMDL include the Municipal Stormwater Dischargers (MS4s) of the Cities of Camarillo, Moorpark, Thousand Oaks, County of Ventura, Ventura County Watershed Protection District, and general industrial and construction permittees.

7-23 Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on June 7, 2007.

This TMDL was approved by:
The State Water Resources Control Board on December 4, 2007.
The Office of Administrative Law on February 8, 2008.
The U.S. Environmental Protection Agency on February 27, 2008.

The effective date of this TMDL is: March 6, 2008.

The elements of the TMDL are presented in Table 7-23.1 and the Implementation Plan in Tables 7-23.2a and 7-23.2b.

Table 7-23.1 Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL: Elements

Element	Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL
Problem Statement	Current levels of trash discharges into Lake Elizabeth and Lake Hughes violate water quality objectives and are impairing beneficial uses. Based on trash abatement and cleanup efforts by the local landowner in the vicinity of Munz Lake and site visits by Regional Board staff, current assessment of trash levels indicates that Munz Lake is no longer impaired by trash and the local landowner will provide date to evaluate the feasibility of delisting Munz Lake. Relevant water quality objectives include Floating Material and Solid, Suspended, or Settleable Materials. The following designated beneficial uses are impacted by trash: water contact recreation (REC 1) and non-contact water recreation (REC 2), warm freshwater habitat (WARM), and wildlife habitat (WILD); rare and threatened species (RARE), that is specific for Lake Elizabeth.
Numeric Target (interpretation of the narrative water quality objective, used to calculate the load allocations)	Zero trash in Lake Elizabeth, Munz Lake, and Lake Hughes and their shorelines. Zero is defined as (1) for nonpoint sources, no trash immediately following each assessment and collection event consistent with an established Minimum Frequency of Assessment and Collection Program (MFAC Program). The MFAC Program is established at an interval that prevents trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, and (2) for point sources, zero trash discharged into Lake Elizabeth, Munz Lake and Lake Hughes and their shorelines.
Source Analysis	Litter from adjacent land areas, roadways and direct dumping and deposition are sources of trash to Lake Elizabeth and Lake Hughes. Point sources such as storm drains are also sources of trash discharged to Lake Elizabeth and Lake Hughes.
Loading Capacity	Zero, as defined in the Numeric Target.
Waste Load Allocations (for point sources)	Waste Load Allocations (WLAs) are assigned to the Permitees under the Los Angeles County Municipal Separate Storm Sewer System (MS4) NPDES permit, including Los Angeles County and local land owners with storm drains that discharge to Lake Elizabeth and Lake Hughes. WLAs are zero trash. WLAs may be issued to additional responsible jurisdictions in the future under Phase 2 of the US EPA Stormwater Permitting Program, or other applicable regulatory programs.

Element	Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL
Load Allocations ***(for nonpoint sources)***	Load Allocations (LAs) are assigned to the National Forest Service and local land owners. LAs are zero trash. LAs may be issued to additional responsible jurisdictions in the future under applicable regulatory programs.
Implementation	Implementation of the trash TMDL for Lake Elizabeth and Lake Hughes includes structural and non-structural best management practices (BMPs) and a program of minimum frequency of assessment and collection (MFAC) to address point and nonpoint trash sources. **Point Sources** WLAs shall be implemented through storm water permits and via the authority vested in the Executive Officer by section 13267 of the Porter-Cologne Water Quality Control Act (Water Code section 13000 et seq.). If point source dischargers comply with WLAs by implementing an Executive Officer certified full capture system on conveyances that discharge to Lake Elizabeth and Lake Hughes through a progressive implementation schedule of full capture devices, they will be deemed in compliance with the WLA. In certain circumstances (if approved by the Executive Officer), point source dischargers may alternatively comply with WLAs by implementing a program for minimum frequency of assessment and collection in conjunction with best management practices (MFAC/BMPs). 1. Compliance with the final WLA may be achieved through an adequately sized and maintained full capture system, once the Executive Officer has certified that the system meets the following minimum criteria. A full capture system, at a minimum, consists of any device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the sub-drainage area. The rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour); and A= subdrainage area (acres).

Element	Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL
Implementation (continued)	Point sources that choose to comply via a full capture system, must demonstrate a phased implementation of full capture devices over an 8-year period until the final WLA of zero is attained. Zero will be deemed to have been met if full capture systems have been installed on all conveyances discharging to Lake Elizabeth and Lake Hughes. Irrespective of whether point sources employ a full capture system, they may comply with the WLA in any lawful manner. 2. Compliance through a MFAC program in conjunction with BMPs may be proposed to the Regional Board for incorporation into the relevant NPDES permit. The MFAC program must include requirements equivalent to those described in the Conditional Waiver set forth below. Agencies that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if a MFAC/BMP program, approved by the Executive Officer, is implemented. **Nonpoint Sources** LAs shall be implemented through either (1) a conditional waiver from waste discharge requirements, or (2) an alternative program implemented through waste discharge requirements or an individual waiver or another appropriate order of the Regional Board. Non-point source dischargers may achieve compliance with the LAs by implementing a MFAC/BMP program approved by the Executive Officer. Responsible jurisdictions that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if a MFAC/BMP program, approved by the Executive Officer, is implemented. 1) Conditional Waiver: Pursuant to Water Code section 13269, waste discharge requirements are waived for any responsible jurisdiction that implements a MFAC/BMP Program which, to the satisfaction of the Executive Officer, meets the following criteria:

Element	Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL
Implementation (continued)	a) The MFAC/BMP Program includes an initial minimum frequency of trash assessment and collection and suite of structural and/or nonstructural BMPs. The MFAC/BMP program shall include collection and disposal of all trash found in the water and shoreline. Responsible jurisdictions shall implement an initial suite of BMPs based on current trash management practices in land areas that are found to be sources of trash to Lake Elizabeth, and Lake Hughes. For Lake Elizabeth and Lake Hughes, the initial minimum frequency shall be set as follows: 1. Once per week on the water, shoreline and the adjacent land areas of Lake Elizabeth and Lake Hughes where they are publicly accessible, as defined in the Executive Officer approved Trash Monitoring and Reporting Plan (TMRP), during May 15 through October 15. Once per month for areas with limited access. 2. Once per month on the water, shoreline and the adjacent land areas for Lake Elizabeth and Lake Hughes, as defined in the Executive Officer approved TMRP, from October 15 to May 15. 3. Within one week on the water, shoreline and the adjacent land areas of Lake Elizabeth and Lake Hughes after each storm event with one inch of rain or greater, and after each wind advisory. b) The MFAC/BMP Program includes reasonable assurances that it will be implemented by the responsible jurisdiction. c) The MFAC/BMP Program includes a Trash Monitoring and Reporting Plan, as described below, and a requirement that the responsible jurisdictions will self-report any non-compliance with its provisions. The results and report of the Trash Monitoring and Reporting Plan must be submitted to Regional Board on an annual basis. d) MFAC protocols may be based on SWAMP protocols for rapid trash assessment, or alternative protocols proposed by dischargers and approved by the Executive Officer. e) Implementation of the MFAC/BMP program should include a Health and Safety Program to protect personnel. The MFAC/BMP program shall not require responsible jurisdictions to access and collect trash from areas where personnel are prohibited.

Element	Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL
Implementation (continued)	The Executive Officer may approve or require a revised assessment and collection frequency and definition of the critical conditions under the waiver: (a) To prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections; (b) To reflect the results of trash assessment and collection; (c) If the amount of trash collected does not show a decreasing trend, where necessary, such that a shorter interval between collections is warranted; or (d) If the amount of trash collected is decreasing such that a longer interval between collections is warranted. At the end of the implementation period, a revised MFAC/BMP program may be required if the Executive Officer determines that the amount of trash accumulating between collections is causing nuisance or otherwise adversely affecting beneficial uses . With regard to (a), (b) or (c), above, the Executive Officer is authorized to allow responsible jurisdictions to implement additional structural or non-structural BMPs in lieu of modifying the monitoring frequency. Any waivers implementing the TMDL shall expire pursuant to Water Code section 13269 five years after the effective date of this TMDL, unless reissued. The Regional Board may reissue this waiver through an order consistent herewith, instead of readopting these regulatory provisions. (2) Alternatively, responsible jurisdictions may propose, or the Regional Board may impose, an alternative program which would be implemented through waste discharge requirements an individual waiver, a cleanup and abatement order, or any other appropriate order or orders, provided the program is consistent with the assumptions and requirements of the reductions described in Table 7-23.2b, below. The County of Los Angeles will act as a third party through the recently enacted County Ordinance to identify private party dischargers in unincorporated County land. Within six months of the effective date of this TMDL, the Executive Officer shall require responsible jurisdictions to submit either a notice of intent to be regulated under the conditional waiver with their proposed MFAC/BMP Program and Trash Monitoring and Reporting Plan (TMRP), or a report of waste discharge.

Element	Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL
Monitoring and Reporting Plan	Responsible jurisdictions will develop a TMRP for Executive Officer approval that describes the methodologies that will be used to assess and monitor trash in Lake Elizabeth and Lake Hughes and/or within responsible jurisdiction land areas. Requirements for the TMRP shall include, but are not limited to, assessment and quantification of trash collected from the surfaces and shoreline of Lake Elizabeth and Lake Hughes or from responsible jurisdiction land areas. The monitoring plan shall provide details of the frequency, location, and reporting of trash monitoring. Responsible jurisdictions shall propose a metric (e.g., weight, volume, pieces of trash) to measure the amount of trash in Lake Elizabeth and Lake Hughes and on the land area surrounding Lake Elizabeth and Lake Hughes, as defined in the Executive Officer approved TMRP. The TMRP shall include a prioritization of areas that have the highest trash generation rates. The TMRP shall give preference to this prioritization when scheduling the installation of full capture devices, BMPs, or trash collection programs. The TMRP shall also include an evaluation of effectiveness of the MFAC/BMP program to prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, proposals to enhance BMPs, and a revised MFAC for Executive Officer review. Responsible Jurisdictions may coordinate their TMRP activities for Lake Elizabeth and Lake Hughes.
Margin of Safety	Zero is a conservative numeric target which contains an implicit margin of safety.
Seasonal Variations and Critical Conditions	Discharge of trash from the conveyances occurs primarily during or shortly after a major rain event. Discharge of trash from nonpoint sources occurs during all seasons, but can be increased during or shortly after high wind events, which are defined as periods of wind advisories issued by the National Weather Service.

Table 7-23.2a Lake Elizabeth, Munz Lake, and Lake Hughes Trash TMDL: Implementation Schedule Point Sources

Task No.	Task	Responsible Jurisdiction	Date
1	Submit Trash Monitoring and Reporting Plan, including a plan for defining the trash baseline WLA and a proposed definition of "major rain event".	Los Angeles County and local land owners with conveyances that discharge to Lake Elizabeth and Lake Hughes.	6 months from effective date of TMDL. If a plan is not approved by the Executive Officer within 9 months, the Executive Officer will establish an appropriate monitoring plan.
2	Implement Trash Monitoring and Reporting Plan.	Los Angeles County and local land owners with conveyances that discharge to Lake Elizabeth and Lake Hughes.	6 months from receipt of letter of approval from Regional Board Executive Officer, or the date a plan is established by the Executive Officer.
3	Submit results of Trash Monitoring and Reporting Plan, recommend trash baseline WLA, and propose prioritization of Full Capture System installation or implementation of other measures to attain the required trash reduction.	Los Angeles County and local land owners with conveyances that discharge to Lake Elizabeth and Lake Hughes.	2 years from receipt of letter of approval for the Trash Monitoring and Reporting Plan from Regional Board Executive Officer.
4	Installation of Full Capture Systems or other measures to achieve 20% reduction of trash from Baseline WLA*.	Los Angeles County, Los Angeles County Flood Control Districts, and local land owners with conveyances that discharge to Lake Elizabeth and Lake Hughes.	Four years from effective date of TMDL.
5	Installation of Full Capture Systems or other measures to achieve 40% reduction of trash from Baseline WLA*.	Los Angeles County and local land owners with conveyances that discharge to Lake Elizabeth and Lake Hughes.	Five years from effective date of TMDL.
6	Evaluate the effectiveness of Full Capture Systems or other measures, and reconsider the WLA*.	Regional Board.	Five years from effective date of TMDL.

Task No.	Task	Responsible Jurisdiction	Date
7	Installation of Full Capture Systems or other measures to achieve 60% reduction of trash from Baseline WLA*.	Los Angeles County and local land owners with conveyances that discharge to Lake Elizabeth and Lake Hughes	Six years from effective date of TMDL.
8	Installation of Full Capture Systems or other measures to achieve 80% reduction of trash from Baseline WLA*.	Los Angeles County and local land owners with conveyances that discharge to Lake Elizabeth and Lake Hughes.	Seven years from effective date of TMDL.
9	Installation of Full Capture Systems or other measures to achieve 100% reduction of trash from Baseline WLA*.	Los Angeles County and local land owners with conveyances that discharge to Lake Elizabeth and Lake Hughes.	Eight years from effective date of TMDL.

* Compliance with percent reductions from the Baseline WLA will be assumed wherever full capture systems are installed in corresponding percentages of the conveyance discharging to the waterbody. Installation will be prioritized based on the greatest point source loadings.

Table 7-23.2b Lake Elizabeth, Munz Lake, and Lake Hughes TMDL: Implementation Schedule Minimum Frequency of Assessment and Collection Program *

Task No.	Task	Responsible Jurisdiction	Date
1	Conditional Waiver in effect.	National Forest Service; Land owners in the vicinity of Lake Elizabeth and Lake Hughes.	Regional Board adoption of TMDL.
2	Submit Notice of Intent to Comply with Conditional Waiver of Discharge Requirements, including MFAC/ BMP Program and Trash Monitoring and Reporting Plan.	National Forest Service; Land owners in the vicinity of Lake Elizabeth and Lake Hughes.	Six months from TMDL effective date.
3	Implement MFAC/ BMP Program.	National Forest Service; Land owners in the vicinity of Lake Elizabeth and Lake Hughes.	Six months from receipt of Notice of Acceptance from Regional Board Executive Officer.
4	Submit annual TMRP reports including proposal for revising MFAC/BMP for Executive Officer approval.	National Forest Service; Land owners in the vicinity of Lake Elizabeth and Lake Hughes.	Two years from effective date of TMDL, and annually thereafter.
5	Reconsideration of Trash TMDL based on evaluation of effectiveness of MFAC/BMP program.	Regional Board.	Five years from effective date of TMDL.

* At Task 3, all Responsible Jurisdictions must be attaining the zero trash target after each required trash assessment and collection event. At Task 4, all Responsible Jurisdictions must demonstrate full compliance and attainment of the zero trash target's requirement that trash is not accumulating in deleterious amounts between the required trash assessment and collection events. Based on Responsible Jurisdiction monitoring reports, the Executive Officer may adjust the minimum frequency of assessment and collection as necessary to ensure compliance between the required trash assessment and collection events.

7-24 Revolon Slough and Beardsley Wash Trash TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on June 7, 2007.

This TMDL was approved by:

The State Water Resources Control Board on December 4, 2007.
The Office of Administrative Law on January 24, 2008.
The U.S. Environmental Protection Agency on February 27, 2008.

The effective date of this TMDL is: March 6, 2008.

The elements of the TMDL are presented in Table 7-24.1 and the Implementation Plan in Tables 7-24.2a and 7-24.2b.

Table 7-24.1 Revolon Slough and Beardsley Wash Trash TMDL: Elements

Element	Revolon Slough and Beardsley Wash Trash TMDL
Problem Statement	Current levels of trash discharges into Revolon Slough and Beardsley Wash violate water quality objectives and are impairing beneficial uses. Relevant water quality objectives include Floating Material and Solid, Suspended, or Settleable Materials. The following designated beneficial uses are impacted by trash: water contact recreation (REC1); non-contact water recreation (REC2); warm freshwater habitat (WARM); wildlife habitat (WILD); wetland habitat (WET).
Numeric Target (Interpretation of the narrative water quality objective, used to calculate the load allocations)	Zero trash in Revolon Slough and Beardsley Wash, and in the channel. Zero is defined as (1) for nonpoint sources, no trash immediately following each assessment and collection event consistent with an established Minimum Frequency of Assessment and Collection Program (MFAC Program). The MFAC Program is established at an interval that prevents trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, and (2) for point sources, zero trash discharged into Revolon Slough and Beardsley Wash, shoreline and channel.
Source Analysis	Litter from adjacent land areas, roadways and direct dumping and deposition are sources of trash to Revolon Slough and Beardsley Wash. Point sources such as storm drains are also sources of trash discharged to Revolon Slough and Beardsley Wash.
Loading Capacity	Zero, as defined in the Numeric Target.
Waste Load Allocations (for point sources)	Waste Load Allocations (WLAs) are assigned to the Department of Transportation (Caltrans) Permittees and Co-Permittees of the Ventura County Municipal Separate Storm Sewer System (MS4) Permit, including Ventura County, the Ventura County Watershed Protection District, the City of Camarillo, and the City of Oxnard, and local landowners. WLAs are zero trash. WLAs may be issued to additional responsible jurisdictions in the future under Phase 2 of the US EPA Stormwater Permitting Program, or other applicable regulatory programs.

Element	Revolon Slough and Beardsley Wash Trash TMDL
Load Allocations (for nonpoint sources)	Load Allocations (LAs) are assigned to land owners and agencies in the vicinity of Revolon Slough and Beardsley Wash, including the County of Ventura, Ventura County Watershed Protection District, City of Camarillo, City of Oxnard, and Agricultural entities in the Revolon Slough and Beardsley Wash subwatersheds. LAs are zero trash. LAs may be issued to additional responsible jurisdictions in the future under applicable regulatory programs.
Implementation	Implementation of the trash TMDL for Revolon Slough and Beardsley Wash includes structural and non-structural best management practices (BMPs) and a program of minimum frequency of assessment and collection (MFAC) to address point and nonpoint trash sources. **Point Sources** WLAs shall be implemented through storm water permits and via the authority vested in the Executive Officer by section 13267 of the Porter-Cologne Water Quality Control Act (Water Code section 13000 et seq.). If point source dischargers comply with WLAs by implementing an Executive Officer certified full capture system on conveyances that discharge to Revolon Slough and Beardsley Wash through a progressive implementation schedule of full capture devices, they will be deemed in compliance with the WLA. In certain circumstances (if approved by the Executive Officer), point source dischargers may alternatively comply with WLAs by implementing a program for minimum frequency of assessment and collection in conjunction with best management practices (MFAC/ BMPs). 1. Compliance with the final WLA may be achieved through an adequately sized and maintained full capture system, once the Executive Officer has certified that the system meets the following minimum criteria. A full capture system, at a minimum, consists of any device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the sub-drainage area. The rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour); and A= subdrainage area (acres).

Element	Revolon Slough and Beardsley Wash Trash TMDL
Implementation (continued)	Point sources that choose to comply via a full capture system, must demonstrate a phased implementation of full capture devices over an 8-year period until the final WLA of zero is attained. Zero will be deemed to have been met if full capture systems have been installed on all conveyances discharging to Revolon Slough and Beardsley Wash. Irrespective of whether point sources employ a full capture system, they may comply with the WLA in any lawful manner. 2. Compliance through a MFAC program in conjunction with BMPs may be proposed to the Regional Board for incorporation into the relevant NPDES permit. The MFAC program must include requirements equivalent to those described in the Conditional Waiver set forth below. Agencies that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if a MFAC/BMP program, approved by the Executive Officer, is implemented. **Nonpoint Sources** LAs shall be implemented through either (1) a conditional waiver from waste discharge requirements, or (2) an alternative program implemented through waste discharge requirements or an individual waiver or another appropriate order of the Regional Board. Non-point source dischargers may achieve compliance with the LAs by implementing a MFAC/BMP program approved by the Executive Officer. Responsible jurisdictions that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if an MFAC/BMP program, approved by the Executive Officer, is implemented. 1) Conditional Waiver: Pursuant to Water Code section 13269, waste discharge requirements are waived for any responsible jurisdiction that implements a MFAC/BMP Program which, to the satisfaction of the Executive Officer, meets the following criteria: a) The MFAC/BMP Program includes an initial minimum frequency of trash assessment and collection and suite of structural and/or nonstructural BMPs. The MFAC/BMP program shall include collection and disposal of all trash found in the water and on the shoreline. Responsible jurisdictions shall implement an initial suite of BMPs based on current trash management practices in land areas that are found to be sources of trash to Revolon Slough and Beardsley Wash. For Revolon Slough and Beardsley Wash, the initial minimum frequency shall be set as follows:

Element	Revolon Slough and Beardsley Wash Trash TMDL
Implementation (continued)	1. Monthly on Revolon Slough and its adjacent land areas at Wood Road (the end of the concrete-lined channel), as defined in the Executive Officer approved Trash Monitoring and Reporting Plan (TMRP). 2. Bi-monthly on the water, shoreline and channels of Beardsley Wash and Revolon Slough in areas under the jurisdiction of the County of Ventura, and agricultural lands. 3. Monthly assessment and collection at outlets on north side of Camarillo Hills Drain between Las Posas Rd. and Wood Rd. 4. Monthly on Las Posas Estate Drain between Central Ave. and the 101 Freeway. 5. Monthly at the inlet to the North Ramona Place Drain debris basin. 6. Monthly at inlet to Beardsley Wash at Wright Road and the adjacent land areas, as defined in the Executive Officer approved TMRP. 7. Monthly on a rotating basis of the following channels from the City of Oxnard (i.e. one drain cleaned per month): a. Fifth Street Drain from Del Norte Blvd. to Revolon Slough b. Sturgis Drain from Oxnard City Limits to Revolon Slough c. Nyeland Drain from Center Drive to Friedrich Rd. d. Del Norte Drain from Del Norte Blvd. to Revolon Slough 8. All Drains listed above will also be cleaned within one week of every storm event greater than 1 inch of rain. b) The MFAC/BMP Program includes reasonable assurances that it will be implemented by the responsible jurisdiction.

Element	Revolon Slough and Beardsley Wash Trash TMDL
Implementation (continued)	c) The MFAC/BMP Program includes a Trash Monitoring and Reporting Plan, as described below, and a requirement that the responsible jurisdictions will self-report any non-compliance with its provisions. The results and report of the Trash Monitoring and Reporting Plan must be submitted to Regional Board on an annual basis. d) MFAC protocols may be based on SWAMP protocols for rapid trash assessment, or alternative protocols proposed by dischargers and approved by the Executive Officer. e) Implementation of the MFAC/BMP program should include a Health and Safety Plan to protect personnel. The MFAC/BMP shall not require responsible jurisdictions to access and collect trash from areas where personnel are prohibited. Compliance for Agricultural Sources For agricultural dischargers, the Conditional Waiver for Irrigated Lands will be revised to include a MFAC/BMP program for enrollees in the Revolon Slough and Beardsley Wash subwatershed. The Executive Officer may approve or require a revised assessment and collection frequency and definition of the critical conditions under the waiver: (a) To prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections; (b) To reflect the results of trash assessment and collection; (c) If the amount of trash collected does not show a decreasing trend, where necessary, such that a shorter interval between collections is warranted; or (d) If the amount of trash collected is decreasing such that a longer interval between collections is warranted. At the end of the implementation period, a revised MFAC/BMP program may be required if the Executive Officer determines that the amount of trash accumulating between collections is causing nuisance or otherwise adversely affecting beneficial uses. With regard to (a), (b) or (c), above, the Executive Officer is authorized to allow responsible jurisdictions to implement additional structural or non-structural BMPs in lieu of modifying the monitoring frequency.

Element	Revolon Slough and Beardsley Wash Trash TMDL
Implementation (continued)	Any waivers implementing the TMDL shall expire pursuant to Water Code section 13269 five years after the effective date of this TMDL, unless reissued. The Regional Board may reissue this waiver through an order consistent herewith, instead of readopting these regulatory provisions. (2) Alternatively, responsible jurisdictions may propose, or the Regional Board may impose, an alternative program which would be implemented through waste discharge requirements, an individual waiver, a cleanup and abatement order, or any other appropriate order or orders, provided the program is consistent with the assumptions and requirements of the reductions described in Table 7-24.2b, below. Within six months of the effective date of this TMDL, the Executive Officer shall require responsible jurisdictions to submit either a notice of intent to be regulated under the conditional waiver with their proposed MFAC/BMP Program and Trash Monitoring and Reporting Plan (TMRP), or a report of waste discharge.
Monitoring and Reporting Plan	Responsible jurisdictions will develop a TMRP for Executive Officer approval that describes the methodologies that will be used to assess and monitor trash in Revolon Slough and Beardsley Wash and/or within responsible jurisdiction land areas. The TMRP shall include a plan to establish the trash Baseline WLAs for non-Caltrans entities, or an alternative to the default trash baseline for Caltrans to prioritize installation of full capture devices. The default trash baseline WLA for Caltrans is 6677.4 gallons per square mile per year. Requirements for the TMRP shall include, but are not limited to, assessment and quantification of trash collected from the surfaces and shoreline of Revolon Slough and Beardsley Wash or from responsible jurisdiction land areas. The monitoring plan shall provide details of the frequency, location, and reporting of trash monitoring. Responsible jurisdictions shall propose a metric (e.g., weight, volume, pieces of trash) to measure the amount of trash in Revolon Slough and Beardsley Wash and on the land area surrounding Revolon Slough and Beardsley Wash, as defined in the Executive Officer approved TMRP. The TMRP shall include a prioritization of areas that have the highest trash generation rates. The TMRP shall give preference to this prioritization when scheduling the installation of full capture devices, BMPs, or trash collection programs.

Element	Revolon Slough and Beardsley Wash Trash TMDL
Monitoring and Reporting Plan (continued)	The TMRP shall also include an evaluation of effectiveness of the MFAC/BMP program to prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, proposals to enhance BMPs, and a revised MFAC for Executive Officer review. Responsible Jurisdictions may coordinate their TMRP activities for Revolon Slough and Beardsley Wash.
Margin of Safety	Zero is a conservative numeric target which contains an implicit margin of safety.
Seasonal Variations and Critical Conditions	Discharge of trash from the conveyances occurs primarily during or shortly after a major rain event. Discharge of trash from nonpoint sources occurs during all seasons, but can be increased during or shortly after high wind events, which are defined as periods of wind advisories issued by the National Weather Service.

Table 7-24.2a Revolon Slough and Beardsley Wash Trash TMDL: Implementation Schedule - Point Sources

Task No.	Task	Responsible Jurisdiction	Date
1	Submit Trash Monitoring and Reporting Plan, including a plan for defining the trash baseline WLA and a proposed definition of "major rain event".	City of Camarillo; City of Oxnard; Ventura County Watershed Protection District; Ventura County; Caltrans; Local land owners with conveyances	6 months from effective date of TMDL. If a plan is not approved by the Executive Officer within 9 months, the Executive Officer will establish an appropriate monitoring plan.
2	Implement Trash Monitoring and Reporting Plan.	City of Camarillo; City of Oxnard; Ventura County Watershed Protection District; Ventura County; Caltrans; Local land owners with conveyances	6 months from receipt of letter of approval from Regional Board Executive Officer, or the date a plan is established by the Executive Officer.
3	Submit results of Trash Monitoring and Reporting Plan, recommend trash baseline WLA, and propose prioritization of Full Capture System installation or implementation of other measures to attain the required trash reduction.	City of Camarillo; City of Oxnard; Ventura County Watershed Protection District; Ventura County; Caltrans; Local land owners with conveyances	2 years from receipt of letter of approval for the Trash Monitoring and Reporting Plan from Regional Board Executive Officer.
4	Installation of Full Capture Systems or other measures to achieve 20% reduction of trash from Baseline WLA*.	City of Camarillo; City of Oxnard; Ventura County Watershed Protection District; Ventura County; Caltrans; Local land owners with conveyances	Four years from effective date of TMDL.
5	Installation of Full Capture Systems or other measures to achieve 40% reduction of trash from Baseline WLA*.	City of Camarillo; City of Oxnard; Ventura County Watershed Protection District; Ventura County; Caltrans; Local land owners with conveyances	Five years from effective date of TMDL.
6	Evaluate the effectiveness of Full Capture Systems or other measures, and reconsider the WLA*.	Regional Board.	Five years from effective date of TMDL.

Task No.	Task	Responsible Jurisdiction	Date
7	Installation of Full Capture Systems or other measures to achieve 60% reduction of trash from Baseline WLA*.	City of Camarillo; City of Oxnard; Ventura County Watershed Protection District; Ventura County; Caltrans; Local land owners with conveyances	Six years from effective date of TMDL.
8	Installation of Full Capture Systems or other measures to achieve 80% reduction of trash from Baseline WLA*.	City of Camarillo; City of Oxnard; Ventura County Watershed Protection District; Ventura County; Caltrans; Local land owners with conveyances	Seven years from effective date of TMDL.
9	Installation of Full Capture Systems or other measures to achieve 100% reduction of trash from Baseline WLA*.	City of Camarillo; City of Oxnard; Ventura County Watershed Protection District; Ventura County; Caltrans; Local land owners with conveyances	Eight years from effective date of TMDL.

* Compliance with percent reductions from the Baseline WLA will be assumed wherever full capture systems are installed in corresponding percentages of the conveyance discharging to Revolon Slough and Beardsley Wash. Installation will be prioritized based on the greatest point source loadings.

Table 7-24.2b Revolon Slough and Beardsley Wash Trash TMDL:
Implementation Schedule - Minimum Frequency of Assessment and Collection Program *

Task No.	Task	Responsible Jurisdiction	Date
1	Conditional Waiver in effect.	City of Camarillo; City of Oxnard; Ventura County; Agricultural dischargers; Ventura County Watershed Protection District; Caltrans; Local land owners with conveyances	Regional Board adoption of TMDL.
2	Submit Notice of Intent to Comply with Conditional Waiver of Discharge Requirements, including MFAC/BMP Program and Trash Monitoring and Reporting Plan.	City of Camarillo; City of Oxnard; Ventura County; Agricultural dischargers; Ventura County Watershed Protection District; Caltrans; Local land owners with conveyances	Six months from TMDL effective date.
3	Implement MFAC/BMP Program.	City of Camarillo; City of Oxnard; Ventura County; Agricultural dischargers; Ventura County Watershed Protection District; Caltrans; Local land owners with conveyances	Six months from receipt of Notice of Acceptance from Regional Board Executive Officer.
4	Submit annual TMRP reports including proposal for revising MFAC/BMP for Executive Officer approval.	City of Camarillo; City of Oxnard; Ventura County; Agricultural dischargers; Ventura County Watershed Protection District; Caltrans; Local land owners with conveyances	Two years from effective date of TMDL, and annually thereafter.
5	Reconsideration of Trash TMDL based on evaluation of effectiveness of MFAC/BMP program.	Regional Board.	Five years from effective date of TMDL.

* At Task 3, all Responsible Jurisdictions must be attaining the zero trash target after each required trash assessment and collection event. At Task 4, all Responsible Jurisdictions must demonstrate full compliance and attainment of the zero trash target's requirement that trash is not accumulating in deleterious amounts between the required trash assessment and collection events. Based on Responsible Jurisdiction monitoring reports, the Executive Officer may adjust the minimum frequency of assessment and collection as necessary to ensure compliance between the required trash assessment and collection events.

7-25 Ventura River Estuary Trash TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on June 7, 2007.

This TMDL was approved by:

The State Water Resources Control Board on December 4, 2007.
The Office of Administrative Law on February 11, 2008.
The U.S. Environmental Protection Agency on February 27, 2008.

The effective date of this TMDL is: March 6, 2008.

The elements of the TMDL are presented in Table 7-25.1 and the Implementation Plan in Tables 7-25.2a and 7-25.2b.

Table 7-25.1 Ventura River Estuary Trash TMDL: Elements

Element	Ventura River Estuary Trash TMDL
Problem Statement	Current levels of trash discharges into the Ventura River Estuary violate water quality objectives and are impairing beneficial uses. Relevant water quality objectives include Floating Material and Solid, Suspended, or Settleable Materials. The following designated beneficial uses are impacted by trash: navigation (NAV), contact recreation (REC 1) and non-contact recreation (REC 2), commercial and sport fishing (COMM), warm fresh water habitat (WARM), estuarine habitat (EST), marine habitat (MAR), wildlife habitat (WILD), rare, threatened or endangered species (RARE), migration of aquatic organisms (MIGR), spawning, reproduction, and/or early development (SPWN), shellfish harvesting (SHELL), and wetland habitat (WET).
Numeric Target (Interpretation of the narrative water quality objective, used to calculate the load allocations)	Zero trash in the Ventura River Estuary, shoreline and in the channel. Zero is defined as (1) for nonpoint sources, no trash immediately following each assessment and collection event consistent with an established Minimum Frequency of Assessment and Collection Program (MFAC Program). The MFAC Program is established at an interval that prevents trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, and (2) for point sources, zero trash discharged into the Ventura River Estuary, shoreline, and channel.
Source Analysis	Litter from adjacent land areas, roadways and direct dumping and deposition are sources of trash to the Ventura River Estuary. Point sources such as storm drains are also sources of trash discharged to the Ventura River Estuary.
Loading Capacity	Zero, as defined in the Numeric Target.
Waste Load Allocations (for point sources)	Waste Load Allocations (WLAs) are assigned to the City of Ventura, County of Ventura, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans with conveyances that discharge to the Ventura River Estuary. WLAs are zero trash. WLAs may be issued to additional responsible jurisdictions in the future under Phase 2 of the US EPA Stormwater Permitting Program, or other applicable regulatory programs.

Element	Ventura River Estuary Trash TMDL
Load Allocations (for nonpoint sources)	Load Allocations (LAs) are assigned to the City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Parks and Recreation, California Department of Food and Agriculture, and Agricultural Dischargers. LAs are zero trash. LAs may be issued to additional responsible jurisdictions in the future under applicable regulatory programs.
Implementation	Implementation of the trash TMDL for the Ventura River Estuary includes structural and non-structural best management practices (BMPs) and a program of minimum frequency of assessment and collection (MFAC) to address point and nonpoint trash sources. **Point Sources** WLAs shall be implemented through storm water permits and via the authority vested in the Executive Officer by section 13267 of the Porter-Cologne Water Quality Control Act (Water Code section 13000 et seq.). If point source dischargers comply with WLAs by implementing an Executive Officer certified full capture system on conveyances that discharge to the Ventura River Estuary through a progressive implementation schedule of full capture devices, they will be deemed in compliance with the WLA. In certain circumstances (if approved by the Executive Officer), point source dischargers may alternatively comply with WLAs by implementing a program for minimum frequency of assessment and collection in conjunction with best management practices (MFAC/BMPs). 1. Compliance with the final WLA may be achieved through an adequately sized and maintained full capture system, once the Executive Officer has certified that the system meets the following minimum criteria. A full capture system, at a minimum, consists of any device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the sub-drainage area. The rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour); and A= subdrainage area (acres). Point sources that choose to comply via a full capture system, must demonstrate a phased implementation of full capture devices over an 8-year period until the final WLA of zero is attained. Zero will be deemed to have been met if full capture systems have been installed on all conveyances discharging to the estuary.

Element	Ventura River Estuary Trash TMDL
Implementation (continued)	Irrespective of whether point sources employ a full capture system, they may comply with the WLA in any lawful manner. 2. Compliance through a MFAC program in conjunction with BMPs may be proposed to the Regional Board for incorporation into the relevant NPDES permit. The MFAC program must include requirements equivalent to those described in the Conditional Waiver set forth below. Agencies that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if an MFAC/BMP program, approved by the Executive Officer, is implemented. **Nonpoint Sources** LAs shall be implemented through either (1) a conditional waiver from waste discharge requirements, or (2) an alternative program implemented through waste discharge requirements or an individual waiver or another appropriate order of the Regional Board. Non-point source dischargers may achieve compliance with the LAs by implementing a MFAC/BMP program approved by the Executive Officer. Responsible jurisdictions that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if a MFAC/BMP program, approved by the Executive Officer, is implemented. 1) Conditional Waiver: Pursuant to Water Code section 13269, waste discharge requirements are waived for any responsible jurisdiction that implements a MFAC/BMP Program which, to the satisfaction of the Executive Officer, meets the following criteria: a) The MFAC/BMP Program includes an initial minimum frequency of trash assessment and collection and suite of structural and/or nonstructural BMPs. The MFAC/BMP program shall include collection and disposal of all trash found in the water, shoreline, and the channel. Responsible jurisdictions shall implement an initial suite of BMPs based on current trash management practices in land areas that are found to be sources of trash to the Ventura River Estuary. For the Ventura River Estuary, the initial minimum frequency shall be set as follows:

Element	Ventura River Estuary Trash TMDL
Implementation (continued)	1. Once per week for the sandy beach area between the estuary and the ocean and along the bike path between May 15 and October 15. Once per month for the rest of the year. 2. Within one week after each storm event with one inch of rain or greater at the Front Street storm drain, which discharges under the eastern levee, 50-feet north of the railroad tracks. 3. Quarterly for other areas of the estuary below the U.S. 101 Freeway. 4. After major public events that occur in the Ventura County Fairground that charge an admission price and are attended by greater than 7,000 people. b) The MFAC/BMP Program includes reasonable assurances that it will be implemented by the responsible jurisdiction. c) The MFAC/BMP Program includes a Trash Monitoring and Reporting Plan, as described below, and a requirement that the responsible jurisdictions will self-report any non-compliance with its provisions. The results and report of the Trash Monitoring and Reporting Plan must be submitted to Regional Board on an annual basis. d) MFAC protocols may be based on SWAMP protocols for rapid trash assessment, or alternative protocols proposed by dischargers and approved by the Executive Officer. e) Implementation of the MFAC/BMP program should include a Health and Safety Plan to protect personnel. The MFAC/BMP shall not require responsible jurisdictions to access and collect trash from areas where personnel are prohibited. *Compliance for Agricultural Sources* For agricultural dischargers, the Conditional Waiver for Irrigated Lands will be revised to include a MFAC/BMP program for enrollees in the Ventura River Estuary subwatershed. The Executive Officer may approve or require a revised assessment and collection frequency and definition of the critical conditions under the waiver:

Element	Ventura River Estuary Trash TMDL
Implementation (continued)	(a) To prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections; (b) To reflect the results of trash assessment and collection; (c) If the amount of trash collected does not show a decreasing trend, where necessary, such that a shorter interval between collections is warranted; or (d) If the amount of trash collected is decreasing such that a longer interval between collections is warranted. At the end of the implementation period, a revised MFAC/BMP program may be required if the Executive Officer determines that the amount of trash accumulating between collections is causing nuisance or otherwise adversely affecting beneficial uses. With regard to (a), (b) or (c), above, the Executive Officer is authorized to allow responsible jurisdictions to implement additional structural or non-structural BMPs in lieu of modifying the monitoring frequency. Any waivers implementing the TMDL shall expire pursuant to Water Code section 13269 five years after the effective date of this TMDL, unless reissued. The Regional Board may reissue this waiver through an order consistent herewith, instead of readopting these regulatory provisions. (2) Alternatively, responsible jurisdictions may propose, or the Regional Board may impose, an alternative program which would be implemented through waste discharge requirements an individual waiver, a cleanup and abatement order, or any other appropriate order or orders, provided the program is consistent with the assumptions and requirements of the reductions described in Table 7-25.2b, below. Within six months of the effective date of this TMDL, the Executive Officer shall require responsible jurisdictions to submit either a notice of intent to be regulated under the conditional waiver with their proposed MFAC/BMP Program and Trash Monitoring and Reporting Plan (TMRP), or a report of waste discharge.

Element	Ventura River Estuary Trash TMDL
Monitoring and Reporting Plan	Responsible jurisdictions will develop a TMRP for Executive Officer approval that describes the methodologies that will be used to assess and monitor trash in the Ventura River Estuary and/or within responsible jurisdiction land areas. The TMRP shall include a plan to establish the trash Baseline WLAs for non-Caltrans entities, or an alternative to the default trash baseline for Caltrans to prioritize installation of full capture devices. The default trash baseline WLA for Caltrans is 6677.4 gallons per square mile per year. Requirements for the TMRP shall include, but are not limited to, assessment and quantification of trash collected from the surfaces and shoreline of the Ventura River Estuary or from responsible jurisdiction land areas. The monitoring plan shall provide details of the frequency, location, and reporting of trash monitoring. Responsible jurisdictions shall propose a metric (e.g., weight, volume, pieces of trash) to measure the amount of trash in the estuary and on the land area surrounding the estuary, as defined in the Executive Officer approved TMRP. The TMRP shall include a prioritization of areas that have the highest trash generation rates. The TMRP shall give preference to this prioritization when scheduling the installation of full capture devices, BMPs, or trash collection programs. The TMRP shall also include an evaluation of effectiveness of the MFAC/BMP program to prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, proposals to enhance BMPs, and a revised MFAC for Executive Officer review. Responsible Jurisdictions may coordinate their TMRP activities for the Ventura River Estuary.
Margin of Safety	Zero is a conservative numeric target which contains an implicit margin of safety.
Seasonal Variations and Critical Conditions	Discharge of trash from the conveyances occurs primarily during or shortly after a major rain event. Discharge of trash from nonpoint sources occurs during all seasons, but can be increased during or shortly after high wind events, which are defined as periods of wind advisories issued by the National Weather Service, and the period from May 15 to October 15, or during and after public events that occur in the Ventura County Fairground.

Table 7-25.2a Ventura River Estuary Trash TMDL: Implementation Schedule - Point Sources

Task No.	Task	Responsible Jurisdiction	Date
1	Submit Trash Monitoring and Reporting Plan, including a plan for defining the trash baseline WLA and a proposed definition of "major rain event".	City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans.	6 months from effective date of TMDL. If a plan is not approved by the Executive Officer within 9 months, the Executive Officer will establish an appropriate monitoring plan.
2	Implement Trash Monitoring and Reporting Plan.	City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans.	6 months from receipt of letter of approval from Regional Board Executive Officer, or the date a plan is established by the Executive Officer.
3	Submit results of Trash Monitoring and Reporting Plan, recommend trash baseline WLA, and propose prioritization of Full Capture System installation or implementation of other measures to attain the required trash reduction.	City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans.	2 years from receipt of letter of approval for the Trash Monitoring and Reporting Plan from Regional Board Executive Officer.
4	Installation of Full Capture Systems or other measures to achieve 20% reduction of trash from Baseline WLA*.	City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans.	Four years from effective date of TMDL.
5	Installation of Full Capture Systems or other measures to achieve 40% reduction of trash from Baseline WLA*.	City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans.	Five years from effective date of TMDL.
6	Evaluate the effectiveness of Full Capture Systems or other measures, and reconsider the WLA*.	Regional Board.	Five years from effective date of TMDL.

Task No.	Task	Responsible Jurisdiction	Date
7	Installation of Full Capture Systems or other measures to achieve 60% reduction of trash from Baseline WLA*.	City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans.	Six years from effective date of TMDL.
8	Installation of Full Capture Systems or other measures to achieve 80% reduction of trash from Baseline WLA*.	City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans.	Seven years from effective date of TMDL.
9	Installation of Full Capture Systems or other measures to achieve 100% reduction of trash from Baseline WLA*.	City of Ventura, Ventura County, Ventura County Watershed Protection District, California Department of Food and Agriculture, and Caltrans.	Eight years from effective date of TMDL.

* Compliance with percent reductions from the Baseline WLA will be assumed wherever full capture systems are installed in corresponding percentages of the conveyance discharging to the estuary. Installation will be prioritized based on the greatest point source loadings.

Table 7-25.2b Ventura River Estuary Trash TMDL: Implementation Schedule - Minimum Frequency of Assessment and Collection Program *

Task No.	Task	Responsible Jurisdiction	Date
1	Conditional Waiver in effect.	City of Ventura, Ventura County, Ventura County Watershed Protection District, Caltrans, California Department of Parks and Recreation, California Department of Food and Agriculture, and Agricultural Dischargers.	Regional Board adoption of TMDL.
2	Submit Notice of Intent to Comply with Conditional Waiver of Discharge Requirements, including MFAC/BMP Program and Trash Monitoring and Reporting Plan.	City of Ventura, Ventura County, Ventura County Watershed Protection District, Caltrans, California Department of Parks and Recreation, California Department of Food and Agriculture, and Agricultural Dischargers.	Six months from TMDL effective date.
3	Implement MFAC/BMP Program.	City of Ventura, Ventura County, Ventura County Watershed Protection District, Caltrans, California Department of Parks and Recreation, California Department of Food and Agriculture, and Agricultural Dischargers.	Six months from receipt of Notice of Acceptance from Regional Board Executive Officer.
4	Submit annual TMRP reports including proposal for revising MFAC/BMP for Executive Officer approval.	City of Ventura, Ventura County, Ventura County Watershed Protection District, Caltrans, California Department of Parks and Recreation, California Department of Food and Agriculture, and Agricultural Dischargers.	Two years from effective date of TMDL, and annually thereafter.
5	Reconsideration of Trash TMDL based on evaluation of effectiveness of MFAC/BMP program.	Regional Board.	Five years from effective date of TMDL.

* At Task 3, all Responsible Jurisdictions must be attaining the zero trash target after each required trash assessment and collection event. At Task 4, all Responsible Jurisdictions must demonstrate full compliance and attainment of the zero trash target's requirement that trash is not accumulating in deleterious amounts between the required trash assessment and collection events. Based on Responsible Jurisdiction monitoring reports, the Executive Officer may adjust the minimum frequency of assessment and collection as necessary to ensure compliance between the required trash assessment and collection events.

7-26 Machado Lake Trash TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on June 7, 2007.

This TMDL was approved by:

The State Water Resources Control Board on December 4, 2007.
The Office of Administrative Law on February 8, 2008.
The U.S. Environmental Protection Agency on February 27, 2008.

The effective date of this TMDL is: March 6, 2008.

The elements of the TMDL are presented in Table 7-26.1 and the Implementation Plan in Tables 7-26.2a and 7-26.2b.

Table 7-26.1 Machado Lake Trash TMDL: Elements

Element	Machado Lake Trash TMDL
Problem Statement	Current levels of trash discharges into Machado Lake violate water quality objectives and are impairing beneficial uses. Relevant water quality objectives include Floating Material and Solid, Suspended, or Settleable Materials. The following designated beneficial uses are impacted by trash: municipal and domestic supply (MUN); contact water recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); wildlife habitat (WILD), rare, threatened, or endangered species (RARE), and wetland habitat (WET).
Numeric Target (Interpretation of the narrative water quality objective, used to calculate the load allocations)	Zero trash in Machado Lake, and on the shoreline. Zero is defined as (1) for nonpoint sources, no trash immediately following each assessment and collection event consistent with an established Minimum Frequency of Assessment and Collection Program (MFAC Program). The MFAC Program is established at an interval that prevents trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, and (2) for point sources, zero trash discharged into Machado Lake and on the shoreline.
Source Analysis	Litter from adjacent land areas, roadways and direct dumping and deposition are sources of trash to Machado Lake. Point sources such as storm drains are also sources of trash discharged to Machado Lake.
Loading Capacity	Zero, as defined in the Numeric Target.

Element	Machado Lake Trash TMDL
Waste Load Allocations (for point sources)	Waste Load Allocations (WLAs) are assigned to the California Department of Transportation (Caltrans) and permittees under the Los Angeles County Municipal Separate Storm Sewer System (MS4) NPDES permit, including Los Angeles County, Los Angeles Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance. WLAs are zero trash. WLAs may be issued to additional responsible jurisdictions in the future under Phase 2 of the US EPA Stormwater Permitting Program, or other applicable regulatory programs.
Load Allocations (for nonpoint sources)	Load Allocations (LAs) are assigned to the City of Los Angeles. LAs are zero trash. LAs may be issued to additional responsible jurisdictions in the future under applicable regulatory programs.
Implementation	Implementation of the trash TMDL for Machado Lake includes structural and non-structural best management practices (BMPs) and a program of minimum frequency of assessment and collection (MFAC) to address point and nonpoint trash sources. **Point Sources** WLAs shall be implemented through storm water permits and via the authority vested in the Executive Officer by section 13267 of the Porter-Cologne Water Quality Control Act (Water Code section 13000 et seq.). If point source dischargers comply with WLAs by implementing an Executive Officer certified full capture system on conveyances that discharge to Machado Lake through a progressive implementation schedule of full capture devices, they will be deemed in compliance with the WLA. In certain circumstances, (if approved by the Executive Officer), point source dischargers may alternatively comply with WLAs by implementing a program for minimum frequency of assessment and collection in conjunction with best management practices (MFAC/BMPs).

Element	Machado Lake Trash TMDL
Implementation (continued)	1. Compliance with the final WLA may be achieved through an adequately sized and maintained full capture system, once the Executive Officer has certified that the system meets the following minimum criteria. A full capture system, at a minimum, consists of any device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the sub-drainage area. The rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour); and A= subdrainage area (acres). Point sources that choose to comply via a full capture system, must demonstrate a phased implementation of full capture devices over an 8-year period until the final WLA of zero is attained. Zero will be deemed to have been met if full capture systems have been installed on all conveyances discharging to Machado Lake. Irrespective of whether point sources employ a full capture system, they may comply with the WLA in any lawful manner. 2. Compliance through an MFAC program in conjunction with BMPs may be proposed to the Regional Board for incorporation into the relevant NPDES permit. The MFAC program must include requirements equivalent to those described in the Conditional Waiver set forth below. Agencies that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if a MFAC/BMP program, approved by the Executive Officer, is implemented. **Nonpoint Sources** LAs shall be implemented through either (1) a conditional waiver from waste discharge requirements, or (2) an alternative program implemented through waste discharge requirements or an individual waiver or another appropriate order of the Regional Board. Non-point source dischargers may achieve compliance with the LAs by implementing a MFAC/BMP program approved by the Executive Officer. Responsible jurisdictions that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if an MFAC/BMP program, approved by the Executive Officer, is implemented.

Element	Machado Lake Trash TMDL
Implementation (continued)	1) Conditional Waiver: Pursuant to Water Code section 13269, waste discharge requirements are waived for any responsible jurisdiction that implements a MFAC/BMP Program which, to the satisfaction of the Executive Officer, meets the following criteria: a) The MFAC/BMP Program includes an initial minimum frequency of trash assessment and collection and suite of structural and/or nonstructural BMPs. The MFAC/BMP program shall include collection and disposal of all trash found in the water and on the shoreline. Responsible jurisdictions shall implement an initial suite of BMPs based on current trash management practices in land areas that are found to be sources of trash to Machado Lake. For Machado Lake, the initial minimum frequency shall be set as follows: 1. Five days per week on the shoreline and in the Ken Malloy Harbor Regional Park, as defined in the Executive Officer approved Trash Monitoring and Reporting Plan (TMRP). 2. Twice per week on waters of Machado Lake. b) The MFAC/BMP Program includes reasonable assurances that it will be implemented by the responsible jurisdiction. c) The MFAC/BMP Program includes a Trash Monitoring and Reporting Plan, as described below, and a requirement that the responsible jurisdictions will self-report any non-compliance with its provisions. The results and report of the Trash Monitoring and Reporting Plan must be submitted to Regional Board on an annual basis. d) MFAC protocols may be based on SWAMP protocols for rapid trash assessment, or alternative protocols proposed by dischargers and approved by the Executive Officer. e) Implementation of the MFAC/BMP program should include a Health and Safety Plan to protect personnel. The MFAC/BMP shall not require responsible jurisdictions to access and collect trash from areas where personnel are prohibited.

Element	Machado Lake Trash TMDL
Implementation (continued)	The Executive Officer may approve or require a revised assessment and collection frequency and definition of the critical conditions under the waiver: (a) To prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections; (b) To reflect the results of trash assessment and collection; (c) If the amount of trash collected does not show a decreasing trend, where necessary, such that a shorter interval between collections is warranted; or (d) If the amount of trash collected is decreasing such that a longer interval between collections is warranted. At the end of the implementation period, a revised MFAC/BMP program may be required if the Executive Officer determines that the amount of trash accumulating between collections is causing nuisance or otherwise adversely affecting beneficial uses. With regard to (a), (b) or (c), above, the Executive Officer is authorized to allow responsible jurisdictions to implement additional structural or non-structural BMPs in lieu of modifying the monitoring frequency. Any waivers implementing the TMDL shall expire pursuant to Water Code section 13269 five years after the effective date of this TMDL, unless reissued. The Regional Board may reissue this waiver through an order consistent herewith, instead of readopting these regulatory provisions. (2) Alternatively, responsible jurisdictions may propose, or the Regional Board may impose, an alternative program which would be implemented through waste discharge requirements an individual waiver, a cleanup and abatement order, or any other appropriate order or orders, provided the program is consistent with the assumptions and requirements of the reductions described in Table 7-26.2b, below. Within six months of the effective date of this TMDL, the Executive Officer shall require responsible jurisdictions to submit either a notice of intent to be regulated under the conditional waiver with their proposed MFAC/BMP Program and Trash Monitoring and Reporting Plan (TMRP), or a report of waste discharge.

Element	Machado Lake Trash TMDL
Monitoring and Reporting Plan	Responsible jurisdictions will develop a TMRP for Executive Officer approval that describes the methodologies that will be used to assess and monitor trash in Machado Lake and/or within responsible jurisdiction land areas. The TMRP shall include a plan to establish the trash Baseline WLAs for non-Caltrans entities, or an alternative to the default trash baseline for Caltrans to prioritize installation of full capture devices. The default trash baseline WLA for Caltrans is 6677.4 gallons per square mile per year. Requirements for the TMRP shall include, but are not limited to, assessment and quantification of trash collected from the surfaces and shoreline of Machado Lake or from responsible jurisdiction land areas. The monitoring plan shall provide details of the frequency, location, and reporting of trash monitoring. Responsible jurisdictions shall propose a metric (e.g., weight, volume, pieces of trash) to measure the amount of trash in Machado Lake and on the land area surrounding Machado Lake, as defined in the Executive Officer approved TMRP. The TMRP shall include a prioritization of areas that have the highest trash generation rates. The TMRP shall give preference to this prioritization when scheduling the installation of full capture devices, BMPs, or trash collection programs. The TMRP shall also include an evaluation of effectiveness of the MFAC/BMP program to prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, proposals to enhance BMPs, and a revised MFAC for Executive Officer review. Responsible Jurisdictions may coordinate their TMRP activities for Machado Lake.
Margin of Safety	Zero is a conservative numeric target which contains an implicit margin of safety.
Seasonal Variations and Critical Conditions	Discharge of trash from the conveyances occurs primarily during or shortly after a major rain event. Discharge of trash from nonpoint sources occurs during all seasons, but can be increased during or shortly after high wind events, which are defined as periods of wind advisories issued by the National Weather Service, and the period from May 15 to October 15.

Table 7-26.2a Machado Lake Trash TMDL: Implementation Schedule - Point Sources

Task No.	Task	Responsible Jurisdiction	Date
1	Submit Trash Monitoring and Reporting Plan, including a plan for defining the trash baseline WLA and a proposed definition of "major rain event".	California Department of Transportation (Caltrans) and Municipal Separate Storm Sewer System (MS4) Permittees including: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance	6 months from effective date of TMDL. If a plan is not approved by the Executive Officer within 9 months, the Executive Officer will establish an appropriate monitoring plan.
2	Implement Trash Monitoring and Reporting Plan.	California Department of Transportation (Caltrans) and Municipal Separate Storm Sewer System (MS4) Permittees including: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance	6 months from receipt of letter of approval from Regional Board Executive Officer, or the date a plan is established by the Executive Officer.
3	Submit results of Trash Monitoring and Reporting Plan, recommend trash baseline WLA, and propose prioritization of Full Capture System installation or implementation of other measures to attain the required trash reduction.	California Department of Transportation (Caltrans) and Municipal Separate Storm Sewer System (MS4) Permittees including: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance	2 years from receipt of letter of approval for the Trash Monitoring and Reporting Plan from Regional Board Executive Officer.
4	Installation of Full Capture Systems or other measures to achieve 20% reduction of trash from Baseline WLA*.	California Department of Transportation (Caltrans) and Municipal Separate Storm Sewer System (MS4) Permittees including: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance	Four years from effective date of TMDL.
5	Installation of Full Capture Systems or other measures to achieve 40% reduction of trash from Baseline WLA*.	California Department of Transportation (Caltrans) and Municipal Separate Storm Sewer System (MS4) Permittees including: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance	Five years from effective date of TMDL.

Task No.	Task	Responsible Jurisdiction	Date
6	Evaluate the effectiveness of Full Capture Systems or other measures, and reconsider the WLA*.	Regional Board.	Five years from effective date of TMDL.
7	Installation of Full Capture Systems or other measures to achieve 60% reduction of trash from Baseline WLA*.	California Department of Transportation (Caltrans) and Municipal Separate Storm Sewer System (MS4) Permittees including: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance	Six years from effective date of TMDL.
8	Installation of Full Capture Systems or other measures to achieve 80% reduction of trash from Baseline WLA*.	California Department of Transportation (Caltrans) and Municipal Separate Storm Sewer System (MS4) Permittees including: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance	Seven years from effective date of TMDL.
9	Installation of Full Capture Systems or other measures to achieve 100% reduction of trash from Baseline WLA*.	California Department of Transportation (Caltrans) and Municipal Separate Storm Sewer System (MS4) Permittees including: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance	Eight years from effective date of TMDL.

* Compliance with percent reductions from the Baseline WLA will be assumed wherever full capture systems are installed in corresponding percentages of the conveyance discharging to Machado Lake. Installation will be prioritized based on the greatest point source loadings.

Table 7-26.2b Machado Lake Trash TMDL: Implementation Schedule - Minimum Frequency of Assessment and Collection Program *

Task No.	Task	Responsible Jurisdiction	Date
1	Conditional Waiver in effect.	City of Los Angeles	Regional Board adoption of TMDL.
2	Submit Notice of Intent to Comply with Conditional Waiver of Discharge Requirements, including MFAC/ BMP Program and Trash Monitoring and Reporting Plan.	City of Los Angeles	Six months from TMDL effective date.
3	Implement MFAC/ BMP Program.	City of Los Angeles	Six months from receipt of Notice of Acceptance from Regional Board Executive Officer.
4	Submit annual TMRP reports including proposal for revising MFAC/BMP for Executive Officer approval.	City of Los Angeles	Two years from effective date of TMDL, and annually thereafter.
5	Reconsideration of Trash TMDL based on evaluation of effectiveness of MFAC/BMP program.	Regional Board.	Five years from effective date of TMDL.

* At Task 3, all Responsible Jurisdictions must be attaining the zero trash target after each required trash assessment and collection event. At Task 4, all Responsible Jurisdictions must demonstrate full compliance and attainment of the zero trash target's requirement that trash is not accumulating in deleterious amounts between the required trash assessment and collection events. Based on Responsible Jurisdiction monitoring reports, the Executive Officer may adjust the minimum frequency of assessment and collection as necessary to ensure compliance between the required trash assessment and collection events.

7-27 Legg Lake Trash TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on June 7, 2007.

This TMDL was approved by:

The State Water Resources Control Board on December 4, 2007.
The Office of Administrative Law on February 5, 2008.
The U.S. Environmental Protection Agency on February 27, 2008.

The effective date of this TMDL is: March 6, 2008.

The elements of the TMDL are presented in Table 7-27.1 and the Implementation Plan in Tables 7-27.2a and 7-27.2b.

Table 7-27.1 Legg Lake Trash TMDL: Elements

Element	Legg Lake Trash TMDL
Problem Statement	Current levels of trash discharges into Legg Lake violate water quality objectives and are impairing beneficial uses. Relevant water quality objectives include Floating Material and Solid, Suspended, or Settleable Materials. The following designated beneficial uses are impacted by trash: water contact recreation (REC 1) and non-contact water recreation (REC 2), warm freshwater habitat (WARM), cold freshwater (COLD), wildlife habitat (WILD), and wetland habitat (WET).
Numeric Target (Interpretation of the narrative water quality objective, used to calculate the load allocations)	Zero trash in Legg Lake and its shoreline. Zero is defined as (1) for nonpoint sources, no trash immediately following each assessment and collection event consistent with an established Minimum Frequency of Assessment and Collection Program (MFAC Program). The MFAC Program is established at an interval that prevents trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, and (2) for point sources, zero trash discharged into Legg Lake and its shoreline.
Source Analysis	Litter from adjacent land areas, roadways and direct dumping and deposition are sources of trash to Legg Lake. Point sources such as storm drains are also sources of trash discharged to Legg Lake.
Loading Capacity	Zero, as defined in the Numeric Target.
Waste Load Allocations (for point sources)	Waste Load Allocations (WLAs) are assigned to the California Department of Transportation, and permittees under the Los Angeles County Municipal Separate Storm Sewer System (MS4) NPDES permit, including the Los Angeles County Flood Control District, the County of Los Angeles, and the Cities of El Monte and South El Monte. WLAs are zero trash. WLAs may be issued to additional responsible jurisdictions in the future under Phase 2 of the US EPA Stormwater Permitting Program, or other applicable regulatory programs.
Load Allocations (for nonpoint sources)	Load Allocations (LAs) are assigned to the County of Los Angeles. LAs are zero trash. LAs may be issued to additional responsible jurisdictions in the future under applicable regulatory programs.

Element	Legg Lake Trash TMDL
Implementation	Implementation of the trash TMDL for Legg Lake includes structural and non-structural best management practices (BMPs) and a program of minimum frequency of assessment and collection (MFAC) to address point and nonpoint trash sources. **Point Sources** WLAs shall be implemented through storm water permits and via the authority vested in the Executive Officer by section 13267 of the Porter-Cologne Water Quality Control Act (Water Code section 13000 et seq.). If point source dischargers comply with WLAs by implementing an Executive Officer certified full capture system on conveyances that discharge to Legg Lake through a progressive implementation schedule of full capture devices, they will be deemed in compliance with the WLA. In certain circumstances (if approved by the Executive Officer), point source dischargers may alternatively comply with WLAs by implementing a program for minimum frequency of assessment and collection in conjunction with best management practices (MFAC/BMPs). 1. Compliance with the final WLA may be achieved through an adequately sized and maintained full capture system, once the Executive Officer has certified that the system meets the following minimum criteria. A full capture system, at a minimum, consists of any device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the sub-drainage area. The rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour); and A= subdrainage area (acres). Point sources that choose to comply via a full capture system, must demonstrate a phased implementation of full capture devices over an 8-year period until the final WLA of zero is attained. Zero will be deemed to have been met if full capture systems have been installed on all conveyances discharging to Legg Lake.

Element	Legg Lake Trash TMDL
Implementation (continued)	Irrespective of whether point source dischargers employ a full capture system, they may comply with the WLA in any lawful manner. 2. Compliance through a MFAC program in conjunction with BMPs may be proposed to the Regional Board for incorporation into the relevant NPDES permit. The MFAC program must include requirements equivalent to those described in the Conditional Waiver set forth below. Agencies that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if a MFAC/BMP program, approved by the Executive Officer, is implemented. **Nonpoint Sources** LAs shall be implemented through either (1) a conditional waiver from waste discharge requirements, or (2) an alternative program implemented through waste discharge requirements or an individual waiver or another appropriate order of the Regional Board. Non-point source dischargers may achieve compliance with the LAs by implementing an MFAC/BMP program approved by the Executive Officer. Responsible jurisdictions that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if a MFAC/BMP program, approved by the Executive Officer, is implemented. 1) Conditional Waiver: Pursuant to Water Code section 13269, waste discharge requirements are waived for any responsible jurisdiction that implements a MFAC/BMP Program which, to the satisfaction of the Executive Officer, meets the following criteria: a) The MFAC/BMP Program includes an initial minimum frequency of trash assessment and collection and suite of structural and/or nonstructural BMPs. The MFAC/BMP program shall include collection and disposal of all trash found in the water and shoreline. Responsible jurisdictions shall implement an initial suite of BMPs based on current trash management practices in land areas that are found to be sources of trash to Legg Lake. For Legg Lake, the initial minimum frequency shall be set as follows: 1. Five days per week on the shoreline and in the Whittier Narrows Recreation Park Area, as defined in the Executive Officer approved Trash Monitoring and Reporting Plan (TMRP). 2. Once per week on waters of Legg Lake.

Element	Legg Lake Trash TMDL
Implementation (continued)	b) The MFAC/BMP Program includes reasonable assurances that it will be implemented by the responsible jurisdiction. c) The MFAC/BMP Program includes a Trash Monitoring and Reporting Plan, as described below, and a requirement that the responsible jurisdictions will self-report any non-compliance with its provisions. The results and report of the Trash Monitoring and Reporting Plan must be submitted to Regional Board on an annual basis. d) MFAC protocols may be based on SWAMP protocols for rapid trash assessment, or alternative protocols proposed by dischargers and approved by the Executive Officer. e) Implementation of the MFAC/BMP program should include a Health and Safety Program to protect personnel. The MFAC/BMP program shall not require responsible jurisdictions to access and collect trash from areas where personnel are prohibited. The Executive Officer may approve or require a revised assessment and collection frequency and definition of the critical conditions under the waiver: (a) To prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections; (b) To reflect the results of trash assessment and collection; (c) If the amount of trash collected does not show a decreasing trend, where necessary, such that a shorter interval between collections is warranted; or (d) If the amount of trash collected is decreasing such that a longer interval between collections is warranted. At the end of the implementation period, a revised MFAC/BMP program may be required if the Executive Officer determines that the amount of trash accumulating between collections is causing nuisance or otherwise adversely affecting beneficial uses . With regard to (a), (b) or (c), above, the Executive Officer is authorized to allow responsible jurisdictions to implement additional structural or non-structural BMPs in lieu of modifying the monitoring frequency.

Element	Legg Lake Trash TMDL
Implementation (continued)	Any waivers implementing the TMDL shall expire pursuant to Water Code section 13269 five years after the effective date of this TMDL, unless reissued. The Regional Board may reissue this waiver through an order consistent herewith, instead of readopting these regulatory provisions. (2) Alternatively, responsible jurisdictions may propose, or the Regional Board may impose, an alternative program which would be implemented through waste discharge requirements an individual waiver, a cleanup and abatement order, or any other appropriate order or orders, provided the program is consistent with the assumptions and requirements of the reductions described in Table 7-27.2b, below. Within six months of the effective date of this TMDL, the Executive Officer shall require responsible jurisdictions to submit either a notice of intent to be regulated under the conditional waiver with their proposed MFAC/BMP Program and Trash Monitoring and Reporting Plan (TMRP), or a report of waste discharge.
Monitoring and Reporting Plan	Responsible jurisdictions will develop a TMRP for Executive Officer approval that describes the methodologies that will be used to assess and monitor trash in Legg Lake and/or within responsible jurisdiction land areas. The TMRP shall include a plan to establish the trash Baseline WLAs for non-Caltrans entities, or an alternative to the default trash baseline for Caltrans to prioritize installation of full capture devices. The default trash baseline WLA for Caltrans is 6677.4 gallons per square mile per year. Requirements for the TMRP shall include, but are not limited to, assessment and quantification of trash collected from the surfaces and shoreline of Legg Lake or from responsible jurisdiction land areas. The monitoring plan shall provide details of the frequency, location, and reporting of trash monitoring. Responsible jurisdictions shall propose a metric (e.g., weight, volume, pieces of trash) to measure the amount of trash in Legg Lake and on the land area surrounding Legg Lake, as defined in the Executive Officer approved TMRP. The TMRP shall include a prioritization of areas that have the highest trash generation rates. The TMRP shall give preference to this prioritization when scheduling the installation of full capture devices, BMPs, or trash collection programs. The TMRP shall also include an evaluation of effectiveness of the MFAC/BMP program to prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, proposals to enhance BMPs, and a revised MFAC for Executive Officer review. Responsible Jurisdictions may coordinate their TMRP activities for Legg Lake.

Element	Legg Lake Trash TMDL
Margin of Safety	Zero is a conservative numeric target which contains an implicit margin of safety.
Seasonal Variations and Critical Conditions	Discharge of trash from the conveyances occurs primarily during or shortly after a major rain event. Discharge of trash from nonpoint sources occurs during all seasons, but can be increased during or shortly after high wind events, which are defined as periods of wind advisories issued by the National Weather Service.

Table 7-27.2a Legg Lake Trash TMDL: Implementation Schedule - Point Sources

Task No.	Task	Responsible Jurisdiction	Date
1	Submit Trash Monitoring and Reporting Plan, including a plan for defining the trash baseline WLA and a proposed definition of "major rain event".	Los Angeles County, Los Angeles County Flood Control Districts, the Cities of El Monte and South El Monte, and Caltrans.	6 months from effective date of TMDL. If a plan is not approved by the Executive Officer within 9 months, the Executive Officer will establish an appropriate monitoring plan.
2	Implement Trash Monitoring and Reporting Plan.	Los Angeles County, Los Angeles County Flood Control Districts, the Cities of El Monte and South El Monte, and Caltrans.	6 months from receipt of letter of approval from Regional Board Executive Officer, or the date a plan is established by the Executive Officer.
3	Submit results of Trash Monitoring and Reporting Plan, recommend trash baseline WLA, and propose prioritization of Full Capture System installation or implementation of other measures to attain the required trash reduction.	Los Angeles County, Los Angeles County Flood Control Districts, the Cities of El Monte and South El Monte, and Caltrans.	2 years from receipt of letter of approval for the Trash Monitoring and Reporting Plan from Regional Board Executive Officer.
4	Installation of Full Capture Systems or other measures to achieve 20% reduction of trash from Baseline WLA*.	Los Angeles County, Los Angeles County Flood Control Districts, the Cities of El Monte and South El Monte, and Caltrans.	Four years from effective date of TMDL.
5	Installation of Full Capture Systems or other measures to achieve 40% reduction of trash from Baseline WLA*.	Los Angeles County, Los Angeles County Flood Control Districts, the Cities of El Monte and South El Monte, and Caltrans.	Five years from effective date of TMDL.
6	Evaluate the effectiveness of Full Capture Systems or other measures, and reconsider the WLA*.	Regional Board.	Five years from effective date of TMDL.

Task No.	Task	Responsible Jurisdiction	Date
7	Installation of Full Capture Systems or other measures to achieve 60% reduction of trash from Baseline WLA*.	Los Angeles County, Los Angeles County Flood Control Districts, the Cities of El Monte and South El Monte, and Caltrans	Six years from effective date of TMDL.
8	Installation of Full Capture Systems or other measures to achieve 80% reduction of trash from Baseline WLA*.	Los Angeles County, Los Angeles County Flood Control Districts, the Cities of El Monte and South El Monte, and Caltrans	Seven years from effective date of TMDL.
9	Installation of Full Capture Systems or other measures to achieve 100% reduction of trash from Baseline WLA*.	Los Angeles County, Los Angeles County Flood Control Districts, the Cities of El Monte and South El Monte, and Caltrans.	Eight years from effective date of TMDL.

* Compliance with percent reductions from the Baseline WLA will be assumed wherever full capture systems are installed in corresponding percentages of the conveyance discharging to the waterbody. Installation will be prioritized based on the greatest point source loadings.

Table 7-27.2b Legg Lake TMDL: Implementation Schedule - Minimum Frequency of Assessment and Collection Program *

Task No.	Task	Responsible Jurisdiction	Date
1	Conditional Waiver in effect.	Los Angeles County, City of South El Monte, City of El Monte.	Regional Board adoption of TMDL.
2	Submit Notice of Intent to Comply with Conditional Waiver of Discharge Requirements, including MFAC/ BMP Program and Trash Monitoring and Reporting Plan.	Los Angeles County, City of South El Monte, City of El Monte.	Six months from TMDL effective date.
3	Implement MFAC/ BMP Program.	Los Angeles County, City of South El Monte, City of El Monte.	Six months from receipt of Notice of Acceptance from Regional Board Executive Officer.
4	Submit annual TMRP reports including proposal for revising MFAC/BMP for Executive Officer approval.	Los Angeles County, City of South El Monte, City of El Monte.	Two years from effective date of TMDL, and annually thereafter.
5	Reconsideration of Trash TMDL based on evaluation of effectiveness of MFAC/BMP program.	Regional Board.	Five years from effective date of TMDL.

* At Task 3, all Responsible Jurisdictions must be attaining the zero trash target after each required trash assessment and collection event. At Task 4, all Responsible Jurisdictions must demonstrate full compliance and attainment of the zero trash target's requirement that trash is not accumulating in deleterious amounts between the required trash assessment and collection events. Based on Responsible Jurisdiction monitoring reports, the Executive Officer may adjust the minimum frequency of assessment and collection as necessary to ensure compliance between the required trash assessment and collection events.

7-28 Harbor Beaches of Ventura County Bacteria TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on November 1, 2007.

This TMDL was approved by:

The State Water Resources Control Board on October 7, 2008.
The Office of Administrative Law on December 9, 2008.
The U.S. Environmental Protection Agency on December 18, 2008.

The effective date of this TMDL is: December 18, 2008.

The following table includes the elements of this TMDL.

Table 7-28.1. Harbor Beaches of Ventura County Bacteria TMDL: Elements

Element	Findings and Regulatory Provisions
Problem Statement	Elevated bacteria indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at Kiddie Beach and Hobie Beach. Kiddie and Hobie Beach are referenced in the Staff Report as the Harbor Beaches of Ventura County. Swimming in marine waters with elevated bacteria indicator densities has been associated with adverse health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacteria indicator densities.
Numeric Target (Interpretation of the numeric water quality objective, used to calculate allocations)	The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine water to protect the water contact recreation use. These targets are the most appropriate indicators of public health risk in recreational waters. Bacteriological objectives are set forth in Chapter 3 of the Basin Plan. The objectives are based on four bacteria indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives that serve as the numeric targets for this TMDL are: <u>1. Rolling 30-day Geometric Mean Limits</u> a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. c. Enterococcus density shall not exceed 35/100 ml. <u>2. Single Sample Limits</u> a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1.

Element	Findings and Regulatory Provisions
Numeric Target (Interpretation of the numeric water quality objective, used to calculate allocations) (continued)	These objectives are based on health risk for marine recreational waters of 19 illnesses per 1,000 exposed individuals as set by the United States Environmental Protection Agency (USEPA, 1986). For the Harbor Beaches of Ventura County, the targets will apply at existing monitoring sites, with samples taken at ankle to knee-high depths. These targets apply during both dry- and wet-weather. This TMDL uses a "reference system/anti-degradation approach" which means that on the basis of historical exceedance levels at existing monitoring locations, including a local reference beach within the Los Angles Region, a certain number of daily exceedances of the single sample bacteria objectives are permitted. The allowable number of exceedance days is set such that (1) bacteriological water quality at any site is at least as good as at a designated reference site within the watershed and (2) there is no degradation of existing bacteriological water quality. This approach recognizes that there are natural sources of bacteria that may cause or contribute to exceedances of the bacteriological objectives and that it is not the intent of the Regional Board to require treatment or diversion of natural coastal creeks or to require treatment of natural sources of bacteria from undeveloped areas. The geometric mean targets may not be exceeded at any time. The rolling 30-day geometric mean will be calculated on each sample day. For the single sample targets, each existing monitoring site is assigned an allowable number of exceedance days for three time periods (1) summer dry-weather (April 1 to October 31), (2) winter dry-weather (November 1 to March 31), and (3) wet-weather (defined as days with 0.1 inch of rain or greater and the three days following the rain event.)
Source Analysis	Bacteria sources in the Harbor Beaches of Ventura County include anthropogenic and non-anthropogenic sources and point and non-point sources. Each of these sources contributes to the elevated levels of bacteria indicator densities at the Harbor Beaches of Ventura County during dry- and wet-weather. As of December 2006, there are four active, National Pollutant Discharge Elimination System (NPDES) permits or Waste Discharge Requirements (WDRs) for discharges to Channel Islands Harbor or Edison Canal. Discharges from the Statewide MS4 Permit for the California Department of Transportation (Caltrans) are a potentially significant source of bacteria loading. Discharges from general NPDES permits, individual NPDES permits, WDRs, the Statewide Industrial Storm Water General Permit, and the Statewide Construction Activity Storm Water General Permit are not expected to be a significant source of bacteria.

Element	Findings and Regulatory Provisions
Source Analysis (continued)	While a source identification study conducted at the Channel Islands Harbor indicated that local non-point sources are the majority contributor in summer dry-weather, high bacteria densities and exceedances during wet-weather may be more indicative of urban and agricultural run-off. Potential non-point sources of bacteria contamination at the Harbor Beaches of Ventura County include: marina activities such as waste disposal from boats, boat deck and slip washing, swimmer “wash-off”, and restaurant washouts; natural sources including birds, waterfowl, and feral cat; and agricultural sources.
Loading Capacity	Loading capacity for the Harbor Beaches of Ventura County is defined in terms of bacteria indicator densities, which is the most appropriate for addressing public health risk, and is equivalent to the numeric targets, listed above. As the numeric targets shall be met at the specific sampling locations, which are representative of the corresponding beaches, no degradation or dilution allowance is provided.
Waste Load Allocations (for point sources)	Waste load allocations (WLAs) are expressed as allowable exceedance days. The allowable number of exceedance days for a monitoring site for each time period is based on the more stringent of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data at the monitoring site. This ensures that bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing water quality. For each beach, allowable exceedance days are set on an annual basis as well as for three time periods. These three periods are: 1. Summer dry-weather (April 1 to October 31) 2. Winter dry-weather (November 1 to March 31) 3. Wet-weather days (defined as days of 0.1 inch of rain or more plus three days following the rain event) For the Channel Islands Harbor Beaches, the County of Ventura, the Ventura County Watershed Protection District (VCWPD) and associated Municipal Separate Storm Sewer System (MS4) permittees in the Channel Islands Harbor subwatershed, the City of Oxnard, and Caltrans are assigned WLAs. All WLAs for summer dry-weather single sample bacteria densities at the Harbor Beaches of Ventura County are zero (0) days of allowable exceedances.

Element	Findings and Regulatory Provisions
Waste Load Allocations (for point sources) (continued)	The WLA for the rolling 30-day geometric mean during any time period or monitoring site at the Harbor Beaches of Ventura County is zero (0) days of allowable exceedances. The WLA for winter dry-weather and wet-weather single sample bacteria densities for Kiddie Beach and Hobie Beach are listed in Table 7-28.2. General NPDES permits, individual NPDES permits, the Statewide Industrial Storm Water General Permit, the Statewide Construction Activity Storm Water General Permit, and WDR permittees in the Channel Islands Harbor subwatershed are assigned WLAs of zero (0) days of allowable exceedances for all three time periods and for the single sample limits and the rolling 30-day geometric mean. Any future enrollees under a general NPDES permit, individual NPDES permit, the Statewide Industrial Storm Water General Permit, the Statewide Construction Activity Storm Water General Permit, and WDR will also be subject to a WLA of zero (0) days of allowable exceedances. The Harbor Beaches of Ventura County are assigned interim WLAs upon the effective date of the TMDL. Interim WLAs for single sample and the 30-day rolling geometric mean are expressed in terms of an exceedance day and listed below. **Single Sample Exceedances:**

Summer Dry-Weather

Location	Daily Sampling	Weekly Sampling
Kiddie Beach	54	8
Hobie Beach	40	6

Winter Dry-Weather

Location	Daily Sampling	Weekly Sampling
Kiddie Beach	23	4
Hobie Beach	25	4

Wet-Weather

Location	Daily Sampling	Weekly Sampling
Kiddie Beach	32	5
Hobie Beach	38	6

<table>
<tr><th>Element</th><th>Findings and Regulatory Provisions</th></tr>
<tr><td>Waste Load Allocations
(for point sources)
(continued)</td><td>30-day Rolling Geometric Mean Exceedances:

Summer Weather
<table>
<tr><th>Location</th><th>Daily Sampling</th><th>Weekly Sampling</th></tr>
<tr><td>Kiddie Beach</td><td>55</td><td>8</td></tr>
<tr><td>Hobie Beach</td><td>80</td><td>12</td></tr>
</table>
Winter Weather
<table>
<tr><th>Location</th><th>Daily Sampling</th><th>Weekly Sampling</th></tr>
<tr><td>Kiddie Beach</td><td>92</td><td>14</td></tr>
<tr><td>Hobie Beach</td><td>91</td><td>13</td></tr>
</table></td></tr>
<tr><td>Load Allocations
(for non-point sources)</td><td>Load allocations (LAs) are expressed as the number of daily or weekly sample days that may exceed the single sample targets identified under “Numeric Target” at a monitoring site.

For the Channel Islands Harbor Beaches, the County of Ventura and the City of Oxnard are assigned LAs. LAs may be assigned to agricultural lands in the Channel Islands Harbor subwatershed during Regional Board Reconsideration based on monitoring data from the Conditional Waiver for Dischargers from Irrigated Lands.

All LAs for summer dry-weather, single sample bacteria densities at the Harbor Beaches of Ventura County are zero (0) days of allowable exceedances. The LA for winter dry-weather and wet-weather single sample bacteria densities for Kiddie Beach and Hobie Beach are listed in Table 7-28.2.

The LA for the rolling 30-day geometric mean during any time period or monitoring site at the Harbor Beaches of Ventura County is zero (0) days of allowable exceedances.

The Harbor Beaches of Ventura County are assigned interim LAs upon the effective date of the TMDL. Interim LAs for single sample and the 30-day rolling geometric mean are expressed in terms of an exceedance day and listed below.</td></tr>
</table>

Element	Findings and Regulatory Provisions
Load Allocations (for non-point sources) (continued)	**Single Sample Exceedances:** Summer Dry-Weather Location / Daily Sampling / Weekly Sampling Kiddie Beach / 54 / 8 Hobie Beach / 40 / 6 Winter Dry-Weather Location / Daily Sampling / Weekly Sampling Kiddie Beach / 23 / 4 Hobie Beach / 25 / 4 Wet-Weather Location / Daily Sampling / Weekly Sampling Kiddie Beach / 32 / 5 Hobie Beach / 38 / 6 **30-day Rolling Geometric Mean Exceedances:** Summer Weather Location / Daily Sampling / Weekly Sampling Kiddie Beach / 55 / 8 Hobie Beach / 80 / 12 Winter Weather Location / Daily Sampling / Weekly Sampling Kiddie Beach / 92 / 14 Hobie Beach / 91 / 13
Implementation	The regulatory mechanisms used to implement the TMDL will include general NPDES permits, individual NPDES permits, WDRs, the Statewide Industrial Storm Water General Permit, the Statewide Construction Activity Storm Water General Permit, the Conditional Waiver for Dischargers from Irrigated Lands, the Statewide MS4 Permit for Caltrans, and the authority contained in Sections 13263 and 13267 of the Water Code. Each NPDES permit, assigned a WLA, shall be reopened or amended when the permit is reissued, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. LAs for non-point sources will be implemented within the context of this TMDL.

Nested tables (from the Load Allocations cell):

Single Sample Exceedances:

Summer Dry-Weather

Location	Daily Sampling	Weekly Sampling
Kiddie Beach	54	8
Hobie Beach	40	6

Winter Dry-Weather

Location	Daily Sampling	Weekly Sampling
Kiddie Beach	23	4
Hobie Beach	25	4

Wet-Weather

Location	Daily Sampling	Weekly Sampling
Kiddie Beach	32	5
Hobie Beach	38	6

30-day Rolling Geometric Mean Exceedances:

Summer Weather

Location	Daily Sampling	Weekly Sampling
Kiddie Beach	55	8
Hobie Beach	80	12

Winter Weather

Location	Daily Sampling	Weekly Sampling
Kiddie Beach	92	14
Hobie Beach	91	13

Element	Findings and Regulatory Provisions
Implementation (continued)	This TMDL will be implemented in accordance with the implementation schedule for the Harbor Beaches of Ventura County. The compliance and implementation schedules are detailed in Table 7-28.3. Responsible parties are not specifically required to conduct pilot projects for Best Management Practices (BMPs), though conducting pilot projects is within their discretion. The Regional Board recognizes the long duration required to conduct a pilot project. As such, time is allocated in the implementation schedule for the option of piloting structural BMPs, which include but are not limited to enhanced circulation devices. Special studies are not required for implementation of the TMDL, though conducting special studies is within the discretion of the responsible parties. The Regional Board shall reconsider this TMDL four years after the effective date of the TMDL for the Harbor Beaches of Ventura County to re-evaluate WLAs and LAs based on monitoring data; to re-evaluate allowable exceedance levels, including whether the allowable number of exceedance days maybe adjusted based on a Ventura County rainfall record; to re-evaluate the selection of the reference beach if additional, appropriate reference beach options have been developed; to consider a natural source exclusion approach, subject to the antidegradation policy, if it can be demonstrated that such an approach is warranted by demonstration of the control of all anthropogenic sources of bacteria to the beaches, and demonstration that beneficial uses are being met; and to assign LAs to agricultural lands in the Chanel Islands Harbor subwatershed based on monitoring in the Conditional Waiver for Dischargers from Irrigated Lands. Five years after the effective date of the TMDL, there shall be no allowable exceedances of the single sample limits, in excess of the allowable exceedances listed in Table 7-28.2, at any monitoring location at the Harbor Beaches of Ventura County during summer dry-weather, winter dry-weather, and the rolling 30-day geometric mean targets shall be achieved. Ten years after the effective date of the TMDL there shall be no allowable exceedances of the single sample limits, in excess of the allowable exceedances listed in Table 7-28.2, at any monitoring location during dry-weather or wet-weather at the Harbor Beaches of Ventura County, and the rolling 30-day geometric mean targets shall be achieved.

Element	Findings and Regulatory Provisions
Margin of Safety	An implicit margin of safety is included through several conservative assumptions, such as the assumption that no dilution takes place between the on-shore sources and where the effluent initially mixes with the receiving water, and that bacteria degradation rates are not sufficient to affect bacteria densities in the receiving water. In addition, an explicit margin of safety has been incorporated, as the load allocations will allow exceedances of the single sample targets no more than 5% of the time on an annual basis, based on the cumulative allocations for dry- and wet-weather. The Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List concludes that there are water quality impairments using a binomial distribution method which lists waterbodies when the exceedances are between approximately 8 and 10 percent.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for summer dry-weather, winter dry-weather, and wet-weather based on public health concerns and observed natural background levels of exceedance of bacteria indicators. Historic monitoring data for the Harbor Beaches of Ventura County and the reference beach indicate that the critical condition for bacteria loading is during wet-weather due to greater exceedance probabilities of the single sample bacteria objectives then during dry-weather. To more specifically identify a critical condition within wet-weather, in order to set the allowable exceedance days shown in Table 7-28.2, the 90th percentile 'storm year'[1] in terms of wet days[2] is used as the reference year for the reference system. Selecting the 90th percentile year avoids a situation where the reference system is frequently out of compliance. Selecting the 90th percentile year is a more conservative approach that will accommodate a 'worst-case' scenario resulting in fewer exceedance days than the maximum allowed in drier years. Conversely, in the 10% of wetter years, there may be more than the allowable number of exceedance days.
Compliance Monitoring	Compliance and monitoring for Harbor Beaches of Ventura County is based on existing monitoring protocols and locations. Monitoring shall continue at sampling locations (VCEHD 36000 and VCEHD 37000) and at the current weekly monitoring frequency, consistent with AB411 compliance monitoring. Monitoring shall be conducted on a year-round basis at the current monitoring locations including the summer months (i.e., April to October) and winter months (i.e., November to March). Bacteria sampling shall be conducted in ankle- to knee-high water, consistent with AB411. However, if additional monitoring stations are added or if changes are made to the sampling frequencies or existing monitoring locations, then submittal of a monitoring plan is required for Executive Officer approval.

Element	Findings and Regulatory Provisions
Compliance Monitoring (continued)	For agricultural dischargers, the Conditional Waiver for Dischargers from Irrigated Lands shall be revised to include monitoring for enrollees in the Channel Islands Harbor subwatershed.

1 For purposes of this TMDL, a 'storm year' means November 1 to October 31. The 90th percentile storm year was 1993 with 75 wet days at the LAX meteorological station.

2 A wet day is defined as a day with rainfall of 0.1 inch or more plus the 3 days following the rain event.

Table 7-28.2. Harbor Beaches of Ventura County Bacteria TMDL: Final Allowable Exceedance Days by Location

Location	Summer dry-weather*		Compliance Deadline	Winter dry-weather		Compliance Deadline	Wet-weather**		Compliance Deadline
	Daily sampling (No. days)	Weekly sampling (No. days)		Daily sampling (No. days)	Weekly sampling (No. days)		Daily sampling (No. days)	Weekly sampling (No. days)	
Hobie Beach	0	0	Five years after effective date of the TMDL	3	1	Five years after effective date of the TMDL	17	3	Ten years after effective date of the TMDL
Kiddie Beach	0	0	Five years after effective date of the TMDL	3	1	Five years after effective date of the TMDL	17	3	Ten years after effective date of the TMDL

*A dry day is defined as a non-wet day.
**A wet day is defined as a day with 0.1-inch or more of rain and the three days following the rain event.

Table 7-28.3 Harbor Beaches of Ventura County Bacteria TMDL: Implementation Table		
Implementation Action	**Responsible Parties**	**Date**
Compliance (WLAs): There shall be no exceedances of the interim WLAs (see the WLAs section in Table 7-28.1).	1. County of Ventura 2. Ventura County Watershed Protection District (VCWPD) and associated MS4 Co-permittees in the Channel Islands Harbor (CIH) subwatershed[3] 3. City of Oxnard 4. Caltrans	Effective date of the TMDL.
Compliance (LAs): There shall be no exceedances of the interim LAs (see the LAs section in Table 7-28.1).	1. County of Ventura 2. City of Oxnard	Effective date of the TMDL.
Monitoring: Continue monitoring at stations VCEHD 36000 and VCEHD 37000, at a weekly monitoring frequency, and on a year-round basis. Extend the monitoring period for Hobie Beach to include winter months.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Effective date of the TMDL.
Monitoring[4]: Submit a monitoring plan for the Harbor Beaches of Ventura County (HBVC) for approval by the Executive Officer.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Prior to the modification of existing monitoring locations or frequencies.
Implementation: Submit draft work plan to implement source control and BMPs, including but not limited to structural and non-structural BMPs, at the HBVC during dry-weather for Executive Officer approval.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Six months after the effective date of the TMDL.
Monitoring: Submit monitoring plan for agricultural discharges into the Channel Islands Harbor subwatershed for approval by the Executive Officer.	1. Agricultural Dischargers	One year after the effective date of the TMDL.
Monitoring: Monitor agricultural discharges at the frequency and monitoring locations approved by the Executive Officer in the monitoring plan.	1. Agricultural Dischargers	Six months after Executive Officer approval of the monitoring plan for agricultural discharges.
Pilot Project: Submit a work plan piloting Structural BMPs, including but not limited to enhanced circulation devices, for Executive Officer approval (optional).	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	One year and six months after the effective date of the TMDL.

Table 7-28.3 Harbor Beaches of Ventura County Bacteria TMDL: Implementation Table		
Implementation Action	**Responsible Parties**	**Date**
Implementation: Submit draft work plan to implement source control and BMPs, including but not limited to structural and non-structural BMPs, at the HBVC during wet-weather for Executive Officer approval.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	One year and six months after the effective date of the TMDL.
Pilot Project: Completion of Structural BMP pilot projects, including but not limited to enhanced circulation devices (optional).	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Two years and six months after the effective date of the TMDL.
Implementation: Submit final work plan; to implement source control and BMPs, including but not limited to structural and non-structural BMPs, at the HBVC during dry-weather for Executive Officer approval.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Three years and six months after the effective date of the TMDL.
Regional Board Reconsideration: a. Re-evaluate WLAs and LAs based on data. b. Re-evaluate the implementation schedule based on results from pilot projects. c. Re-evaluate allowable exceedance levels, including whether the allowable number of exceedance days maybe adjusted based on a Ventura County rainfall record. d. Re-evaluate the selection of the reference beach if additional, appropriate reference beach options have been developed and if an appropriate reference system cannot be identified for this enclosed harbor, evaluate using the ‘natural sources exclusion’ approach subject to antidegradation policies rather than the ‘reference system/antidegradation’ approach. e. Assign LAs to agricultural lands in the Channel Islands Harbor subwatershed based on monitoring in the Conditional Waiver for Dischargers from Irrigated Lands.	Regional Board	Four years after effective date of the TMDL.
Implementation: Submit final work plan to implement source control and BMPs, including but not limited to structural and non-structural BMPs, at the HBVC during wet-weather for Executive Officer approval.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Four years after the effective date of the TMDL.

Table 7-28.3 Harbor Beaches of Ventura County Bacteria TMDL: Implementation Table		
Implementation Action	**Responsible Parties**	**Date**
Compliance (WLAs): There shall be no exceedances in excess of the numbers in Table 7-28.2 of the single sample limits at any location during dry-weather, and the rolling 30-day geometric mean targets shall be achieved.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Five years after the effective date of the TMDL.
Compliance (LAs): There shall be no exceedances in excess of the numbers in Table 7-28.2 of the single sample limits at any location during dry-weather, and the rolling 30-day geometric mean targets shall be achieved.	1. County of Ventura 2. City of Oxnard	Five years after the effective date of the TMDL.
Compliance: Submit Compliance Report for Executive Officer approval. The Compliance Report shall include an evaluation of compliance with dry-weather allocations, interim wet-weather allocations, and rolling 30-day geometric mean targets.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Six and Eight years after the effective date of the TMDL.
Compliance: Submit Final Compliance Report for Executive Officer approval. The Compliance Report shall include an evaluation of compliance with dry-weather allocations, wet-weather allocations, and the rolling 30-day geometric mean targets.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Ten years after the effective date of the TMDL.
Final Compliance (WLAs): There shall be no allowable exceedances of single sample limits in excess of the numbers listed in Table 7-28.2 of the single sample limits at any location during any periods and the rolling 30-day geometric mean targets shall be achieved.	1. County of Ventura 2. VCWPD and associated MS4 Co-permittees in the CIH subwatershed 3. City of Oxnard 4. Caltrans	Ten years after the effective date of the TMDL.
Final Compliance (LAs): There shall be no allowable exceedances of single sample limits in excess of the numbers listed in Table 7-28.2 of the single sample limits at any location during any periods and the rolling 30-day geometric mean targets shall be achieved.	1. County of Ventura 2. City of Oxnard	Ten years after the effective date of the TMDL.

3 Co-permittees of Municipal Separate Storm Sewer System (MS4) permit for Channel Islands Harbor subwatershed include the County of Ventura and incorporated cities therein. The incorporated cities for Channel Islands Harbor subwatershed include the City of Oxnard.

4 Submittal of a monitoring plan is required if additional monitoring stations are added or if changes are made to the sampling frequencies or existing monitoring locations (VCEHD 36000 and VCEHD 37000).

7-29 Machado Lake Eutrophic, Algae, Ammonia, and Odors (Nutrient) TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on May 1, 2008**.**

This TMDL was approved by:

The State Water Resources Control Board on December 2, 2008.
The Office of Administrative Law on February 19, 2009.
The U.S. Environmental Protection Agency on March 11, 2009.

The effective date of this TMDL is: March 11, 2009.

The elements of the TMDL are presented in Table 7-29.1 and the Implementation Plan in Table 7-29.2

Table 7-29.1. Machado Lake Eutrophic, Algae, Ammonia, and Odors (Nutrient) TMDL: Elements

TMDL Element	Regulatory Provisions
Problem Statement	Excessive loadings of nutrients, in particular nitrogen (including ammonia) and phosphorus, cause eutrophic effects, including algae and odors, which impair the beneficial uses of Machado Lake. The nutrient enrichment results in high algal productivity; algal blooms have been observed in the lake during summer months. In addition, high nutrient concentrations contribute to excessive and nuisance macrophyte growth. Algae respiration and decay depletes oxygen from the water column creating an adverse aquatic environment. Machado Lake was placed on the Clean Water Act 303(d) list of impaired waterbodies in 1998, 2002, and 2006 for ammonia, algae, odors, and eutrophic. Applicable Water Quality Objectives for this TMDL are narrative objectives for Biostimulatory Substances and Taste and Odor; and numeric objectives for Dissolved Oxygen and Ammonia. The beneficial uses of Machado Lake include beneficial uses associated with recreation (REC 1 and REC 2), aquatic life (WARM, WILD, RARE, and WET) and water supply (MUN). This TMDL addresses the eutrophic, algae, ammonia, and odor listings which impair these uses.

TMDL Element	Regulatory Provisions
Numeric Targets	The total phosphorus target for Machado Lake is 0.1 mg/L as a monthly average concentration in the water column, which is based upon US EPA Nutrient Criteria Technical Guidance Manual for Lakes and Reservoirs. A ratio of total nitrogen to total phosphorus of 10 is the basis for the total nitrogen (TKN + NO_3-N + NO_2 –N) numeric target of 1.0 mg/L as a monthly average concentration in the water column. The total nitrogen target incorporates all forms of nitrogen including TKN, which is the sum of organic nitrogen and ammonia nitrogen, nitrate nitrogen (NO_3-N), and nitrite nitrogen (NO_2-N). The total nitrogen target expressed as a monthly average is protective of chronic aquatic life exposure for ammonia. There is a separate numeric target for ammonia of 5.95 mg/L as an hourly average to be protective of acute aquatic life exposure. The chlorophyll *a* target is 20 ug/L based on EPA guidance and the Carlson Trophic Status Index. The dissolved oxygen target is a single sample concentration of no less than 5 mg/L measured at 0.3 meter above the sediments based on the Basin Plan objective. The following table provides the numeric targets for the Machado Lake TMDL.

Indicator	Numeric Target
Total Phosphorus	0.1 mg/L monthly average
Total Nitrogen (TKN + NO_3-N + NO_2 –N)	1.0 mg/L monthly average
Ammonia - N	5.95 mg/L one-hour average
Ammonia - N	2.15 mg/L 30 day average
Dissolved Oxygen	5 mg/L single sample minimum measured 0.3 meter above the sediments.
Chlorophyll *a*	20 µg/L monthly average

TMDL Element	Regulatory Provisions
Source Analysis	The point sources of nutrients into Machado Lake are stormwater discharges from the municipal separate storm sewer system (MS4), California Department of Transportation (Caltrans), and general construction and industrial discharges. Stormwater discharges to Machado Lake occur through the following subdrainage systems: Drain 553, Wilmington Drain, Project 77/510, and Walteria Lake. Discharges from Walteria Lake and Drain 553 are tributary to the Wilmington Drain, which then directly discharges in the northern portion of Machado Lake. Approximately, 88 % of the discharge into the lake enters through the Wilmington Drain. The major nonpoint source of nutrients to Machado Lake is internal nutrient loading (nutrient flux from sediments). Atmospheric deposition is also a nonpoint source of total nitrogen. Nutrient loads from wind resuspension, bioturbation, birds, and general surface runoff are minor sources. Special studies may be conducted to further evaluate sources.

TMDL Element	Regulatory Provisions
Linkage Analysis	The linkage analysis focuses on the relationship between the nutrient loading to the lake and the numeric targets established to measure attainment of beneficial uses. The Nutrient Numeric Endpoints BATHTUB Spreadsheet Model, which was developed by Tetra Tech for US EPA, was used to establish the linkage between nutrient loading to Machado Lake and the predicted water quality response. The model performs water and nutrient balance calculations under steady-state conditions. Eutrophication related water quality conditions are expressed in terms of total phosphorus, ortho-phosphourus, total nitrogen, inorganic nitrogen, chlorophyll a, transparency (Secchi depth), and hypolimnetic oxygen depletion rates. The linkage analysis demonstrates that assigning waste load and load allocations for total nitrogen and total phosphorus will address eutrophication related water quality conditions.
Waste Load Allocations	Waste load allocations are assigned to urban stormwater dischargers (MS4, Caltrans, general construction and general industrial) in both wet and dry weather. The final waste load allocations are assigned as concentration based allocations of 0.1 mg/L and 1.0 mg/L as monthly averages for total phosphorus and total nitrogen (TKN + NO_3-N + NO_2 –N), respectively. Interim WLAs are based on current in-lake concentrations. The effective date interim total nitrogen and total phosphorus waste load allocations are set as the 95th percentile of current concentrations in the lake. The 5 year interim total nitrogen WLAs are established as a 30 percent reduction from current in-lake concentrations. Concentration-based interim and final WLAs will be included in stormwater permits in accordance with NPDES guidance and requirements. The tables below present the interim and final waste load allocations for the stormwater discharges.

Waste Load Allocations	Total Phosphorus	Total Nitrogen (TKN + NO_3-N + NO_2-N)
	Final WLA (mg/L)	Final WLA (mg/L)
MS4 Permittees[1] Caltrans, General Construction and Industrial stormwater permits	0.1	1.0

[1] Municipal Separate Storm Sewer System (MS4) Permittees that are responsible for discharges to Machado Lake include: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance.

TMDL Element	Regulatory Provisions
Waste Load Allocations (continued)	(see table and notes below)

Waste Load Allocations	Years After Effective Date	Interim Total Phosphorus WLAs (mg/L)	Interim Total Nitrogen (TKN + NO3-N + NO2-N) WLAs (mg/L)
MS4 Permittees, Caltrans, General Construction and Industrial Stormwater permits	At Effective Date[1]	1.25	3.50
	5[2]	1.25	2.45
	9.5 (Final WLAs[3])	0.10	1.00

[1] The compliance point for all effective date interim WLAs is measured in the lake.
[2] The compliance point for all year 5 interim WLAs is measured as specified in Implementation Plan Section II of Table 7-29.1
[3] The compliance point for all final WLAs is measured as specified in Implementation Plan Section II of Table 7-29-.1

Load Allocations

Load allocations are assigned for nonpoint source discharges to the lake, primarily internal loading from the lake. The final load allocations for internal loading are concentration based allocations of 0.1 mg/L and 1.0 mg/L as monthly averages for total phosphorus and total nitrogen (TKN + NO_3-N + NO_2 –N), respectively. Concentration based load allocations are appropriate and can be evaluated by monitoring the nutrient concentrations in the water column.

Interim LAs are based on current in-lake concentrations. The effective date interim total nitrogen and phosphorus load allocations are set at the 95th percentile of current concentrations in the lake. The 5 year interim total nitrogen LAs are established as a 30 percent reduction from current in-lake concentrations. The tables below present the final and interim load allocations for the nonpoint sources.

Load Allocations	Total Phosphorus	Total Nitrogen (TKN + NO_3-N + NO_2-N)
	Final LA (mg/L)	**Final LA (mg/L)**
Internal Nutrient Load (City of Los Angeles Department of Recreation and Parks)	0.1	1.0

Load Allocations	Years After Effective Date	Interim Total Phosphorus LAs (mg/L)	Interim Total Nitrogen (TKN + NO3-N + NO2-N) LAs (mg/L)
Internal Nutrient Load (City of Los Angeles Department of Recreation and Parks)	At Effective Date	1.25	3.50
	5	1.25	2.45
	9.5 (Final LAs)	0.10	1.00

TMDL Element	Regulatory Provisions
Margin of Safety	The uncertainties associated with this TMDL are due to limited data from the stormdrains entering the lake and the inherent seasonal and annual variability in delivery of phosphorus and nitrogen for external sources and nutrient cycling within the lake. To address these uncertainties, conservative numeric targets were selected by establishing the targets under a critical lake volume. Likewise, the waste load and load allocations are based on a constant value for internal loading. Moreover, the lake conditions under which the load capacity was developed were based on dry weather critical conditions when the lake level is reduced and therefore loading capacity is reduced. These conservative approaches provide an implicit margin of safety.
Seasonal Variations and Critical Conditions	The external nutrient loading to Machado Lake generally occurs during winter and spring months, in conjunction with storm events. During the dry season the lake receives minimal external loading. In the summer there is the release of nutrients from the sediments. At the same time there is very little water inflow and a decreased lake level due to evaporation. These seasonal variations cause increased nutrient concentrations. Moreover, the reduced lake volume during the summer months provides less assimilative capacity. The critical condition for the attainment of beneficial uses at Machado Lake occurs during the summer months. Also, the critical conditions for dissolved oxygen impairments related to algae growth are during the warm dry summer months when algal respiration is highest. The Machado Lake nutrient TMDL accounts for seasonal and critical conditions of the summer months by assigning a load allocation to the lake sediments and requiring a reduction in this source of nutrients to the lake, and by assigning WLAs to urban stormwater dischargers year-round.
Special Studies and Monitoring Plan	**<u>Special Studies</u>** Additional monitoring and special studies may be undertaken by dischargers and responsible agencies to evaluate the uncertainties and assumptions made in the development of this TMDL. (The results of special studies may be used to reevaluate waste load allocations and load allocations when the Machado Lake Nutrient TMDL is reconsidered.) ***Optional Study #1:*** Core flux study to estimate the nutrient flux from sediments under equilibrium conditions. Results from this study would be beneficial to gauge the success of implementation measures such as aeration. ***Optional Study #2:*** A study to understand factors such as nitrogen and phosphorus sedimentation rates (particulate settling velocities), the overall lake sedimentation rate, and sediment resuspension rate. These factors would be important for a Machado Lake nutrient budget and gauging the potential need for periodic hydraulic dredging.

TMDL Element	Regulatory Provisions
Special Studies and Monitoring Plan (continued)	***Optional Study #3***: A work plan for permittees to assess compliance with TMDL WLAs on a mass basis for total nitrogen and total phosphorous. The work plan should detail testing methodologies, BMPs, and treatments to be implemented to attain and demonstrate a reduction of total nitrogen and phosphorous loading on a mass basis. A final report including the results shall be submitted to the Regional Board for Executive Officer approval. Additional special studies proposed by stakeholders are optional and will be considered at the 7.5 year TMDL reconsideration. All proposed special study work plans and documents shall be submitted to the Regional Board for Executive Officer approval prior to special studies being initiated. **Monitoring Plan** A Monitoring and Reporting Program (MRP) plan to assess compliance with LAs and WLAs measured in lake must be submitted to the Executive Officer for approval within one year of the effective date. Monitoring will begin 60 days after the Executive Officer has approved the monitoring plan. This MRP plan will be required as part of the Lake Water Quality Management Plan as discussed in the Implementation Section. The MRP plan will be designed to monitor and implement this TMDL. The monitoring plan is required to measure the progress of pollutant load reductions and improvements in water quality. The monitoring plan shall ▪ Determine attainment of total phosphorus, total nitrogen, ammonia, dissolved oxygen, and chlorophyll *a* numeric targets. ▪ Determine compliance with the waste load and load allocations for total phosphorus, and total nitrogen. ▪ Monitor the effect of implementation actions on lake water quality Responsible jurisdictions shall be required to begin monitoring sixty days after the Executive Officer approves the MRP. Field samples and water samples shall be collected bi-weekly on a year-round basis. The lake sampling sites will be located in the open water portion of the lake with one in the northern portion and one in the southern portion of the lake. *In situ* measurements of water quality shall be made. The water quality probes will be calibrated immediately prior to departure to the field against known pH, EC, and DO solutions. Secchi depth, a measurement of transparency, will also be measured with a standard Secchi disk or other approved method. Additionally, a staff gauge shall be placed in an appropriate location at the lake to measure changes in lake elevation.

TMDL Element	Regulatory Provisions
Special Studies and Monitoring Plan (continued)	The monitoring plan shall consider stratification for the collection of water samples. Water samples shall be analyzed for constituents including but not limited to the following. ▪ Total nitrogen ▪ Total phosphorus ▪ Nitrate (NO_3-N) ▪ Total ammonia (NH_3-N) ▪ Ortho-phosphorus (PO_4) ▪ Total Dissolved Solids ▪ Total Suspended Solids ▪ Chlorophyll a ▪ Turbidity Detection limits shall be less than the numeric targets in this TMDL. A monitoring report shall be prepared and submitted to the Regional Board annually within six months after the completion of the final sampling event of the year. If an alternative WLA compliance option is selected, an appropriate separate TMDL compliance MRP Plan and TMDL Implementation Plan must be submitted for Executive Officer approval. Annual monitoring reports demonstrating compliance or non-compliance with WLAs shall be submitted for Executive Officer approval. All compliance monitoring must be conducted in conjunction with a Regional Board approved Quality Assurance Project Plan (QAPP). The QAPP shall include protocols for sample collection, standard analytical procedures, and laboratory certification.
Implementation Plan	Compliance with the TMDL is based on the assigned WLAs and LAs. Compliance with this TMDL will require the implementation of NPDES stormwater permit limits and lake management activities to reduce nutrient loading to the lake, reduce nutrient concentrations in the lake, prevent excessive algal biomass growth, and maintain an adequate dissolved oxygen concentration. Table 7-29.2 contains a schedule for responsible jurisdictions to implement BMPs and a Lake Water Quality Management Plan to comply with the TMDL. I. Implementation and Determination of Compliance with LAs Compliance with the LAs will be measured in the lake and will be achieved through a combination of implementation of lake management projects and BMPs to reduce external and internal nutrient loading to the lake and to reduce and manage internal nutrient sources.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	Load allocations will be implemented through the following: (1) Memorandum of Agreement (MOA), or (2) Clean Up and Abatement Order or Other Regulatory Order The responsible jurisdictions for the load allocations shall be allowed one year from the effective date of this TMDL to enter into a Memorandum of Agreement (MOA) with the Executive Officer, detailing the voluntary efforts that will be undertaken to attain the load allocations. The MOA shall comply with the <u>Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options</u> ("Policy"), including part II, section 2 c ii and related provisions, and shall be consistent the requirements of this TMDL. If the MOA is timely adopted, and so long as it is implemented, the program described in the MOA shall be deemed "certified", pursuant to the Policy, subject to the conditions of Policy section 2 e. The MOA shall include development of a Lake Water Quality Management Plan (LWQMP), must be approved by the Executive Officer, and may be amended with Executive Officer approval, as necessary. If a MOA is not established with responsible jurisdictions within one year or if responsible jurisdictions do not comply with the terms of the MOA, a cleanup and abatement order pursuant to Water Code section 13304, or another appropriate regulatory order, shall be issued to implement the load allocations. Furthermore, the implementation of the MOA must result in attainment of the TMDL load allocations. If the MOA and LWQMP are not implemented or otherwise do not result in attainment of load allocations, the certification shall be revoked, the MOA rescinded, and the load allocations shall be implemented through a cleanup and abatement order, or other order, as described above. Implementation of the MOA shall be reviewed annually by the Executive Officer as part of the Monitoring and Reporting Program (MRP) annual reports. To the satisfaction of the Executive Officer the LWQMP shall meet the following criteria: ▪ One and one half years from the effective date of the TMDL responsible jurisdictions shall submit a LWQMP, MRP Plan and QAPP for approval by the Executive Officer. ▪ The LWQMP shall include a list of cooperating parties.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	▪ The LWQMP shall address appropriate water quality monitoring and a timeline for the implementation of management practices to reduce and manage nutrient loading to the lake. The timeline shall ensure that the implementation actions are underway prior to Regional Board reconsideration of the TMDL. The LWQMP shall present a comprehensive management plan and strategy for achieving the LAs at Machado Lake and attaining numeric targets and beneficial uses. The LWQMP shall include a schedule for implementation actions. ▪ The LWQMP shall achieve compliance with the load allocations through the implementation of lake management strategies to reduce and manage internal nutrient sources. The lake management implementation actions may include, but are not limited to the following: ▪ Wetland restoration ▪ Aeration system ▪ Hydraulic Lake dredging ▪ Hydroponic Islands ▪ Alum treatment ▪ Fisheries Management ▪ Macrophyte Management and Harvesting ▪ Maintain Lake Level – Supplemental Water ▪ The LWQMP shall include a MRP Plan. The MRP shall include a requirement that the responsible jurisdictions report compliance and non-compliance with load allocations as part of annual reports submitted to the Regional Board. Compliance with the load allocations shall be measured in the lake at two locations, one in the north portion and one in the south. The average of these two sampling locations shall determine compliance with the load allocations. MRP protocols may be based on Surface Water Ambient Monitoring Program (SWAMP) protocols for water quality monitoring or alternative protocols proposed by dischargers and approved by the Executive Officer. ▪ A QAPP shall also be submitted to the Regional Board for approval by the Executive Officer to ensure data quality. The QAPP shall include protocols for sample collection, standard analytical procedures, and laboratory certification. The QAPP may be based on SWAMP protocols for water quality monitoring and quality assurance or alternative protocols proposed by dischargers and approved by the Executive Officer. ▪ The MOA and LWQMP program shall include assurances that it will be implemented by the responsible jurisdiction.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	▪ Implementation of the LWQMP program should include a Health and Safety Plan to protect personnel. The Executive Officer may require a revised assessment under the MOA and LWQMP: (a) To prevent nutrients from accumulating or recycling in the lake in deleterious amounts that impair water quality, contribute to negative eutrophic conditions or adversely affect beneficial uses; (b) To reflect the results of nutrient assessment or special studies Cleanup and Abatement Order or Other Regulatory Order: Alternatively, responsible jurisdictions may propose, or the Regional Board may impose, an alternative program which would be implemented through a cleanup and abatement order, or any other appropriate order or orders, provided the program is consistent with the allocations, reductions, and schedule described in Table 7-29.2. ❖ Determination of Compliance with Interim LAs Responsible parties shall comply with numeric interim LAs or may be deemed in compliance with the interim LAs through implementation of lake sediment removal and/or lake management implementation actions in accordance with the LWQMP schedule as approved by the Regional Board Executive Officer. II. Implementation and Determination of Compliance with WLAs WLAs will be incorporated into NPDES stormwater permits. Stormwater permittees may be deemed in compliance with waste load allocations by actively participating in a LWQMP and attaining the waste load allocations for Machado Lake. Stormwater permittees and the responsible party for the lake may work together to implement the LWQMP and reduce external nutrient loading to attain the TMDL waste load allocations measured in the lake. Alternatively, MS4 Permittees may be deemed in compliance with waste load allocations by demonstrating reduction of total nitrogen and total phosphorous on an annual mass basis measured at the stormdrain outfall of the permittee's drainage area. The annual mass based allocation shall be equal to a monthly average concentration of 0.1 mg/L TP and 1.0 mg/L TN based on approved flow conditions. Permittees must demonstrate total nitrogen and total phosphorous load reductions to be achieved in accordance with a special study workplan approved by the Executive Officer. Compliance may also be demonstrated as concentration based monthly averages for TP and TN measured at the stormdrain outfall of the permittee's drainage area.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	MS4 Permittees shall be required to develop and implement a MRP plan and TMDL Implementation Plan. The MRP plan shall include a requirement that the responsible jurisdictions report compliance and non-compliance with waste load allocations as part of annual reports submitted to the Regional Board. ❖ Determination of Compliance with Interim WLAs Responsible parties may comply with the numeric interim WLAs or may be deemed in compliance with the interim WLAs through implementation of external nutrient source reduction projects in accordance with the TMDL Implementation Plan schedule as approved by the Regional Board Executive Officer. The Regional Board may revise these WLAs and the compliance point based on the collection of additional information developed through special studies or monitoring conducted as part of this TMDL. The Regional Board will reconsider the TMDL at 7.5 years from the effective date based on water quality monitoring and special studies. III. APPLICATION OF ALLOCATIONS TO RESPONSIBLE JURISDICTIONS Responsible jurisdictions to attain WLAs for this TMDL include but are not limited to: • Caltrans • General Stormwater Permit Enrollees • MS4 Permittees including: ➢ Los Angeles County ➢ Los Angeles County Flood Control District ➢ Cities of Carson, ➢ City of Lomita, ➢ City of Los Angeles, ➢ City of Palos Verdes Estates, ➢ City of Rancho Palos Verdes, ➢ City of Redondo Beach, ➢ City of Rolling Hills, ➢ City of Rolling Hills Estates, ➢ City of Torrance. The City of Los Angeles, Department of Recreation and Parks is responsible jurisdiction to implement the assigned Load Allocations for this TMDL.

Table 7-29.2 Machado Lake Eutrophic, Algae, Ammonia, and Odors (Nutrient) TMDL: Implementation Schedule

Task Number	Task	Responsible Jurisdiction	Date
1	Effective date interim waste load (WLA) and load allocations (LA) for total nitrogen and total phosphorus apply.	California Department of Transportation (Caltrans), Municipal Separate Storm Sewer System Permittees[4] (MS4 Permittees), City of Los Angeles – Department of Recreation and Parks	Effective Date of TMDL
2	Responsible jurisdictions shall enter into a Memorandum of Agreement (MOA) with the Regional Board to implement the load allocations.	City of Los Angeles – Department of Recreation and Parks	1 year from effective date of TMDL
3	Regional Board staff shall begin development of a Clean Up and Abatement Order or other regulatory order to implement the load allocations if an MOA is not established with responsible jurisdictions.	Regional Board Staff	1 year from effective date of TMDL
4	Clean Up and Abatement Order or other regulatory order adopted by the Regional Board if an MOA is not established with responsible jurisdictions. The Clean Up and Abatement Order or other regulatory order shall reflect the TMDL Implementation Schedule.	Regional Board Staff	1.5 years from effective date of TMDL
5	Responsible jurisdictions whose compliance is determined as concentration based WLAs measured at end of pipe shall submit a Monitoring and Reporting Program (MRP) Plan to the Executive Officer for approval.	Caltrans, MS4 Permittees	One year from effective date of TMDL
6	Responsible jurisdictions shall submit a Lake Water Quality Management Plan, MRP Plan and Quality Assurance Project Plan for approval by the Executive Officer to comply with MOA.	City of Los Angeles – Department of Recreation and Parks	1.5 years from effective date of TMDL
7	Responsible jurisdictions shall submit a work plan for optional special study #3 (if responsible jurisdictions choose to conduct this special study) for approval by the Executive Officer.	Caltrans, MS4 Permittees	One year from effective date of TMDL
8	Responsible jurisdictions shall submit work plans for optional special studies #1 and #2 (if responsible jurisdictions choose to conduct special studies) for approval by the Executive Officer.	Caltrans, MS4 Permittees, City of Los Angeles – Department of Recreation and Parks	1.5 years from effective date of TMDL

Task Number	Task	Responsible Jurisdiction	Date
9	Responsible jurisdictions shall begin monitoring as outlined in the approved MRP plan.	Caltrans, MS4 Permittees, City of Los Angeles – Department of Recreation and Parks	Sixty days from date of MRP Plan approval
10	Responsible jurisdictions shall begin implementation of Lake Water Quality Management Plan.	City of Los Angeles – Department of Recreation and Parks	Sixty days from date of Lake Water Quality Management Plan approval
11	Responsible jurisdictions whose compliance is determined as concentration based WLAs measured at end of pipe shall submit a TMDL Implementation Plan including BMPs to address discharges from storm drains.	Caltrans, MS4 Permittees	Two years from effective date of TMDL
12	Responsible jurisdictions whose compliance is determined as concentration based WLAs measured at end of pipe shall begin implementation of BMPs to address discharges from stormdrains	Caltrans, MS4 Permittees	Sixty days from date of Implementation Plan approval
13	Responsible jurisdictions shall submit annual monitoring reports. The monitoring reports shall include a requirement that the responsible jurisdictions demonstrate compliance with the MOA. If the MOA and Lake Water Quality Management Plan are not implemented or otherwise do not result in attainment of load allocations, the Regional Board shall revoke the MOA and the load allocations shall be implemented through a Clean Up and Abatement Order or other regulatory order.	City of Los Angeles – Department of Recreation and Parks	Annually – from date of Lake Water Quality Management Plan approval
14	Responsible jurisdictions whose compliance is determined as concentration based WLAs measured at end of pipe shall submit annual monitoring reports.	Caltrans, MS4 Permittees	Annually – from date of MPR Plan approval
15	Optional Special Study #3 completed and final report submitted for Executive Officer approval.	Caltrans, MS4 Permittees	Within 2.5 years of effective date of TMDL
16	Responsible jurisdictions shall submit a MRP Plan and TMDL Implementation Plan for the alternative mass based WLA compliance option (if selected), to the Executive Officer for approval.	Caltrans, MS4 Permittees	Within 2.5 years of effective date of TMDL

Task Number	Task	Responsible Jurisdiction	Date
17	Responsible jurisdictions shall begin monitoring and implementing projects/ programs as outlined in the approved MRP and TMDL Implementation Plan for the alternative mass based WLA compliance option.	Caltrans, MS4 Permittees	Sixty days from date of MRP/ Implementation Plan approval
18	Responsible jurisdictions whose compliance is determined as mass based WLAs measured at end of pipe shall submit annual monitoring reports.	Caltrans, MS4 Permittees	Annually – from date of MPR/ Implementation Plan approval
19	Optional Special Studies completed and Special Study final reports submitted for Executive Officer approval.	Caltrans, MS4 Permittees, City of Los Angeles – Department of Recreation and Parks	Within 6 years of effective date of TMDL
20	Regional Board staff and responsible jurisdictions will present an Information Item to the Regional Board on the progress of TMDL implementation efforts and compliance with implementation schedules.	Regional Board staff and responsible jurisdictions	4 years from effective date of TMDL
21	5 Year interim total nitrogen WLA and LA apply.	Caltrans, MS4 permittees, City of Los Angeles – Department Recreation and Parks	Within 5 years of effective date of TMDL
22	Regional Board will reconsider the TMDL to include results of optional special studies and water quality monitoring data completed by the responsible jurisdictions and revise numeric targets, WLAs, LAs, and the implementation schedule as needed.	Regional Board	7.5 years from effective date of TMDL
23	Responsible jurisdictions shall achieve Final WLAs and LAs for total nitrogen (including ammonia) and total phosphorus and demonstrate attainment of numeric targets for total nitrogen, ammonia, total phosphorus, dissolved oxygen, and chlorophyll a. Responsible parties shall demonstrate attainment of water quality standards for total nitrogen, ammonia, total phosphorus, dissolved oxygen, and biostimulatory substances in accordance with federal regulations and state policy on water quality control.	Caltrans, MS4 Permittees, City of Los Angeles – Department of Recreation and Parks	Within 9.5 years of effective date of TMDL

[4] Municipal Separate Storm Sewer System (MS4) Permittees that are responsible for discharges to Machado Lake include: Los Angeles County, Los Angeles County Flood Control District, and the Cities of Carson, Lomita, Los Angeles, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance.

7-30 Colorado Lagoon OC Pesticides, PCBs, Sediment Toxicity, PAHs, and Metals TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on October 1, 2009**.**

This TMDL was approved by:

The State Water Resources Control Board on November 16, 2010.
The Office of Administrative Law on May 6, 2011.
The U.S. Environmental Protection Agency on June 14, 2011.

The effective date of this TMDL is: June 14, 2011.

The elements of the TMDL are presented in Table 7-30.1 and the Implementation Plan in Table 7-30.2

Table 7-30.1. Colorado Lagoon OC Pesticides, PCBs, Sediment Toxicity, PAHs, and Metals TMDL: Elements

TMDL Element	Regulatory Provisions
Problem Statement	Colorado Lagoon is identified on the 1998, 2002, and 2006 Clean Water Act Section 303(d) lists of water-quality limited segments as impaired due to elevated levels of OC pesticides, PCBs, sediment toxicity, PAHs, and metals in fish tissue and sediment. Applicable fish tissue, sediment, and water quality objectives for this TMDL are narrative objectives for chemical constituents, bioaccumulation, pesticides, and toxicity; and numeric objectives for metals and organic compounds. The beneficial uses of Colorado Lagoon include water contact recreation (REC-1) and non-contact water recreation (REC-2), commercial and sport fishing (COMM), warm freshwater habitat (WARM), wildlife habitat (WILD), and shellfish harvesting (SHELL). The goal of this TMDL is to protect and restore fish tissue and sediment quality in Colorado Lagoon by controlling the contaminated sediment loading and accumulation of contaminated sediment in the lagoon.

TMDL Element	Regulatory Provisions
Numeric Targets	Colorado Lagoon is listed on the 303(d) list for sediment toxicity, PAHs, lead, and zinc in sediment; DDT, Dieldrin, and PCBs in fish tissue; and chlordane in fish tissue and sediment. In order to address these listings, water column, fish tissue and sediment targets are selected. The following table provides the numeric targets for the Colorado Lagoon OC Pesticides, PCBs, Sediment Toxicity, PAHs, and Metals TMDL.

Numeric targets for water, fish tissue, and sediment for OC Pesticides, PCBs, PAHs, and metals

Constituents	Water Quality Target[1] (ug/L)	Fish Tissue Target[2] (ug/kg)	ERL Sediment Target[3] (ug/dry Kg)
Chlordane	0.00059	5.60	0.50
DDTs	0.00059	21.00	1.58[4]
Dieldrin	0.00014	0.46	0.02
PCBs	0.00017[5]	3.60[6]	22.70
Total PAHs[7]	0.049[8]	5.47	4,022.00
Total LPAHs[9]	NA	NA	552.00
Total HPAHs[10]	NA	NA	1,700.00
Lead	8.10[11]	NA	46,700.00
Zinc	81.00[11]	NA	150,000.00

1 The California Toxics Rule (CTR) water quality criteria for consumption of organisms only are applied as the numeric targets for Chlordane, 4,4' DDT, Dieldrin, and PCBs for protection of human health. The CTR aquatic life criteria for saltwater are applied as the numeric targets for protection of aquatic life for lead and zinc.
2 Office of Environmental Health Hazard Assessment (OEHHA) Fish Contaminant Goals are applied as numeric targets for Chlordane, DDTs, Dieldrin, and PCBs. The U.S. Environmental Protection Agency (USEPA) screening value is applied as the numeric target for total PAHs.
3 Effect Range Low (ERL) sediment criteria from National Oceanic and Atmospheric Administration (NOAA) Sediment Quality Guidelines are applied as numeric targets.
4 DDTs in sediment are measured as the sum of DDT, DDE, and DDD.
5 PCBs in water are measured as the sum of all congener or isomer or homolog or aroclor.
6 PCBs in fish tissue and sediment are measured as sum of all congeners.
7 PAHs: Polycyclic aromatic hydrocarbons (sum of acenaphthylene, anthracene, benz(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo(a)pyrene, chrysene, dibenz(a,h)anthracene, fluorene, indeno(1,2,3-c,d)pyrene, phenanthrene, and pyrene).
8 CTR human health criteria were not established for total PAHs, Therefore, the lowest CTR criteria for individual PAHs of 0.049 ug/L is applied to the sum of benz(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene. Other PAHs compounds in the CTR shall be screened as part of the TMDL monitoring plan.
9 LPAHs: Low molecular weight PAHs.
10 HPAHs: High molecular weight PAHs.
11 Saltwater criteria for metals are expressed in terms of the dissolved fraction of metals in water column.

TMDL Element	Regulatory Provisions
Source Analysis	**Point sources** The point sources of OC pesticides, PCBs, PAHs, and metals discharged to Colorado Lagoon are urban runoff and stormwater discharges from the municipal separate storm sewer systems (MS4s) and California Department of Transportation (Caltrans). The Colorado Lagoon watershed is divided into five sub-basins that discharge stormwater and urban dry weather runoff to Colorado Lagoon. Each of the sub-basins is served by a major storm sewer trunk line and supporting appurtenances that collect and transport stormwater and urban dry weather runoff to Colorado Lagoon**.** The sub-basins are as follows: **Sub-basin A.** Discharges to Colorado Lagoon via a 63-inch reinforced concrete pipe owned and operated by the Los Angeles County Flood Control District (Project 452 Drain) discharging into the north part of the west arm. The drainage pattern is generally to the south and east. Sub-basin A contains the most commercial activities mainly along Anaheim Street and the northern part of Redondo Avenue. **Sub-basin B.** Discharges to Colorado Lagoon via a 54-inch reinforced concrete pipe (Line I Storm Drain) discharging into the north part of the north arm. The drainage pattern is generally to the south and west. Sub-basin B is predominately park/golf course open space with some residential areas on the north east corner. **Sub-basin C.** Discharges to Colorado Lagoon via a 48-inch reinforced concrete pipe (Line K Storm Drain) discharging into the mid-point of the north arm. The drainage pattern is generally to the south and west. Sub-basin C is almost entirely residential with a few commercial activities at the eastern boundary. **Sub-basin D.** Discharges to Colorado Lagoon via a 24-inch reinforced concrete pipe (Line M Storm Drain) discharging into the south part of the west arm. The drainage pattern is generally to the north and east. Sub-basin D is almost entirely residential with schools and other public facilities. **Sub-basin E.** Discharges to Colorado Lagoon via a 48-inch reinforced concrete pipe (Termino Avenue Drain) discharging into the west arm. The drainage pattern is generally to the south and east. Sub-basin E is mainly residential with commercial activities located along 7th Street, Coronado and Redondo Avenues to the west, and public facilities to the north. Several other smaller storm drains serve the areas immediately adjacent to the lagoon. These smaller storm drains contribute small amounts of contaminants relative to the five sub-basin discharges described above.

TMDL Element	Regulatory Provisions
Source Analysis (continued)	**Non-point Sources** Sediment loading from non-point sources to Colorado Lagoon is mainly runoff from urban, recreational park areas including two golf courses and adjacent park areas, a right-of-way greenbelt, and the picnic and park areas surrounding Colorado Lagoon, and atmospheric deposition.
Linkage Analysis	This TMDL analysis makes a simplifying assumption that the relationship between OC pesticides and PCBs concentrations in fish tissue and sediments is linear, with the slope of the line being the overall sediment–organism bioaccumulation factor (BAF). The impairing contaminants in sediment are associated with fine-grained particles that are primarily delivered to the sediments through suspended solids in stormwater and urban runoff. It is expected that reductions in loadings of these pollutants will lead to reductions in sediment concentrations over time. The existing contaminants in surface sediments will be removed by dredging operations and reduced as sediments are scoured during storms. For the legacy pollutants (chlordane and PCBs), some losses will also occur through the slow decay and breakdown of these organic compounds. Concentrations in surface sediments will be reduced through mixing with cleaner sediments. Attenuation of pollutant concentration levels in sediment is expected to translate to reductions in fish tissue contaminant levels. The linkage analysis focuses on the relationship between source contributions and in-lagoon water and sediment response. The Environmental Fluid Dynamics Code (EFDC) model was selected to simulate source loadings and transport of the listed pollutants in the Colorado Lagoon. This model estimates the metals, PAHs, PCBs, and DDT concentrations in the receiving water to evaluate potential management scenarios and to identify waste load allocations to support water and sediment quality management decisions for Colorado Lagoon. Hydrodynamic, water quality, and sediment transport was developed to simulate the dynamic interaction between Marine Stadium and Colorado Lagoon.
Waste Load Allocations	**Sediment Waste Load Allocations (WLAs) for MS4 Discharges:** <u>Mass-based WLAs for MS4 Discharges</u> Mass-based waste load allocations for MS4 permittees including the City of Long Beach, Los Angeles County Flood Control District, and Caltrans are allocated to the five major storm drain outfalls that currently discharge to the lagoon. Because Colorado Lagoon is located completely within the jurisdictional boundaries of the City of Long Beach and land areas serviced by storm drains that currently discharge to the lagoon are under the jurisdiction of the City of Long Beach, the WLAs are assigned to the City of Long Beach. Caltrans and the City of Long Beach shall each be responsible for achieving the WLAs assigned to the Line I Storm Drain as it conveys stormwater from both Caltrans' facilities and the City of Long Beach. The Los Angeles County Flood Control District (District) owns and operates the Project 452 Storm Drain; therefore, the District and the City of Long Beach shall each be responsible for achieving the WLAs assigned to the Project 452 Storm Drain. Mass-based WLAs are applied as annual limits and compliance with the mass-based WLAs for sediment will be determined at the storm drain outfalls to the lagoon.

TMDL Element	Regulatory Provisions
Waste Load Allocations (continued)	(see tables and text below)

Constituent	**Final Mass-based WLAs (mg/yr)**				
	Project 452	**Line I**	**Termino Ave**	**Line K**	**Line M**
Chlordane	5.10	3.65	12.15	1.94	0.73
Dieldrin	0.20	0.15	0.49	0.08	0.03
Lead	476,646.68	340,455.99	1,134,867.12	181,573.76	68,116.09
Zinc	1,530,985.05	1,093,541.72	3,645,183.47	583,213.37	218,788.29
PAHs	41,050.81	29,321.50	97,739.52	15,637.89	5,866.44
PCBs	231.69	165.49	551.64	88.26	33.11
DDT	16.13	11.52	38.40	6.14	2.30

Concentration-based WLAs for MS4 Discharges

Concentration-based WLAs for sediment are assigned to MS4 permittees including the City of Long Beach, Los Angeles County Flood Control District, and Caltrans. Concentration-based WLAs for sediment are applied as average monthly limits. Compliance with the concentration-based WLAs for sediment shall be determined by pollutant concentrations in the sediment in the lagoon at points in the West Arm, North Arm, and Central Arm that represent the cumulative inputs from the MS4 drainage system to the lagoon. Concentration-based WLAs for sediment are also assigned to all other minor storm drains discharging from the MS4 to the lagoon.

Concentration-based interim WLAs for sediment are set to allow time for removal of contaminated sediment through proposed implementation actions. Interim WLAs are based on the 95th percentile value of sediment data collected from 2000 to 2008. The use of 95th percentile values to develop interim limits is consistent with current NPDES permitting methodology. If the 95th percentile is equal to or lower than the numeric target, the interim limit is equal to the final WLAs. Interim and final WLAs will be included in MS4 permits in accordance with NPDES guidance and requirements.

Constituent	**Concentration-based WLAs**	
	Interim WLAs (ug/dry kg)	**Final WLAs (ug/dry kg)**
Chlordane	129.65	0.50
Dieldrin	26.20	0.02
Lead	399,500.00	46,700.00
Zinc	565,000.00	150,000.00
PAHs	4,022.00	4,022.00
PCBs	89.90	22.7
DDT	149.80	1.58

<table>
<tr><th>TMDL Element</th><th>Regulatory Provisions</th></tr>
<tr><td>Waste Load Allocations (continued)</td><td>Sediment Waste Load Allocations for Other Point Sources

Concentration-based waste load allocations are assigned to minor NPDES permits, other stormwater, and non-stormwater permittees. Any future minor NPDES permits or enrollees under a general non-stormwater NPDES permit, general industrial stormwater permit or general construction permit will also be subject to the concentration-based waste load allocations.

<table>
<tr><th>Constituents</th><th>Waste Load Allocation (ug/dry kg)</th></tr>
<tr><td>Chlordane</td><td>0.50</td></tr>
<tr><td>Dieldrin</td><td>0.02</td></tr>
<tr><td>Lead</td><td>46,700.00</td></tr>
<tr><td>Zinc</td><td>150,000.00</td></tr>
<tr><td>PAHs</td><td>4,022.00</td></tr>
<tr><td>PCBs</td><td>22.70</td></tr>
<tr><td>DDT</td><td>1.58</td></tr>
</table>
</td></tr>
<tr><td>Load Allocations</td><td>A mass-based load allocation is developed for direct atmospheric deposition. An estimate of direct atmospheric deposition was developed based on the percent area of surface water within the watershed, which is approximately 15 acres or 1.3% of the total watershed area. The load allocation for atmospheric deposition is calculated by multiplying this percentage by the total loading capacity.

<table>
<tr><th>Constituent</th><th>Load Allocation (mg/year)</th></tr>
<tr><td>Chlordane</td><td>0.36</td></tr>
<tr><td>Dieldrin</td><td>0.014</td></tr>
<tr><td>Lead</td><td>33,217.48</td></tr>
<tr><td>Zinc</td><td>106,694.25</td></tr>
<tr><td>PAHs</td><td>2,860.83</td></tr>
<tr><td>PCBs</td><td>16.15</td></tr>
<tr><td>DDT</td><td>0.71</td></tr>
</table>
</td></tr>
<tr><td>Margin of Safety</td><td>An implicit margin of safety exists in the final WLAs. The implicit margin of safety is based on the selection of multiple numeric targets, including targets for water, fish tissue and sediment to protect human health, and the selection of ERLs as numeric targets for sediment, which are the most protective of the potentially applicable sediment guidelines available.

Additionally, to address sources of uncertainty in the analysis, particularly the assumption of natural removal of contaminated sediment at the northern arm of the lagoon, an explicit 10% margin of safety is also included.</td></tr>
</table>

TMDL Element	Regulatory Provisions
Seasonal Variations and Critical Conditions	No correlation with flow or seasonality (wet vs. dry season) was found to exist in sediment or tissue data. Given that allocations for this TMDL are expressed in terms of OC pesticides, PCBs, PAHs, and metals concentrations in sediment, a critical condition is not identified based upon flow or seasonality. Because the adverse effects of OC pesticides, PCBs, PAHs, and metals are related to sediment accumulation and bioaccumulation in the food chain over long periods of time, short term variations in concentrations are less likely to cause significant impacts upon beneficial uses.
Monitoring Plan	The Colorado Lagoon TMDL Monitoring Plan (CLTMP) is designed to monitor and evaluate implementation of this TMDL, and refine the understanding of current sediment loadings. The goals of the CLTMP are: To determine compliance with OC pesticides, PCBs, metals, and PAHs waste load and load allocations, To monitor the effectiveness of implementation actions proposed by Los Angeles County Flood Control District and the City of Long Beach on water and sediment quality, including the potential impacts of redirecting discharges from the Termino Ave. Drain and from cleaning the culvert on Marine Stadium and Colorado Lagoon, To monitor contaminated sediment levels in the Lagoon especially in the North Arm of the Lagoon and determine if additional implementation action such as dredging are necessary to achieve the TMDL, and To implement the CLTMP in a manner consistent with other TMDL implementation plans and regulatory actions within the Colorado Lagoon watershed. Monitoring shall begin six months after the monitoring plan is approved by the Executive Officer. Water column and sediment samples will be collected at the outlet of the storm drains discharging to the lagoon, while water column, sediment, and fish tissue samples will be collected in the West Arm, Central Arm, North Arm, at the outlet of the lagoon to Marine Stadium during an incoming tide, and at the outfall of Termino Ave. Drain to Marine Stadium. The number and location of monitoring sites shall be specified in the monitoring plan to be approved by the Executive Officer. The City of Long Beach, the Los Angeles County Flood Control District, and Caltrans are each responsible for conducting water, sediment, and fish tissue monitoring. However, they are encouraged to collaborate or coordinate their efforts to avoid duplication and reduce associated costs. Water quality samples and total suspended solids samples shall be collected quarterly in the first year and semi-annually thereafter and analyzed for chlordane, dieldrin, OC pesticides, and total PCBs at detection limits that are at or below the minimum levels. The minimum levels are those published by the State Water Resources Control Board in Appendix 4 of the Policy for the Implementation of Toxic Standards for Inland Surface Water, Enclosed Bays, and Estuaries of California, 2005.

TMDL Element	Regulatory Provisions
Monitoring Plan (continued)	Water quality samples shall also be collected quarterly in the first year and semi-annually thereafter and analyzed for general water quality constituents (GWQC), total recoverable and dissolved PAHs, lead, and zinc. If water quality objectives are exceeded at any time, sampling frequency shall be accelerated to quarterly thereafter until water quality objectives are not exceeded. Total suspended solid samples shall also be collected to analyze for PAHs, lead, and zinc. For metal analysis, methods that allow for (1) the removal of salt matrix to reduce interference and avoid inaccurate results prior to the analysis; and (2) the use of trace metal clean sampling techniques, must be applied. Examples of such methods include EPA Method 1669 for sample collection and handling, and EPA Method 1640 for sample preparation and analysis. Sediment samples will be collected annually for analysis of general sediment quality constituents (GSQC), OC pesticides, PCBs, PAHs, and metals. Lead, zinc, chlordane, dieldrin, and total PCBs shall be analyzed at detection limits that are lower than the ERLs. The sediment toxicity testing shall include testing a minimum of three species for lethal and non-lethal endpoints. Toxicity testing may include: the 28-day and 10-day amphipod mortality test, the sea urchin fertilization testing using sediment pore water, and the bivalve embryo testing of the sediment/water interface. The chronic 28-day and shorter-term 10-day amphipod tests may be conducted in the first year. If there is no significant difference in the tests, then the less expensive 10-day test can be used throughout the rest of the monitoring, with some periodic 28-day tests. Sediment toxicity monitoring shall be conducted annually to provide sufficient data over the implementation timeframe to evaluate changes in sediment quality due to implementation actions. If sediment objectives are exceeded or sediment toxicity is observed at any time, sampling frequency for both sediment and sediment toxicity shall be accelerated to semi-annually thereafter until sediment objectives are not exceeded and sediment toxicity is not observed. Fish tissue samples will be collected annually and analyzed for chlordane, dieldrin, DDT, and PCBs to assess changes in concentrations of target organic constituents. The same rationale used for establishing sampling frequency for sediments is used to establish fish tissue sample collection frequency. For Colorado Lagoon, species with the potential for human and wildlife consumption will be targeted. Fish targeted to evaluate potential impacts to human health will be limited to species more commonly consumed by humans. Tissues analyzed will be based on the most appropriate and common preparation for the selected fish species. Tissues from resident California or bay mussels shall be collected annually and analyzed to further assess and track impairment. Monitoring reports shall be prepared and submitted to the Regional Board annually within six months after the completion of the final sampling event of the year. All compliance monitoring must be conducted in conjunction with a Regional Board approved Quality Assurance Project Plan (QAPP). The QAPP shall include protocols for sample collection, standard analytical procedures, and laboratory certification.

TMDL Element	Regulatory Provisions
Implementation Plan	The City of Long Beach, Los Angeles County Flood Control District, and California Department of Transportation (Caltrans) are each responsible for meeting the waste load allocations. However, to the extent their effluent discharges are commingled, they will be held jointly liable for abating the pollutants in the commingled discharge to the extent any of them are unable to disprove their own contribution of pollutants. Compliance with the TMDL is determined based on the assigned WLAs. NPDES permits will be amended to be consistent with the assumptions and requirements of the WLAs. Responsible agencies are required to implement the proposed actions to remove contaminated sediment; control the discharges of pollutants in urban runoff, stormwater and contaminated sediments to Colorado Lagoon; attain water, fish tissue, and sediment quality standards; and protect beneficial uses. Table 7-30.2 contains a schedule for responsible agencies to implement BMPs and proposed implementation actions to comply with the TMDL. Responsible agencies may employ a variety of implementation strategies such as non-structural and structural best management practices (BMPs) to meet the required waste load allocations. The implementation actions described in this section represent a range of activities that are proposed by the Los Angeles County Flood Control District and City of Long Beach in the *Los Angeles County Termino Avenue Drain Project* and *Colorado Lagoon Restoration Project*, respectively. **Implementation and Determination of Compliance with the WLAs** The WLAs will apply to all NPDES dischargers in the Colorado Lagoon watershed. The regulatory mechanisms used to implement the TMDL include the Los Angeles County MS4 permit, the City of Long Beach MS4 permit, the Caltrans stormwater permit, and any future general industrial stormwater permits, general construction stormwater permits, minor NPDES permits, and general NPDES permits as well as any other appropriate regulatory mechanism, including Board orders, where required. Each NPDES permit may be reopened immediately after the TMDL becomes effective, or amended at re-issuance, in accordance with applicable laws, to incorporate the waste load allocations and other provisions of this TMDL. Compliance with the WLAs will be measured at the storm drain outlets and in the lagoon and will be achieved through BMPs and a combination of proposed implementation actions provided in the Proposed Implementation section below to remove contaminated sediment and reduce loadings of contaminated sediment through the control of stormwater and contaminated sediments to Colorado Lagoon. The final WLAs will be included for permitted MS4 discharges and other NPDES discharges in accordance with the compliance schedules provided in Table 7-30.2. The Regional Board may revise these WLAs based on additional information developed through monitoring or special studies.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	The WLAs for the minor NPDES permits and general non-stormwater NPDES permits will be implemented through effluent limitations consistent with the assumptions and requirements of the WLAs. Permit writers for the non-stormwater permits may translate applicable waste load allocations into effluent limitations for the minor and general NPDES permits by applying applicable engineering practices. **Proposed Implementation Actions** <u>Non-Structural Best Management Practices</u> The non-structural BMPs are based on the premise that specific land uses or critical sources can be targeted to achieve the TMDL waste load allocations. Available non-structural BMPs include better sediment control at construction sites and improved street cleaning by upgrading to vacuum type sweepers, storm drain cleaning, and public education and out reach. The lagoon is also impacted by irrigation runoff from the golf course located adjacent to the lagoon in the dry season. Improvements to the golf course operation should also be considered to protect lagoon resources by reducing watering needs and eliminating pesticide and herbicide use. <u>Site-Specific Implementation Actions:</u> The Regional Board does not prescribe the methods of achieving compliance with the TMDL allocations. However, described below are several implementation actions proposed by the responsible agencies. *Relocation of the Termino Avenue Drain.* One of the major system outfalls, the Termino Avenue Drain, has been proposed by the Los Angeles County Flood Control District to be modified, which will no longer discharge into the Lagoon. As proposed in the Los Angeles County Flood Control District Termino Avenue Drain Project (TADP) the drain would bypass the Lagoon and discharge stormwater flows into Marine Stadium. Dry weather flows will be diverted into the sanitary sewer system. This project would also redirect flows from three other storm drains located on the south shore of the Lagoon that currently discharge into the Lagoon. *Low Flow Diversion and Trash Separation Device.* The City of Long Beach proposed in the Colorado Lagoon Restoration Project to divert low storm drain flows from other three major storm drain system outfalls and install trash separation devices to trap trash and debris prior to entering the wet well for the diverted runoff. The Colorado Lagoon Restoration Project would redirect or treat low flows from these drains to minimize contamination to water and sediment.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	*Vegetated Bioswale Installation.* The flows from the remaining four local storm drains would be treated via a vegetated bioswale as proposed in the Colorado Lagoon Restoration Project. A bioswale would also be developed on the north shore between the Lagoon and Recreation Park Golf Course. The vegetated bioswale would treat stormwater and dry weather runoff through filtration to remove sediment and pollutants prior to discharging into the Lagoon. *Clean Culvert, Repair Tidal Gates, and Remove Sill/Structural Impedances.* The Colorado Lagoon is connected to Alamitos Bay and the Pacific Ocean through an underground tidal culvert to Marine Stadium. The existing culvert has not been cleaned since it was built in the 1960s. The flow in the culvert is impeded by sediment that has accumulated on the bottom, extensive marine growth that has accumulated on the sides and ceiling, and debris that is trapped within the trash racks on the tide gate screens at both ends of the culvert. These existing conditions limit the Lagoon's tidal range and tidal flushing, which results in increased degradation of water quality. As proposed in the Colorado Lagoon Restoration Project, the City of Long Beach plans to clean the existing culvert and trash racks, repair the tidal gates, and remove the sill and structural impedances within and around the existing culvert. Implementation of this component of the Colorado Lagoon Restoration Project would result in increased tidal range, tidal flushing, and water circulation, and improvement of water and sediment quality. *Remove Contaminated Sediment in the Western Arm of the Lagoon.* OC pesticides, PCBs, PAHs, and metals were deposited over time from the particulates in the runoff brought to the Lagoon through the existing storm drains. It is estimated that the layer of contaminated sediment reaches 4 to 5 ft deep. The City of Long Beach proposes to remove sediment to a depth of 6 ft to provide a safeguard that only clean sediment remains. The excavation depth gradually decreases toward the footbridge. This component of the Colorado Lagoon Restoration Project would remove approximately 16,000 cubic yards (cy) of contaminated sediment within the western arm of the Lagoon. *Remove Contaminated Sediment in the Central Lagoon.* Similar to the sediment removal project above, the Colorado Lagoon Restoration Project would remove sediment and sand that has eroded and been deposited into the Lagoon over years, and create a larger subtidal area. Approximately 5,500 cy of sediment would be removed from the central Lagoon. Sediment removal from the central area of the lagoon would create a channel through the center of the central Lagoon to connect the dredge areas in the western arm to the outlet at the existing culvert or proposed open channel. Removal of this sediment would also provide additional space for water circulation and tidal flushing.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	As proposed in the Colorado Lagoon Restoration Project, only the Western Arm and the Central Lagoon are planned to be dredged based on the recommendation from the Sediment Testing and Disposal Report. The TMDL monitoring program will determine if additional implementation actions such as dredging in the North Arm will be required to remove contaminated sediment in the Lagoon. *Build Alternate Channel or Underground Culvert between Lagoon and Marine Stadium.* City is considering an open channel or parallel underground culvert option to further improve water quality at the Colorado Lagoon. However, this project was not included in the certified EIR. This proposed project consists of replacing the existing concrete box culvert with an open channel or new underground culvert that would run from the Lagoon through Marina Vista Park to Marine Stadium in a location generally parallel to the existing culvert. Creating an open channel or underground culvert would improve tidal flushing by an increase in the tidal range, and result in a corresponding improvement of water and sediment quality. In addition, it would provide improved flood flow conveyance. Implementation of the proposed actions should result in attainment of the TMDL allocations. If the proposed actions are not implemented or otherwise do not result in attainment of allocations, additional implementation actions shall be required.

Table 7-30.2 Colorado Lagoon OC Pesticides, PCBs, Sediment Toxicity, PAHs, and Metals TMDL: Implementation Schedule

Item	Implementation Action	Responsible Party	Date
1	Effective date of interim waste load allocations (WLAs).	The City of Long Beach, the Los Angeles County Flood Control District, and Caltrans	Effective date of the TMDL
2	Responsible agencies shall submit a monitoring plan to the Los Angeles Regional Board for Executive Officer approval.	The City of Long Beach, the Los Angeles County Flood Control District, and Caltrans	6 months after effective date of the TMDL
3	Responsible agencies shall begin monitoring as outlined in the approved monitoring plan.	The City of Long Beach, the Los Angeles County Flood Control District, and Caltrans	6 months after monitoring plan approved by E.O.
4	Responsible agencies shall submit annual reports to the Los Angeles Regional Board for review.	The City of Long Beach, the Los Angeles County Flood Control District, and Caltrans	15 months after monitoring starts and annually thereafter
5	Responsible agencies shall submit bi-annual progress reports to provide updates on the status of implementation actions performed under the TMDL. The plan shall contain mechanisms for demonstrating progress toward meeting the assigned WLAs.	The City of Long Beach, the Los Angeles County Flood Control District, and Caltrans	Every 2 years after effective date of the TMDL
6	Responsible agencies shall achieve WLAs.	The City of Long Beach, the Los Angeles County Flood Control District, and Caltrans	7 years after effective date of the TMDL

7-31 Malibu Creek Watershed Trash TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on May 1, 2008.

This TMDL was approved by:

The State Water Resources Control Board on March 17, 2009.
The Office of Administrative Law on June 16, 2009.
The U.S. Environmental Protection Agency on June 26, 2009.

The effective date of this TMDL is: July 7, 2009.

The elements of the TMDL are presented in Table 7-31.1 and the Implementation Plan in Tables 7-31.2a and 7-31.2b.

Table 7-31.1 Malibu Creek Watershed Trash TMDL: Elements

Element	Malibu Creek Watershed Trash TMDL
Problem Statement	Discharges of trash into Malibu Creek, Malibu Lagoon, Malibou Lake, Medea Creek (Reach 1 and Reach 2), Lindero Creek (Reach 1 and Reach 2), Lake Lindero, and Las Virgenes Creek violate water quality objectives and impair beneficial uses. The waterbodies above were listed in the 1998, 2002, 2004, and 2006 303(d) lists of impaired waterbodies for trash. Relevant water quality objectives in the Water Quality Control Plan Los Angeles Region include Floating Material and Solid, Suspended, or Settleable Materials. The following designated beneficial uses are impaired by trash: municipal and domestic supply (MUN), ground water recharge (GWR), contact water recreation (REC-1), non-contact water recreation (REC-2), warm freshwater habitat (WARM), cold freshwater habitat (COLD), migration of aquatic organisms (MIGR), wildlife habitat (WILD), rare, threatened, or endangered species (RARE), spawning, reproduction, and or early development (SPWN), and wetland habitat (WET).
Numeric Target (Interpretation of the narrative water quality objective, used to calculate the load allocations)	Zero trash in the above listed subwatersheds of the Malibu Creek Watershed, and on the shorelines of those waterbodies. Zero is defined for nonpoint sources as no trash immediately following each assessment and collection event consistent with an established Minimum Frequency of Assessment and Collection Program (MFAC Program). The MFAC Program is established at an interval that prevents trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections. For point sources, zero is defined as no trash discharged into the listed waterbodies of the Malibu Creek Watershed and on the shoreline of those waterbodies.
Source Analysis	Litter from adjacent land areas, roadways and direct dumping and deposition are sources of trash to Malibu Creek Watershed. Point sources such as storm drains are also sources of trash discharged to Malibu Creek Watershed.
Loading Capacity	Zero, as defined in the Numeric Target.

Element	Malibu Creek Watershed Trash TMDL
Waste Load Allocations (for point sources)	Waste Load Allocations (WLAs) are assigned to the California Department of Transportation (Caltrans, permittee for Statewide National Pollutant Discharge Elimination System (NPDES) Storm Water Permit, No. 99-06-DWQ), Los Angeles County (principal permittee for NPDES Los Angeles County Municipal Separate Strom Sewer System (MS4) permit, No. CAS004001), and the Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village (co-permittees for NPDES Los Angeles County MS4 permit) under the NPDES Los Angeles County MS4 permit, and to Ventura County Watershed Protection District (principal permittee for NPDES Ventura County MS4 permit, No. 004002), County of Ventura, and City of Thousand Oaks (co-permittees for NPDES Ventura County MS4 permit) under the NPDES Ventura County MS4 permit. WLAs are zero trash. WLAs may be issued to additional responsible jurisdictions in the future under Phase 2 of the USEPA Stormwater Permitting Program, or other applicable regulatory programs.
Load Allocations (for nonpoint sources)	Load Allocations (LAs) are assigned to the National Park Service, California Department of Parks and Recreation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Santa Monica Mountains Conservancy, Cities of Malibu, Agoura Hills, Hidden Hills, Thousand Oaks, Westlake Village, and Calabasas, and land owners in the vicinity of listed waterbodies in the Malibu Creek Watershed. LAs are zero trash. LAs may be issued to additional responsible jurisdictions in the future under applicable regulatory programs.
Implementation	Implementation of the trash TMDL for Malibu Creek Watershed includes structural and non-structural best management practices (BMPs) and a program of minimum frequency of assessment and collection (MFAC) to address point and nonpoint trash sources. **Point Sources** WLAs shall be implemented through storm water permits and via the authority vested in the Executive Officer by section 13267 of the Porter-Cologne Water Quality Control Act (Water Code section 13000 et seq.). If point source dischargers comply with WLAs by implementing an Executive Officer certified full capture system on conveyances that discharge to the listed subwatersheds of the Malibu Creek Watershed through a progressive implementation schedule of full capture devices, they will be deemed in compliance with the WLA.

Element	Malibu Creek Watershed Trash TMDL
Implementation (continued)	In certain circumstances, (if approved by the Executive Officer), point source dischargers may alternatively comply with WLAs by implementing a program for installing partial capture systems (PCS) in conjunction with best management practices. Compliance through implementation of a PCS/BMP program must demonstrate attainment of WLAs through trash monitoring in accordance with the Trash Monitoring and Reporting Plan (TMRP) approved by the Executive Officer. 1. Compliance with the final WLA may be achieved through an adequately sized and maintained full capture system, once the Executive Officer has certified that the system meets the following minimum criteria. A full capture system, at a minimum, consists of any device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the sub-drainage area. The rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour); and A= subdrainage area (acres). Point sources discharges that choose to comply via a full capture system must demonstrate a phased implementation of full capture devices over an 8-year period until the final WLA of zero is attained. Zero will be deemed to have been met if full capture systems have been installed on all conveyances discharging to the listed subwatersheds of the Malibu Creek Watershed. Irrespective of whether point sources employ a full capture system, they may comply with the WLA in any lawful manner. 2. Compliance through a PCS/BMP program may be proposed to the Regional Board for incorporation into the relevant NPDES permit. **Nonpoint Sources** LAs shall be implemented through either (1) a conditional waiver from waste discharge requirements, (2) an alternative program implemented through waste discharge requirements, or (3) an individual waiver or another appropriate order of the Regional Board.

Element	Malibu Creek Watershed Trash TMDL
Implementation (continued)	Non-point source dischargers may achieve compliance with the LAs by implementing a MFAC/BMP program approved by the Executive Officer. Responsible jurisdictions that are responsible for both point and nonpoint sources will be deemed in compliance with both the WLAs and LAs if an MFAC/BMP program, approved by the Executive Officer, is implemented. 1) Conditional Waiver: Pursuant to Water Code section 13269, waste discharge requirements are waived for any responsible jurisdiction that implements a MFAC/BMP Program which, to the satisfaction of the Executive Officer, meets the following criteria: a) The MFAC/BMP Program includes an initial minimum frequency of trash assessment and collection and suite of structural and/or nonstructural BMPs. The MFAC/BMP program shall include collection and disposal of all trash found in the water and on the shoreline. Responsible jurisdictions shall implement an initial suite of BMPs based on current trash management practices in land areas that are found to be sources of trash to Malibu Creek Watershed. For individual subwatershed in the Malibu Creek Watershed, the initial minimum frequency shall be set as follows: <u>Malibu Creek (from Malibu Lagoon to Malibou Lake)</u> 1. Within City of Malibu, the waterbody, shorelines and areas adjacent to Malibu Creek: once per week and within 72 hours after critical conditions. 2. Within the County of Los Angeles and in the State Parks: once per month, and within 72 hours after critical conditions. <u>Malibu Lagoon</u> 1. The waterbody, shorelines, beach and areas adjacent to Malibu Lagoon: twice per week during high visitation seasons from May 15 through October 15. 2. The waterbody, shorelines, beach and areas adjacent to Malibu Lagoon: once per week from October 15 through May 15, and within 72 hours after critical conditions. <u>Malibou Lake</u> Once per month for the waterbody, shorelines and the adjacent lands, and within 72 hours after critical conditions.

Element	Malibu Creek Watershed Trash TMDL
Implementation (continued)	Medea Creek Reach 1 (Malibou Lake to confluence with Lindero Creek) Twice per month for the waterbody, shorelines and the adjacent areas, and within 72 hours after critical conditions. Medea Creek Reach 2 (above confluence) 1. Once per week on the waterbody, shorelines and the adjacent areas from the confluence with Lindero Creek to the intersection with Thousand Oaks Blvd., and within 72 hours after critical conditions. 2. Twice per month above the intersection with Thousand Oaks Blvd., and within 72 hours after critical conditions. Lindero Creek Reach 1 (Confluence with Medea Creek to Lake Lindero) Twice per month for Lindero Creek Reach 1 including the waterbody, shorelines and the adjacent areas, and within 72 hours after critical conditions. Lindero Creek Reach 2 (Above Lake Lindero) Twice per month for Lindero Creek Reach 2 including the waterbody, shorelines and the adjacent areas, and within 72 hours after critical conditions. Lake Lindero Twice per month for the waterbody, shorelines and the adjacent land, and within 72 hours after critical conditions. Las Virgenes Creek 1. Within the State Parks northerly to the intersection with Mulholland Highway: once per month, and within 72 hours after critical conditions. 2. Once per week for the waterbody, shorelines and the adjacent areas between Mulholland Highway and Juan Bautista De Anza Park at Los Hills Road in the City of Calabasas, and within 72 hours after critical conditions. 3. Twice per week for the waterbody, shorelines and the adjacent areas for the rest of City of Calabasas. 4. Once per month for section in Los Angeles County along Ventura Freeway and within 72 hours after critical conditions. 5. Within Ventura County, once every two months for the waterbody, shorelines and the adjacent areas, and within 72 hours after critical conditions.

Element	Malibu Creek Watershed Trash TMDL
Implementation (continued)	b) The MFAC/BMP Program includes reasonable assurances that it will be implemented by the responsible jurisdiction. c) The MFAC/BMP Program includes a Trash Monitoring and Reporting Plan, as described below, and a requirement that the responsible jurisdictions will self-report any non-compliance with its provisions. The results and report of the Trash Monitoring and Reporting Plan must be submitted to Regional Board on an annual basis. d) MFAC protocols may be based on SWAMP protocols for rapid trash assessment, or alternative protocols proposed by dischargers and approved by the Executive Officer. e) Implementation of the MFAC/BMP program should include a Health and Safety Plan to protect personnel. The MFAC/BMP shall not require responsible jurisdictions to access and collect trash from areas where personnel are prohibited. The Executive Officer may approve or require a revised assessment and collection frequency, location, and definition of the critical conditions under the waiver: (a) To prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections; (b) To reflect the results of trash assessment and collection; (c) If the amount of trash collected does not show a decreasing trend, where necessary to prevent nuisance or adverse effects on beneficial uses, such that a shorter interval between collections is warranted; or (d) If the amount of trash collected is decreasing such that a longer interval between collections is warranted. At the end of the implementation period, a revised MFAC/BMP program may be required if the Executive Officer determines that the amount of trash accumulating between collections is causing nuisance or otherwise adversely affecting beneficial uses. With regard to (a), (b) or (c), above, the Executive Officer is authorized to allow responsible jurisdictions to implement additional structural or non-structural BMPs in lieu of modifying the monitoring frequency. Any waivers implementing the TMDL shall expire pursuant to Water Code section 13269 five years after the effective date of this TMDL, unless reissued. The Regional Board may reissue this waiver through an order consistent herewith, instead of readopting these regulatory provisions.

Element	Malibu Creek Watershed Trash TMDL
Implementation (continued)	(2) Alternatively, responsible jurisdictions may propose, or the Regional Board may impose, an alternative program which would be implemented through waste discharge requirements, an individual waiver, a cleanup and abatement order, or any other appropriate order or orders, provided the program is consistent with the assumptions and requirements of the reductions described in Table 7-31.2b, below. Within six months of the effective date of this TMDL, the Executive Officer shall require responsible jurisdictions to submit either a notice of intent to be regulated under the conditional waiver with their proposed MFAC/BMP Program and Trash Monitoring and Reporting Plan (TMRP), or a report of waste discharge.
Monitoring and Reporting Plan	Responsible jurisdictions will develop a TMRP for Executive Officer approval that describes the methodologies that will be used to assess and monitor trash in the listed subwatersheds of the Malibu Creek Watershed and/or within responsible jurisdiction land areas. The TMRP shall include a plan to establish the trash Baseline WLAs for non-Caltrans entities, or an alternative to the default trash baseline for Caltrans to prioritize installation of full capture devices. The default trash baseline WLA for Caltrans is 2136 gallons per year. Requirements for the TMRP shall include, but are not limited to, assessment and quantification of trash collected from the surfaces and shoreline of the listed waterbodies in the Malibu Creek Watershed or from responsible jurisdiction land areas. The monitoring plan shall provide details of the frequency, location, and reporting of trash monitoring. Responsible jurisdictions shall propose a metric (e.g., weight, volume, pieces of trash) to measure the amount of trash in the listed subwatersheds of the Malibu Creek Watershed and on the land area surrounding these subwatersheds, as defined in the Executive Officer approved TMRP. The TMRP shall include a prioritization of areas that have the highest trash generation rates. The TMRP shall give preference to this prioritization when scheduling the installation of full capture devices, BMPs, or trash collection programs. The TMRP shall also include an evaluation of effectiveness of the MFAC/BMP program to prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections, proposals to enhance BMPs, and a revised MFAC for Executive Officer review. Responsible Jurisdictions in Table 7-31.2a and 7-31.2b may cooperate and coordinate their TMRP activities for Malibu Creek Watershed.
Margin of Safety	Zero is a conservative numeric target which contains an implicit margin of safety.

Element	Malibu Creek Watershed Trash TMDL
Seasonal Variations and Critical Conditions	Discharge of trash from the conveyances occurs primarily during or shortly after a major rain event. Discharge of trash from nonpoint sources occurs during all seasons, but can be increased during or shortly after high wind events, which are defined as periods of wind advisories issued by the National Weather Service.

Table 7-31.2a Malibu Creek Watershed Trash TMDL: Implementation Schedule - Point Sources

Task No.	Task	Responsible Jurisdiction	Date
1	Submit Trash Monitoring and Reporting Plan, including a plan for defining the trash baseline WLA and a proposed definition of “major rain event”.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	6 months from effective date of TMDL. If a plan is not approved by the Executive Officer within 9 months, the Executive Officer will establish an appropriate monitoring plan.
2	Implement Trash Monitoring and Reporting Plan.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	6 months from receipt of letter of approval from Regional Board Executive Officer, or the date a plan is established by the Executive Officer.
3	Submit results of Trash Monitoring and Reporting Plan, recommend trash baseline WLA, and propose prioritization of Full Capture System installation or implementation of other measures to attain the required trash reduction.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	One year from receipt of letter of approval for the Trash Monitoring and Reporting Plan from Regional Board Executive Officer, and annually thereafter.
4	Installation of Full Capture Systems or other measures to achieve 20% reduction of trash from Baseline WLA*.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	Four years from effective date of TMDL.
5	Installation of Full Capture Systems or other measures to achieve 40% reduction of trash from Baseline WLA*.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	Five years from effective date of TMDL.
6	Evaluate the effectiveness of Full Capture Systems or other measures, and reconsider the WLA*.	Regional Board.	Five years from effective date of TMDL.

Task No.	Task	Responsible Jurisdiction	Date
7	Installation of Full Capture Systems or other measures to achieve 60% reduction of trash from Baseline WLA*.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	Six years from effective date of TMDL.
8	Installation of Full Capture Systems or other measures to achieve 80% reduction of trash from Baseline WLA*.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	Seven years from effective date of TMDL.
9	Installation of Full Capture Systems or other measures to achieve 100% reduction of trash from Baseline WLA*.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	Eight years from effective date of TMDL.

* Compliance with percent reductions from the Baseline WLA will be assumed wherever full capture systems are installed in corresponding percentages of the conveyance discharging to Malibu Creek Watershed. Installation will be prioritized based on the greatest point source loadings.

Table 7-31.2b Malibu Creek Watershed Trash TMDL: Implementation Schedule

Minimum Frequency of Assessment and Collection Program * - Nonpoint Sources

Task No.	Task	Responsible Jurisdiction	Date
1	Conditional Waiver in effect.	National Park Service, California Department of Parks and Recreation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Santa Monica Mountains Conservancy, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village, and Thousand Oaks, and land owners in the vicinity of the waterbodies addressed in the Nonpoint Source Implementation Section of this Basin Plan Amendment.	Regional Board adoption of TMDL.
2	Submit Notice of Intent to Comply with Conditional Waiver of Discharge Requirements, including MFAC/BMP Program and Trash Monitoring and Reporting Plan.	National Park Service, California Department of Parks and Recreation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Santa Monica Mountains Conservancy, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village, and Thousand Oaks, and land owners in the vicinity of the waterbodies addressed in the Nonpoint Source Implementation Section of this Basin Plan Amendment.	Six months from TMDL effective date. If a plan is not approved by the Executive Officer within 9 months, the Executive Officer will establish an appropriate monitoring plan.
3	Implement MFAC/BMP Program.	National Park Service, California Department of Parks and Recreation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Santa Monica Mountains Conservancy, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village, and Thousand Oaks, and land owners in the vicinity of the waterbodies addressed in the Nonpoint Source Implementation Section of this Basin Plan Amendment.	6 months from receipt of letter of approval from Regional Board Executive Officer, or the date a plan is established by the Executive Officer.

Task No.	Task	Responsible Jurisdiction	Date
4	Submit annual TMRP reports including proposal for revising MFAC/BMP for Executive Officer approval.	National Park Service, California Department of Parks and Recreation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Santa Monica Mountains Conservancy, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village, and Thousand Oaks, and land owners in the vicinity of the waterbodies addressed in the Nonpoint Source Implementation Section of this Basin Plan Amendment.	One year from receipt of letter of approval for the Trash Monitoring and Reporting Plan from Regional Board Executive Officer, and annually thereafter.
5	Reconsideration of Trash TMDL based on evaluation of effectiveness of MFAC/ BMP program.	Regional Board.	Five years from effective date of TMDL.

* At Task 3, all Responsible Jurisdictions must be attaining the zero trash target after each required trash assessment and collection event. At Task 4, all Responsible Jurisdictions must demonstrate full compliance and attainment of the zero trash target's requirement that trash is not accumulating in deleterious amounts between the required trash assessment and collection events. Based on Responsible Jurisdiction monitoring reports, the Executive Officer may adjust the minimum frequency of assessment and collection as necessary to ensure compliance between the required trash assessment and collection events.

7-37 McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL

This TMDL was adopted by:
The Regional Water Quality Control Board on October 1, 2009.

This TMDL was approved by:
The State Water Resources Control Board on December 14, 2010.
The Office of Administrative Law on May 31, 2011.
The U.S. Environmental Protection Agency on June 30, 2011.

The effective date of this TMDL is: June 30, 2011.

The elements of the TMDL are presented in Table 7-37.1 and the Implementation Plan in Table 7-37.2.

Table 7-37.1. McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL: Elements

TMDL Element	Regulatory Provisions
Problem Statement	McGrath Lake was placed on the Clean Water Act Section 303(d) list in 1998, 2002, and 2006 as impaired for organochlorine pesticides (chlordane, dieldrin, DDT and derivatives) and polychlorinated biphenyls (PCBs) in sediment and for sediment toxicity. These toxic organic chemicals bind to soil particles, are stored in the fat tissue of exposed organisms, and create long term environmental impairments. Past studies concluded that sediment toxicity in McGrath Lake was likely due to the elevated concentrations of pesticides and PCBs in sediment. Applicable Water Quality Objectives for this TMDL are narrative water quality objectives for Chemical Constituents, Bioaccumulation, Pesticides and Toxicity contained in Chapter 3, the numeric water quality objective for PCBs contained in Chapter 3 and the numeric water quality criteria promulgated in 40 CFR 131 (California Toxics Rule (CTR)). The exposure of the McGrath Lake ecosystem to chlordane, DDT, dieldrin, and PCBs in amounts exceeding the objectives and criteria has impaired the beneficial uses of the lake, including aquatic life uses (rare, threatened or endangered species and estuarine, wildlife, and wetland habitat) and recreation uses (contact and non-contact recreation and commercial and sport fishing).

TMDL Element	Regulatory Provisions
Numeric Targets	Water column targets for PCBs, chlordane, DDT, and dieldrin are based on the CTR water quality criteria for protection of human health (organisms only). These criteria are more stringent than those for the protection of aquatic life and thus will protect both aquatic life and fish consumption beneficial uses. The sediment numeric targets are derived from the Effects Range-Low (ER-Ls) guidelines compiled by the National Oceanographic and Atmospheric Administration (NOAA). The sediment toxicity impairment is addressed by these numeric targets, which are protective of aquatic life in sediment.

Pollutant	Water Column Targets (µg/L)	Sediment Targets (ng/dry g)
Chlordane	0.00059	0.5
Dieldrin	0.00014	0.02
4,4’-DDT	0.00059	1
4,4’-DDE	0.00059	2.2
4,4’-DDD	0.00084	2
Total DDT	--	1.58
Total PCBs	0.00017	22.7

TMDL Element	Regulatory Provisions
Source Analysis	A source of the pesticide and PCB loading is contaminated surface water and sediments flushing into McGrath Lake from the Central Ditch, which drains agriculture and other lands. All of the contaminants included in this TMDL are legacy pollutants. While they are no longer legally sold or used, they remain ubiquitous in the environment, bound to fine-grained particles. Irrigation and rainfall in the watershed mobilize these particles, which are loaded to McGrath Lake. Surface water (stormwater and agricultural drainage) accounts for almost half of the total recharge of the lake, while groundwater accounts for the rest of the recharge. Pesticides and PCBs have been detected in the surface water inlet to the lake (Central Ditch) but not in the groundwater from local monitoring wells. There are no point sources of pesticides or PCBs to McGrath Lake. Atmospheric deposition may be contributing PCBs. In addition to external loading, the in-situ sediments are likely a source of contaminants to the lake water column due to the high concentrations of contaminants in the sediment.
Linkage Analysis	A conceptual model identifies the assimilative capacity of McGrath Lake and links the source loading information to the numeric targets. The chemical properties of the pesticides and PCBs result in strong binding to particulate matter, therefore most of the incoming contaminants from the Central Ditch to the lake are bound to suspended solids. However, pesticide exceedances are observed in the Central Ditch even in low-flow conditions, indicating that some of the contaminants are transported to the lake in the water fraction. Therefore, there are water column and suspended sediment allocations for the Central Ditch. Once the suspended sediment settles to the lake bottom, desorption is possible due to the high contaminant concentrations, favorable environmental conditions and extended contact time (between the sediment and water). The contaminated lake sediments are toxic to benthic organisms and may also be taken up through bioturbation and feeding processes. Therefore, both external loading sources from the lake subwatershed and internal loading from contaminated lake sediments are assigned load allocations.

<table>
<tr><th>TMDL Element</th><th>Regulatory Provisions</th></tr>
<tr><td>Load Allocations</td><td>Load allocations (LAs) addressing non-point sources of pesticides and PCBs are assigned to discharges from the Central Ditch to the lake and internal sources from the lake sediments. The lake sediments are defined as bed sediments in the main body of the lake and the riparian corridor west of Harbor Boulevard.

The in-lake LAs are for concentrations in sediment only.

<table>
<tr><td>Pollutant</td><td>Load Allocation for Concentration in Lake Sediment (µg/dry kg)</td></tr>
<tr><td>Chlordane</td><td>0.5</td></tr>
<tr><td>Dieldrin</td><td>0.02</td></tr>
<tr><td>4,4’-DDT</td><td>1</td></tr>
<tr><td>4,4’-DDE</td><td>2.2</td></tr>
<tr><td>4,4’-DDD</td><td>2</td></tr>
<tr><td>Total DDT</td><td>1.58</td></tr>
<tr><td>Total PCBs</td><td>22.7</td></tr>
</table>

The Central Ditch LAs are for concentrations in both suspended sediment and water.

<table>
<tr><td>Pollutant</td><td>Water Column Load Allocation (µg/L)</td><td>Load Allocation for Concentration in Suspended Sediment (µg/dry kg)</td></tr>
<tr><td>Chlordane</td><td>0.00059</td><td>0.5</td></tr>
<tr><td>Dieldrin</td><td>0.00014</td><td>0.02</td></tr>
<tr><td>4,4’-DDT</td><td>0.00059</td><td>1</td></tr>
<tr><td>4,4’-DDE</td><td>0.00059</td><td>2.2</td></tr>
<tr><td>4,4’-DDD</td><td>0.00084</td><td>2</td></tr>
<tr><td>Total DDT</td><td>--</td><td>1.58</td></tr>
<tr><td>Total PCBs</td><td>0.00017</td><td>22.7</td></tr>
</table>
</td></tr>
<tr><td>Margin of Safety</td><td>The uncertainties associated with this TMDL are due to limited data on the amount and media by which PCBs and pesticides are entering the lake and the extent to which these contaminants are already in the lake. The seasonal and annual variability in the hydrologic budget also creates uncertainty. To address these uncertainties, an implicit margin of safety is applied. Conservative assumptions were used to calculate the loading to the lake and more the protective ER-L sediment quality guidelines were used for the sediment numeric targets.</td></tr>
</table>

TMDL Element	Regulatory Provisions
Seasonal Variations and Critical Conditions	As the contaminants of concern for this TMDL are transported to the lake by the mobilization of sediment, it is expected that the greatest influx of PCBs and pesticides occurs during periods of increased runoff from the watershed. Due to the artificial interference in the watershed hydrologic cycle due to agricultural activities, peak runoff may not correspond to the southern California wet season. Seasonal variations and critical conditions are addressed by the use of concentration-based load allocations. However, due to the bioaccumulative properties of the pollutants, effects occur over extended time periods, which minimizes the importance of seasonal variations.
Monitoring	**<u>Monitoring Program</u>** The monitoring program shall measure the progress of pollutant load reductions and improvements in water and sediment quality. The monitoring program shall: • Determine attainment of numeric targets for PCBs and pesticides; • Determine compliance with the load allocations for PCBs and pesticides; and • Monitor the effect of implementation actions on lake water and sediment quality. The monitoring program shall consist of two phases. The first phase will focus on sampling the Central Ditch (for the first 10 years of the TMDL implementation schedule) and will be conducted by the responsible parties for the Central Ditch LAs. For the remaining portion of the TMDL implementation schedule, required water and sediment samples will be collected from the Central Ditch by "responsible parties" for the Central Ditch LAs, while required water and sediment samples will be collected from the lake as prescribed by the McGrath Lake Work Plan (MLWP) developed pursuant to a Memorandum of Agreement (MOA) entered into by and between "cooperative parties" and the Regional Board. The "responsible parties" and "cooperative parties" are defined in the implementation section below. <u>Phase 1</u> Phase 1 requires the development of a monitoring and reporting plan (MRP) to comply with the TMDL requirements. The MRP shall propose a monitoring frequency for water and sediment sampling that will characterize the variability in water and sediment quality observed in the Central Ditch. Water samples will be analyzed for the following constituents: • Total Organic Carbon • Total Suspended Solids • Total PCBs • DDT and Derivatives • Dieldrin • Total Chlordane

TMDL Element	Regulatory Provisions
Monitoring (continued)	Sediment samples will be analyzed for the following constituents: • Total Organic Carbon • Total PCBs • DDT and Derivatives • Dieldrin • Total Chlordane The annual monitoring reports will summarize proposed changes to the MRP based on the results of the previous year's monitoring. Sampling frequency may be reduced during future years once characterization of the variability in water and sediment quality has been achieved. In addition to the constituents above, general water chemistry (temperature, dissolved oxygen, pH and electrical conductivity) and a flow measurement will be required at each sampling event. Responsible parties for phase 1 monitoring shall submit a MRP plan to assess compliance with LAs and a Quality Assurance Project Plan (QAPP). The MRP and QAPP must be submitted to the Executive Officer for approval within six months of the effective date of the TMDL. The QAPP shall include protocols for sample collection, standard analytical procedures, and laboratory certification. All samples shall be collected in accordance with Surface Water Ambient Monitoring Program (SWAMP) protocols, where available or alternative protocols proposed by dischargers and approved by the Executive Officer. Monitoring shall begin 90 days after the Executive Officer has approved the MRP and QAPP. At the time of TMDL adoption, several of the constituents of concern had numeric targets lower than the laboratory detection limits. As analytical methods and detection limits continue to improve (i.e. development of lower detection limits) and become more environmentally relevant, responsible parties shall incorporate new analytical methods with lower detection limits in the MRP and the QAPP. A monitoring report shall be prepared and submitted to the Regional Board annually within three months after the completion of the final sampling event of the year. <u>Phase 2</u> The sampling, analysis and flow measurements begun in Phase 1 will continue. Additionally, samples will be collected from within the lake. Water column and surficial sediment (top 2 cm) samples will be collected at the northern end of the lake and from the deepest portion of the lake. All samples will be collected in accordance with SWAMP protocols. Cooperative parties shall only commence, participate or fund the Phase 2 monitoring as provided in the MLWP.

TMDL Element	Regulatory Provisions
Monitoring (continued)	Water samples will be analyzed for the following constituents: • Total Organic Carbon • Total Suspended Solids • Total PCBs • DDT and Derivatives • Dieldrin • Total Chlordane Sediment samples will be analyzed for the following constituents: • Total Organic Carbon • Total PCBs • DDT and Derivatives • Dieldrin • Total Chlordane • Toxicity (if toxicity is determined, a TIE shall be completed to elucidate the cause of the toxicity) Samples from the lake will be collected annually. The annual reports required for Phase 1 will continue during Phase 2. Additional monitoring may be required depending on which implementation option is chosen. Three years from the effective date of the TMDL, cooperative parties must submit the MLWP as discussed in the implementation section below. At the time of TMDL adoption, several of the constituents of concern had numeric targets lower than the laboratory detection limits. All required monitoring under Phase 1 and Phase 2 shall incorporate new analytical methods, once commercially available with lower detection limits, in the MRP and the QAPP. A monitoring report shall be prepared and submitted to the Regional Board annually within three months after the completion of the final sampling event of the year.
Implementation Plan	Compliance with this TMDL will require the elimination of pollutant loads in toxic amounts from the Central Ditch to the lake and identification and implementation of strategies to remediate the contaminated sediments at the bottom of the lake. Table 7-37.2 contains a schedule for cooperative parties to implement a MOA to jointly develop the MLWP to implement strategies to remediate the contaminated lake sediments and achieve lake sediment load allocations. I. Implementation and Determination of Compliance with the Central Ditch LAs for Agricultural Non-point Source Discharges The Central Ditch load allocations assigned to agriculture non-point source dischargers will be implemented through the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Conditional Waiver) or other appropriate Regional Board Orders. The load allocations for the Central Ditch shall be incorporated into the Conditional Waiver or other appropriate Regional Board Orders.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	It is likely that a combination of implementation measures will be needed to achieve the LAs. The Central Ditch implementation actions may include, but are not limited to the following: • On-Farm BMPs • Regional Sub-Watershed BMPs • Regional Treatment System • Redirect Agriculture Discharge The estimated costs for on-farm BMPs such as buffer crops, filter strips, and sedimentation basins are approximately \$373/acre of BMP, \$1002/acre of BMP, and \$10,000/acre of BMP, respectively. The estimated costs for regional sub-watershed BMPs, such as converting the Central Ditch to a grassed waterway or converting the dirt road that runs along the Central Ditch into a filter strip, are approximately \$1,288/ per acre of BMP and \$1002/per acre of BMP, respectively. The estimated cost of a regional treatment system to address the Central Ditch water is about \$151,536/year. The estimated costs to redirect the agriculture discharge toward a nearby canal are \$612,611 (open ditch) to \$1,287,402 (piped diversion). Potential sources of financing for these implementation alternatives, such as Clean Water Act section 319(h) grant funding, are discussed in Chapter 4. As discussed in Chapter 4, the U.S. Department of Agriculture Soil Conservation Service and the Resource Conservation Districts provide information on, and assistance in, implementing BMPs. Agricultural Dischargers will be considered in compliance with the TMDL LAs if they comply with all provisions of the Conditional Waiver established to implement the LAs , or those of any alternative regulatory order, if any, that may be established to implement the LAs in lieu of the Conditional Waiver. II. Implementation of Memorandum of Agreement to Develop McGrath Lake Work Plan and Determination of Compliance with LAs for Contaminated Lake Sediments The contaminated lake sediment LAs may be implemented through a MOA, which the Executive Officer is authorized to negotiate and execute, provided it is consistent with the following: The MOA shall detail the voluntary efforts that will be undertaken to attain the load allocations. The MOA shall comply with the <u>Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options</u> ("Policy"), including part II, section 2 (c)(ii) and related provisions, and shall be consistent with the requirements of this TMDL. If the MOA is timely adopted in accordance with the implementation schedule below, the program described in the MOA shall be deemed "certified", pursuant to the Policy, subject to the conditions of Policy section 2 (e). The MOA shall include development of the MLWP, which must be approved by the Executive Officer, and may be amended with Executive Officer approval, as necessary. Implementation of the MOA shall be reviewed annually by the Executive Officer as part of the MRP annual reports.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	The purpose of the MOA is not to create evidence of responsibility or ascertain legal liability for subsequent remediation of the lake sediments, but rather to organize stakeholders who have an interest in the remediation of the lake sediments. To be a valid non-regulatory implementation program adopted by the Regional Board, the MOA shall include the following requirements and conditions: • The MOA shall direct development of a MLWP that addresses the impaired waterbody as approved by the Executive Officer. • The MOA shall outline the roles and responsibilities of the Regional Board and each cooperative party. • The MOA shall contain conditions that require trackable progress on attaining load allocations and numeric targets. A timeline shall be included that identifies the point(s) at which Regional Board regulatory intervention and oversight will be triggered if the pace of work lags or fails. • The MOA shall contain a provision that it shall be revoked based upon findings that the program has not been adequately implemented, is not achieving its goals, or is no longer adequate to restore water quality. • The MOA shall be consistent with the California Policy for Implementation and Enforcement of the Non-point Source Pollution Control Program, including but not limited to, the "Key Elements of a Non-point Source Pollution Control Implementation Program". Pursuant to the terms of the MOA, the cooperative parties and the Regional Board will work jointly to develop the MLWP and remediate the lake sediments. The purpose of the MLWP is to set forth strategies to achieve lake sediment load allocations in a manner that is beneficial to subwatershed landowners and the public in general. To the satisfaction of the Executive Officer, the MLWP shall meet the following criteria: • Three years from the effective date of the TMDL cooperative parties shall submit a MLWP for approval by the Executive Officer. • The MLWP shall include identification of implementation measures that will achieve lake sediment LAs. • The MLWP shall include any additional monitoring needed to assess the effectiveness of the MLWP's chosen implementation strategies. • The MLWP shall include a MRP and QAPP for phase 2 monitoring. • The MLWP shall include a strategy to secure funds necessary to remediate the lake sediments and achieve lake sediment allocations.

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	• The MLWP shall include tasks and a clear timeline for task completion leading to attainment of lake sediment LAs. The roles and responsibilities of each cooperative party shall also be outlined in the MLWP. • The MLWP shall consider and address the potential impacts of lake sediment remediation strategies on the implementation of the McGrath Beach Bacteria TMDL and ongoing restoration efforts at McGrath State Beach. • The MLWP shall achieve compliance with the load allocations through the implementation of lake management strategies to reduce and manage internal pesticide and PCBs sources from lake bed sediments. The lake management implementation actions may include: • Sediment Capping; • Dredging/Hydraulic Dredging; • Monitored Natural Attenuation; or • Other appropriate means of implementation. The Executive Officer may require a revised MLWP to reflect the results of data obtained through TMDL implementation. III. APPLICATION OF ALLOCATIONS A. Responsible parties for the Central Ditch LAs are the agricultural dischargers in the McGrath Lake sub-watershed. B. Responsible parties for the lake sediment LAs have not yet been identified. Instead, cooperative parties for the lake sediment LAs are identified, not as responsible parties or as dischargers, but as landowners in the subwatershed who may execute a MOA jointly with the Regional Board for the development of the MLWP so that lake sediment allocations can be achieved in a manner that is in the best interest of both the subwatershed landowners and the public in general. Cooperative parties for the lake sediment LAs include: • State of California Department of Parks and Recreation • McGrath Family (owners of the Central Ditch west of Harbor Blvd and the northern end of the lake) • Agricultural Landowners in the McGrath Lake sub-watershed • Ventura Regional Sanitation District (Bailard Landfill)

TMDL Element	Regulatory Provisions
Implementation Plan (continued)	If a MOA is not established by and between cooperative parties and the Regional Board within two years of the effective date of the TMDL, or the cooperative parties do not comply with the terms of the MOA, or if the MOA and MLWP are not implemented or otherwise do not result in attainment of load allocations consistent with the provisions and schedule of the TMDL, the Executive Officer shall initiate an investigation, with input from current landowners, to (1) identify the responsible parties, whether named in this TMDL or not, whose discharges of the legacy pollutants have caused or contributed to the impairment of the lake; (2) ascertain the whereabouts and capacities of those responsible parties and/or their successors; (3) determine the parties to whom responsibility for remediation of sediments should be assigned; and (4) issue appropriate regulatory orders to those responsible parties. In addition, a comprehensive review of the MOA by the Executive Officer shall take place five years from the effective date of the MOA. The purpose of this review is to ensure adequate progress pursuant to the timeline established in the MOA on development of the MLWP and ultimately attainment of the lake sediment load allocations. If the Executive Officer determines that adequate progress has not been made, the Regional Board shall initiate the investigation described above. If the Executive Officer is unable to identify the responsible parties per the investigations above, then the TMDL shall be reconsidered.

Table 7-37.2 McGrath Lake PCBs and Pesticides TMDL: Implementation Schedule

Task Number	Task	Deadline
1	Responsible parties assigned Central Ditch LAs shall submit a Monitoring and Reporting Plan (MRP) to the Executive Officer for review and approval to address Phase 1 monitoring.	6 months from the effective date of the TMDL
2	Responsible parties assigned Central Ditch LAs shall begin monitoring as outlined in the approved MRP.	90 days from the date of MRP approval
3	Responsible parties assigned Central Ditch LAs shall submit annual monitoring reports. Reports shall be submitted within three months after the completion of the final sampling event of the year.	Annually
4	Cooperative parties shall enter into a Memorandum of Agreement (MOA) with the Regional Board to implement the lake sediment LAs.	Two years from the effective date of the TMDL
5	Parties subject to the MOA shall submit a McGrath Lake Work Plan (MLWP) for review and approval by the Executive Officer.	Three years from the effective date of the TMDL
6	Parties subject to the MOA shall submit annual progress reports.	Annually from the date of MLWP approval
7	Responsible parties shall attain Central Ditch LAs.	10 years from the effective date of the TMDL
8	Begin implementation of McGrath Lake sediment remediation actions based on MLWP.	As soon as possible, but no later than 10 years from the effective date of the TMDL
9	Phase 2 monitoring shall begin as outlined in the MLWP. The results shall be included as part of the annual progress reports initiated in Task 6.	To be determined based on MLWP.
10	Lake sediment LAs shall be achieved.	14 years from the effective date of the TMDL

Chapter 8:
Groundwater Quality Management
Sustainability and Basin-specific Protection of Groundwater

Table of Contents

Introduction

Groundwater is a valuable resource in the Los Angeles Region, and is relied upon for a significant portion of municipal and domestic water supply and for agricultural, industrial and process water. The groundwater basins and sub-basins in the Los Angeles Region and their designated beneficial uses are identified in Chapter 2 of this Basin Plan. The water quality objectives to protect each of the beneficial uses are set forth in Chapter 3. The Regional Water Board programs of implementation to achieve the water quality objectives are set forth in Chapter 4.

While the regulation and oversight of the distribution of water, i.e., establishing and regulating groundwater supply, is not within the purview of the Regional Water Board, the growing focus toward promoting sustainable local water supplies further highlights the need for increased oversight to ensure water supplies of sufficient quality to support existing beneficial uses within a basin, as well as the need to protect high quality waters for future use. Thus, groundwater quality regulation and protection is conducted using a basin-wide approach that considers issues pertaining to both water quality and water supply. A leading example of this is the State Water Resources Control Board's (State Water Board's) Policy for water Quality Control For Recycled Water (Recycled Water Policy or Policy) (see Chapter 5), which promotes the increased development of recycled water projects to supplement demand, but also recognizes the potential impact of such activities on groundwater quality. The Recycled Water Policy addresses potential impacts by requiring salt and nutrient management planning.

This chapter focuses on basin/sub-basin groundwater quality management, commencing with salt and nutrient management plans.

I. Salt and Nutrient Management Plans

A. Legal Basis and Authority

The purpose of the Recycled Water Policy is to increase the use of recycled water from municipal wastewater sources that meet the definition in Water Code section 13050(n), in a manner that implements State and federal water quality laws. This policy is consistent with the State Water Board's overarching goal of promoting sustainable water supplies. The policy is also intended to encourage beneficial reuse, rather than solely disposal, of municipal wastewater.

The Policy (which is summarized in Chapter 5) recognizes the potential for increased salt and nutrient loading to groundwater basins as a result of increased recycled water use and, therefore, requires the development of regional or sub-regional salt and nutrient management plans (SNMPs) for each groundwater basin in the State. The Policy also acknowledges that recycled water may not be the sole cause of high concentrations of salts and nutrients in groundwater basins, and therefore regulation of recycled water alone may not always address such conditions. The intent of SNMPs is for salts and nutrients from all sources to be managed on a basin-wide or watershed-wide basis in a manner that ensures the attainment of water quality objectives and protection of beneficial uses.

Per the Policy, these SNMPs are to be directed and funded by local water and wastewater entities, together with local salt/nutrient contributing stakeholders, and developed through a collaborative process open to all stakeholders including the Regional Water Board .

The Policy also directs that within one year of receipt of a Salt and Nutrient Management Plan, the Regional Water Board shall consider it for incorporation into the Basin Plan, revised implementation programs, consistent with Water Code section 13242, for those groundwater basins within its region where water quality objectives for salts or nutrients are being exceeded, or where conditions are such that there is the threat that water quality objectives will be exceeded. The implementation program(s) shall be based on the salt and nutrient management plans required by the Recycled Water Policy.

B. Elements of a Salt and Nutrient Management Plan

The **required elements of a SNMP**, as specified by the Recycled Water Policy include:

a) Source identification/source loading and assimilative capacity estimates;
b) Implementation measures that integrate water quantity and quality, groundwater and surface water, and recharge area protection in order to maintain a sustainable long-term supply of water where salt and nutrient loadings are managed for multiple beneficial uses;
c) Consideration of water recycling/stormwater recharge/use;
d) Anti-degradation analyses demonstrating that the projects included within the plan will collectively, satisfy the requirements of State Water Board's Resolution No. 68-16, "Statement of Policy with respect to Maintaining High Quality of Waters in California";
e) Development of a basin-wide monitoring plan to provide to provide reasonable, cost-effective means of determining whether groundwater quality objectives for salts, nutrients and other constituents of concern as identified in the SNMP are being achieved.; and
f) Annual monitoring of Constituents of Emerging Concern (CECs) including several types of chemicals that may be classified as (i) persistent organic pollutants, (ii) pharmaceuticals and personal care products, (iii) veterinary medicines, (iv) endocrine disruptors, and (v) others.

C. CEQA Requirements

The Policy requires that salt and nutrient management plans developed for basin/sub-basins comply with the California Environmental Quality Act (CEQA), Cal Pub. Res. Code §§ 21000 et seq. and associated regulations set forth in California Code of Regulations, Title 14 §§ 15000 et seq. CEQA requires state and local agencies to evaluate the potentially significant environmental impacts of proposed projects and identify measures to avoid or mitigate these impacts where feasible. Pursuant to Public Resources Code section 21080.5, the Resources Agency has approved the Regional Boards' basin planning process as a "certified regulatory program" that adequately satisfies the CEQA requirements for preparing environmental documents (14 Cal. Code Regs. § 15251(g); 23 Cal. Code Regs. § 3782). A programmatic substitute environmental document (SED) has been prepared and considered by the Regional Water Board for each of the implementation programs below. SNMP proponents may also be required to comply with other CEQA requirements related to specific projects for salt and nutrient management contained in their plans.

D. Organization of Section

As Salt and Nutrient Management Plans are developed for the different basin/sub-basin groups, this Chapter will be amended to include summaries of the salt and nutrient management measures contained in each SNMP in chronological order of Board approval.

II. Basin-Specific Salt and Nutrient Management Plans

A. Central Basin and West Coast Basin

Adopted by the California Regional Water Quality Control Board, Los Angeles Region on February 12, 2015.

Approved by:

The State Water Resources Control Board on [Insert Date].
The Office of Administrative Law on [Insert Date].

The program of implementation[1] described below is based on the Salt and Nutrient Management Plan for the Central Basin and West Coast Basin developed by the Water Replenishment District of Southern California (WRD) and other agencies, including, Los Angeles County Department of Public Works, West Basin Municipal Water District, Los Angeles Department of Water and Power, and the County Sanitation Districts of Los Angeles County. The Salt and Nutrient Management Plan and this program of implementation satisfy the Recycled Water Policy requirements for Salt and Nutrient Management Plans. This program of implementation applies to groundwater basin(s) with the designated beneficial use of municipal and domestic supply (MUN).

The following summarizes essential elements of the Salt and Nutrient Management Plan for the Central Basin and West Coast Basin. Further details may be found in the full document at: http://www.waterboards.ca.gov/losangeles/water_issues/programs/salt_and_nutrient_management/index.shtml

Background

The Central Basin and West Coast Basin are located in the southern portion of Los Angeles County and provide approximately 40 percent of the overall water supply for the nearly four million residents and businesses in the 43 cities overlying the basins. The Central Basin covers approximately 280 square miles and is hydrogeologically divided into four subareas including the Los Angeles Forebay, Montebello Forebay, Whittier Area, and Pressure Area (Figure 8.1-1). The forebays are areas where confining layers are thin or absent and infiltration of precipitation

[1] The Recycled Water Policy refers to "revised implementation plans" for adoption into regional basin plans pursuant to Water Code section 13242. Water Code section 13242 uses the term "program of implementation." Pursuant to Water Code section 13242, "[t]he program of implementation for achieving water quality objectives shall include, but not be limited to:
(a) A description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate action by any entity, public or private.
(b) A time schedule for the actions to be taken.
(c) A description of surveillance to be undertaken to determine compliance with objectives."

and surface water can recharge deeper potable water supply aquifers. The Montebello Forebay is the most significant area of recharge in the Central Basin. The Central Basin Pressure Area, the largest of the four subareas, is characterized by aquifers that are generally confined by relatively impermeable clay layers over most of the area, but areas of semi-permeable confining layers allow some interaction between the aquifers (DWR, 1961). The West Coast Basin covers approximately 140 square miles. Aquifers in the West Coast Basin are generally confined and receive the majority of their natural recharge from adjacent groundwater basins or from the Pacific Ocean (seawater intrusion). The Newport-Inglewood Uplift and associated faulting acts as a partial barrier to groundwater flow between the Central Basin and West Coast Basin.

Basin Adjudications and Management

From 1900 through the 1950s, overpumping of the basins caused declines in groundwater levels, seawater intrusion, and other groundwater management problems related to supply and quality. To remedy these problems, the courts adjudicated the two basins in the early 1960s and set a limit on allowable groundwater production. The adjudicated pumping amounts are greater than the natural replenishment of the groundwater aquifers, creating an annual deficit or annual overdraft, under natural recharge conditions. Accordingly, the WRD was established in 1959 to provide the needed supplemental replenishment water to make up the difference between the adjudicated amounts and the natural safe yield. Since then multiple measures have been implemented to manage groundwater supply and quality and prevent seawater intrusion, as described below.

TABLE 8.1-1: HISTORICAL BASIN MANAGEMENT MEASURES

Management Measure	Function
Montebello Forebay Spreading Grounds (MFSG)	To provide artificial groundwater recharge. Water is comprised of stormwater (since 1930s), imported water (since 1950s), and recycled water (since 1960s).
West Coast Basin Seawater Intrusion Barrier (WCBB)	To create a pressure ridge or subsurface water wall to block further seawater intrusion through a series of injection wells constructed by Los Angeles County (LAC) along the western coast of the West Coast Basin in the 1950s
Dominguez Gap Seawater Intrusion Barrier (DGB)	To create a pressure ridge or subsurface water wall to block further seawater intrusion through a series of injection wells constructed by Los Angeles County (LAC) along the southern coast of the West Coast Basin in the 1970s. Currently, treated imported water and advanced treated recycled water are injected.
Alamitos Gap Seawater Intrusion Barrier (AGB)	To create a pressure ridge or subsurface water wall to block further seawater intrusion through a series of injection wells constructed by Los Angeles County (LAC) along the southern coast of the Central Basin in the 1960s. Currently, treated

Management Measure	Function
	imported water and advanced treated recycled water are injected.
De-salters	For salinity management in the West Coast Basin, the Brewer De-salter and Goldsworthy De-salter began operating in 1993 and 2002, respectively, to pump and treat brackish groundwater for potable supply.

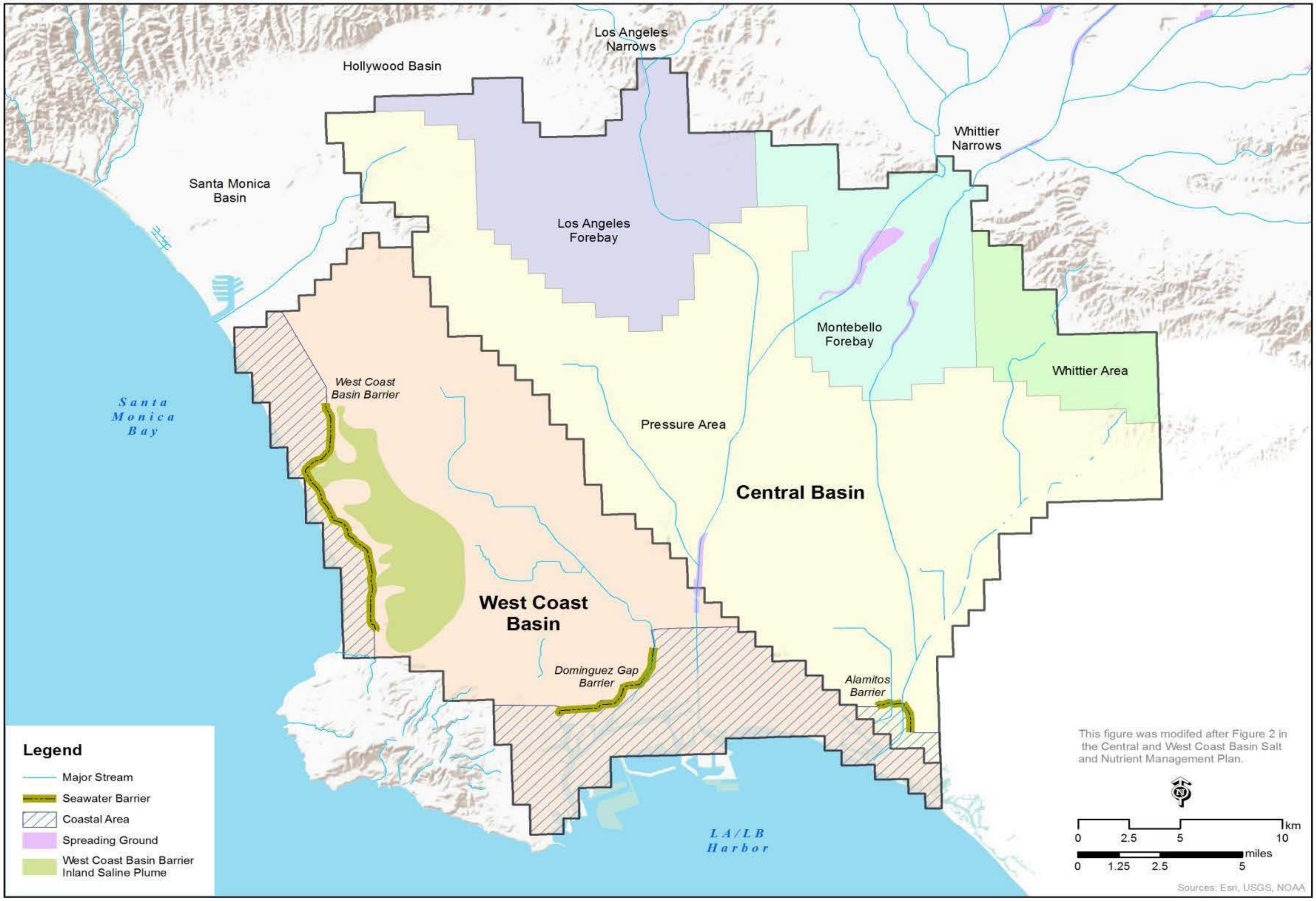

Figure 8.1-1. Central Basin and West Coast Basin Subareas and Coastal Areas (modeled).

Participating Agencies

Stakeholders in the Central Basin and West Coast Basin that participated in the SNMP process and collaborated to develop the SNMP include water and wastewater entities, regulatory agencies, water purveyors, water associations, and environmental groups. The WRD was the lead agency managing and coordinating development of the SNMP. Funding partners for the SNMP consist of WRD, Los Angeles County Department of Public Works, West Basin Municipal Water District, Los Angeles Department of Water and Power, and the County Sanitation Districts of Los Angeles County (CSDLAC).

Sources of Water in the CBWCB

Sources of water for use and recharge in the CBWCB include surface water/stormwater, imported water, groundwater, and recycled water. Other minor potential sources of groundwater recharge include leaking pipes, septic systems, and stream losses (not associated with managed aquifer recharge).

TABLE 8.1-2: CONTRIBUTIONS OF SOURCE WATERS TO THE CENTRAL AND WEST COAST BASINS

TYPE	SOURCE	CONTRIBUTION TO GROUNDWATER
Surface water	Los Angeles River	Negligible - lined throughout most of the overlying area
	Rio Hondo	Negligible - lined throughout the overlying area
	San Gabriel River	In-stream recharge along the San Gabriel River in the Montebello Forebay, and at the Dominguez Gap Spreading Grounds
Storm water	Precipitation from overlying area	Active capture and recharge through replenishment operations the MFSG, as well as stormwater retention basins and LID projects in the area
Imported water	Colorado River (CR) and State Water Project (SWP)	Applied to the Montebello Forebay spreading grounds (Untreated imported water) Injection into the three seawater intrusion barriers (Treated Imported Water)
	Owens Valley-Mono Basin	Water supply in the CBWCB
	Groundwater extracted from the San Gabriel Basin	Water supply in the CBWCB
Groundwater	Extracted from the CBWCB	Water supply and irrigation (small percentage)
	Subsurface flow from adjacent groundwater basins and minor ocean water inflow	Recharge of the CBWCB

TYPE	SOURCE	CONTRIBUTION TO GROUNDWATER
Recycled Water	Pomona, San Jose Creek, and Whittier Narrows Water Reclamation Plants (WRPs)	Managed Aquifer Recharge in the Montebello Forebay
	Tertiary-treated recycled water from CSDLAC's Long Beach, Los Coyotes, and San Jose Creek WRPs	Irrigation and commercial/industrial applications in the Central Basin
	Advanced Water Treatment (AWT) recycled water produced by the Leo J. Vander Lans Advanced Water Treatment Facility	Injected at the AGB
	Tertiary treated and AWT recycled water from Edward C. Little Water Recycling Facility (WRF) .	Irrigation (tertiary-treated) in the West Coast Basin Injection (AWT) at the WCBB
	AWT recycled water from Terminal Island Water Reclamation Plant/Advanced Water Purification Facility (TIWRP)	Injection at the DGB

Groundwater outflow from the Central Basin and West Coast Basin includes:

- Pumping, including extraction associated with the de-salters,
- Subsurface outflow to adjacent basins and the ocean, and
- Groundwater discharge to surface water.

Salt and Nutrient Loading to the Central Basin and West Coast Basin

The mass balances (inputs and outflows) for total dissolved solids (TDS), chloride, and nitrate-N for a 10-year baseline period (Water Years 2000-01 to 2009-10) are presented below.

Table 8.1-3a: Salt and Nutrient Balance in the Central Basin (2000-01 through 2009-10)

Source Water	TDS		Chloride		Nitrate	
	(tons)	%	(tons)	%	(tons)	%
Spreading Grounds	65,880	48.9	13,125	57.2	307.6	73.4
Seawater Barrier	2,227	1.7	447	1.9	4.8	1.2
Precipitation Infiltration	3,429	2.5	457	2.0	3.8	0.9
Mountain Front Recharge	2,191	1.6	314	1.4	13.6	3.2
Irrigation Return Flows	31,643	23.5	4,601	20.0	4.9	1.2
Subsurface Inflow	29,478	21.9	4,012	17.5	84.2	20.1
Total Inflow	**134,849**	**100**	**22,956**	**100**	**419.0**	**100**
Groundwater Production	-130,042	97.3	-19,787	96.9	-110.3	99.1
Subsurface Outflow	-3,621	2.7	-537	3.1	-0.9	0.8
Total Outflow	**-133,663**	**100**	**-17,323**	**100**	**-111.3**	**100**
Annual Change in Mass	**1,186**	**-**	5,633	**-**	**307.7**	**-**

Table 8.1-3b: Salt and Nutrient Balance in the West Coast Basin (2000-01 through 2009-10)

Source Water	TDS		Chloride		Nitrate	
	(tons)	%	(tons)	%	(tons)	%
Spreading Grounds	127	0.3	17	0.1	0.8	2.2
Seawater Barriers	8,830	17.6	1,977	10.4	15.3	42.6
Precipitation Infiltration	1,689	3.4	225	1.2	1.9	5.3
Mountain Front Recharge	804	1.6	115	0.6	5.0	13.9
Irrigation Return Flows	12,716	25.4	3,179	16.6	2.2	6.1
Subsurface Inflow*	25,924	51.8	13,586	71.1	10.7	29.8
Total Inflow	**50,090**	**100**	**19,099**	**100**	**35.9**	**100**
Groundwater Production	-57,937	100	-28,999	100	-4.0	100
Subsurface Outflow	0	0	0	0	0.0	0
Total Outflow	**-57,937**	**100**	**-28,999**	**100**	**-4.0**	**100**
Annual Change in Mass	**-7,847**	**-**	**-9,900**	**-**	**31.9**	**-**

Groundwater Quality and Assimilative Capacity in Central Basin and West Coast Basin

Monitoring data from wells in the Central Basin and West Coast Basin, from January 2007 through mid-2012, were used to calculate current groundwater quality. The water quality data set includes semi-annual monitoring of the network of WRD nested wells and other data sets such as the State Water Board's Division of Drinking Water (formerly the California Department of Public Health) well database. For each basin, two average concentrations were calculated: one average includes the coastal areas (i.e., areas seaward of the barriers) and the other average excludes these coastal areas). For the West Coast Basin, a third average groundwater quality estimate was calculated excluding the WCBB-inland saline plume and coastal areas in order to evaluate the impact of this saline plume on overall basin groundwater quality (Figure 8.1-4a).

TABLE 8.1-4A: GROUNDWATER QUALITY IN THE CENTRAL AND WEST COAST BASINS (2007-2012)

	Existing Average Concentration (mg/l)		
Location	**TDS**	**Cl**	**NO3-N**
Central Basin Water Quality Objectives	**700**	**150**	**10**
Los Angeles Forebay	640	81	0.15
Montebello Forebay	534	88	1.13
Whittier Area	1007	121	0.57
Central Basin Pressure Area (including Coastal Area)	485	65	0.10
Central Basin Pressure Area (excluding Coastal Area)	470	55	0.10
Central Basin (including Coastal Area)	538	73	0.28
Central Basin (excluding Coastal Area)	529	67	0.28
West Coast Basin Water Quality Objectives	**800**	**250**	**10**
West Coast Basin (including Coastal Areas)	1424	660	0.04
West Coast Basin (excluding Coastal Areas)	890	306	0.05
West Coast Basin (excluding Coastal Areas and inland saline plume)	747	224	0.05

The average (2007-2012) TDS, chloride, and nitrate-N concentrations for each subarea/layer and for the Central Basin and West Coast Basin both with and without the coastal areas, and the West Coast Basin without the coastal areas and without the WCBB inland saline plume were compared to the applicable basin water quality objectives to determine the existing available assimilative capacity (Table 8-1.4b).

TABLE 8.1-4B: GROUNDWATER ASSIMILATIVE CAPACITY FOR TDS, CHLORIDES AND NITRATES IN THE CENTRAL AND WEST COAST BASINS (2007-2012)

	Assimilative Capacity (mg/l)		
Location	**TDS**	**Cl**	**NO3-N**
Central Basin Water Quality Objectives	**700**	**150**	**10**
Los Angeles Forebay	60	69	9.85

Location	Assimilative Capacity (mg/l)		
	TDS	**Cl**	**NO3-N**
Montebello Forebay	166	62	8.87
Whittier Area	-307	29	9.43
Central Basin Pressure Area (including Coastal Area)	215	85	9.90
Central Basin Pressure Area (excluding Coastal Area)	230	95	9.90
Central Basin (including Coastal Area)	162	77	9.72
Central Basin (excluding Coastal Area)	171	83	9.72
West Coast Basin Water Quality Objectives	**800**	**250**	**10**
West Coast Basin (including Coastal Areas)	-624	-410	9.96
West Coast Basin (excluding Coastal Area)s	-90	-56	9.95
West Coast Basin (excluding Coastal Areas and inland saline plume)	53	26	9.95

Salt and Nutrient Management Measures in the Central and West Coast Basins

Existing salt and nutrient management measures in the Central Basin and West Coast Basin can be broadly categorized into actions that improve source waters to the groundwater basin, improve stormwater capture, and/or increase recycled water use (Table 8.1-5a).

TABLE 8.1-5A: CURRENT SALT AND NUTRIENT MANAGEMENT MEASURES IN THE CENTRAL AND WEST COAST BASINS

Type	Components
Improve Surface Water Quality	Compliance with TMDL requirements, stormwater best management practices, Low Impact Development, water quality monitoring, education & outreach
Improve Imported Water Quality	Salinity Source Water Control Program (Metropolitan Water District of Southern California), Education & Outreach (Southern California Salinity Coalition), water quality monitoring
Improve Recycled Water Quality	Nitrogen treatment, industrial source controls, water quality monitoring, public education on water softeners, compliance with existing permits and regulations
Improve Groundwater Quality	Seawater intrusion barriers, Desalters, LA County First Flush Policy, water quality monitoring, basin adjudication
Improve Surface Water Capture	Montebello Forebay Spreading Grounds (MFSG), Dominguez Gap Spreading Grounds (DGSG), Torrance stormwater retention ponds
Increased Recycled Water Use	Advanced treated recycled water at seawater barriers, recycled water at MFSG, recycled water for irrigation and industrial uses

Planned implementation projects include increased groundwater recharge at the seawater barriers, increased volumes of groundwater treatment by de-salters, and increased stormwater recharge (Table 8.1-5b). These projects are expected to be completed by the 2025.

TABLE 8.1-5B: MAJOR PLANNED (FUTURE) SALT AND NUTRIENT PROJECTS AND MANAGEMENT STRATEGIES

Project Description*	Estimated Date	Lead Agency(s)
Central Basin		
100% Advanced treated (AWT) Recycled Water (RW) at Alamitos Gap Barrier - increased recharge volume, increased injection volumes and replacement of imported water with advanced treated recycled water	2014/15	Water Replenishment District of Southern California
Groundwater Reliability Improvement Program (GRIP) for the Montebello Forebay Spreading Grounds • GRIP RW Project A – Replace recharge of 21,000 AFY of imported water with 11,000 AFY tertiary RW and 10,000 AFY AWT RW • GRIP RW Project B – Replace recharge of 21,000 AFY of imported water with 21,000 AFY tertiary RW	2017/2018 2015	Water Replenishment District of Southern California
Increased RW** for irrigation • Increase the volumes of recycled water for irrigation to reduce reliance on imported water and groundwater supplies	On-going	County Sanitation Districts of Los Angeles County
West Coast Basin		
100% Advanced Treated Recycled Water at West Coast Basin Barrier - increased recharge volume, increased injection volumes and replacement of imported water with advanced treated recycled water	2015	West Basin Municipal Water District
100% Advanced Treated Recycled Water at Dominguez Gap Barrier - increased recharge volume, increased injection volumes and replacement of imported water with advanced treated recycled water	2018/19	City of Los Angeles
Expansion of Goldsworthy De-salter and increased groundwater pumping for treatment by the Goldsworthy De-salter and Brewer De-salter	2015	Water Replenishment District of Southern California
Increased recharge at Dominguez Gap Spreading Grounds	2015	Los Angeles County Department of Public Works
Increased use of recycled water** for irrigation	On-going	County Sanitation Districts of Los Angeles County

***** These projects are expected to be implemented by or before the SNMP 2025 planning horizon.
** Using recycled water quality at Secondary MCLs for TDS and chloride and MCLs for nitrate-N..

Projected Impacts of Future Projects on Water Quality

A salt and nutrient management mixing model was developed to simulate/estimate groundwater quality over the planning period (through 2025). The mixing model was also used to evaluate the effects of planned future projects on overall groundwater quality and use of assimilative capacity in the CBWCB through WY 2024-25. The mixing model was developed in Microsoft Excel™ and consisted of a set of linked spreadsheets used to represent "continuously-stirred" mixing volumes for basins/subareas, and vertical modellayers.

The estimated current groundwater volume (provided by the MODFLOW regional groundwater flow model [USGS, 2003 and CH2MHILL, 2012b]) and associated salt and nutrient mass in storage (estimated from existing average groundwater quality) within the Central and West Coast Basins served as initial inputs into the mixing model. Several scenarios were evaluated. Results of the recommended scenario and the most likely alternative are provided in Table 8.1-6.

TABLE 8.1-6: PROJECTED IMPACT OF SALT AND NUTRIENT MANAGEMENT MEASURES ON BASIN WATER QUALITY

Basin/sub-basin	Impact of Projected Baseline Conditions & Recommended Future Projects (with GRIP A)*			Impact of Projected Baseline Conditions & Recommended Future Projects (with GRIP B)*		
Change (2010 to 2025) (mg/L)	**TDS**	**Cl**	**NO3-N**	**TDS**	**Cl**	**NO3-N**
Los Angeles Forebay	-0.6	1.6	0.15	-0.5	1.6	0.15
Montebello Forebay	-66.1	-0.7	0.16	-47.1	4.0	0.22
Whittier Area	-41.5	-3.1	0.05	-41.5	-3.1	0.05
Central Basin Pressure Area	18.8	8.2	0.13	20.0	8.4	0.14
Central Basin						
Change (2010 to 2025) (mg/L)	**1.1**	**5.6**	**0.14**	**4.7**	**6.5**	**0.15**
Assimilative Capacity Used (2010 to 2025) (%)	**0.7%**	**6.7%**	**1.4%**	**2.8%**	**7.8%**	**1.5%**
West Coast Basin						
Change (2010 to 2025) (mg/L)	**-56.8**	**-34.1**	**0.06**	**-56.7**	**-34.1**	**0.06**
Assimilative Capacity Used (2010 to 2025) (%)	**NC**	**NC**	**0.6%**	**NC**	**NC**	**0.6%**

TDS - total dissolved solids
AWT - advanced water treatment
MCL - maximum contaminant level
Cl - chloride
SMCL - secondary MCL
NO_3-N - nitrate as nitrogen
mg/L - milligrams per liter
NC - No assimilative capacity available
GRIP - Groundwater Reliability Improvement Program
GRIP A – GRIP Recycled Water Project A
GRIP B - GRIP Recycled Water Project B
"Overall Scenario" quantifies the impacts of the indicated future project/scenario in combination with existing projects in the CBWCB, i.e. including average baseline conditions (No Future Projects Scenario) continued through the future planning period
*Values reflect recycled water quality limits at secondary MCLs for TDS and chloride and MCL for nitrate

Salt and Nutrient Load Limits

The Central and West Coast Basins are currently being managed in a manner that addresses existing TDS and chloride impairments in localized areas, and proposes to maintain TDS, chloride and nitrate levels in the other areas of the basin below water quality objectives. Therefore assignment of allocations for salt and nutrient loading is not warranted at this time.

Monitoring Program

The SNMP Monitoring Program was developed based on WRD's Regional Groundwater Monitoring Program. Seventy (70) WRD nested groundwater monitoring wells (referred to as the SNMP monitoring wells) at 13 locations throughout the CBWCB were selected for the purpose of salt and nutrient monitoring and reporting (see Figure 8.1-2). Elements of the program are laid out in Table 8.1-7.

TABLE 8.1-7: MONITORING PROGRAM ELEMENTS

<table>
<tr><th>Element</th><th>Description</th></tr>
<tr><td>Responsible Agency</td><td>Water Replenishment District of Southern California</td></tr>
<tr><td>Program Origin</td><td>Water Replenishment District of Southern California's Regional Groundwater Monitoring Program (RGWMP)</td></tr>
<tr><td>Parameters and Monitoring Frequency</td><td><table>
<tr><th>Parameter</th><th>Monitoring Frequency</th></tr>
<tr><td>Total Dissolved Solids</td><td rowspan="3">Semi-Annually</td></tr>
<tr><td>Chloride</td></tr>
<tr><td>Nitrate</td></tr>
</table></td></tr>
<tr><td>Monitoring locations</td><td>70 nested groundwater monitoring wells at 13 locations throughout the Central Basin and West Coast Basin (CBWCB); each nested well is screened in a specific aquifer, allowing the assessment of salts and nutrients in all the major aquifers of the CBWCB. These wells are located throughout the most critical areas of the basins, particularly their proximity to water supply wells and groundwater recharge projects that utilize recycled water, including the seawater intrusion barriers and the MFSG (Figure 8.1-2).</td></tr>
<tr><td>Reporting Requirements</td><td>Monitoring results will be reported annually. WRD will upload TDS, chloride, and nitrate data collected from the SNMP monitoring wells to the State Water Board's online GeoTracker database.</td></tr>
<tr><td>Additional Resources</td><td>WRD's annual Regional Groundwater Monitoring Report (RGWMR), which provides maps depicting chloride, TDS, and nitrate concentrations in all the RGWMP wells and active drinking water wells; chloride and TDS trend graphs for the SNMP monitoring wells; and a discussion of salt and nutrient concentrations and trends in groundwater with respect to water quality objectives established in the Basin Plan to assess overall groundwater quality in the CBWCB. The RGWMR is sent to the CBWCB water purveyors and can be downloaded from the WRD website:
http://www.wrd.org/engineering/groundwater-engineering-reports.php

WRD's online Geographical Information System (GIS) database provides groundwater quality data, well locations, well construction, and water levels for active production wells and all the RGWMP wells:
http://gis.wrd.org/wrdmap/login.asp</td></tr>
<tr><td>Review Period and Re-opener</td><td>TDS, chloride, and nitrate data collected from the SNMP monitoring wells will be reviewed periodically to validate model predictions regarding changes to basin water quality.</td></tr>
</table>

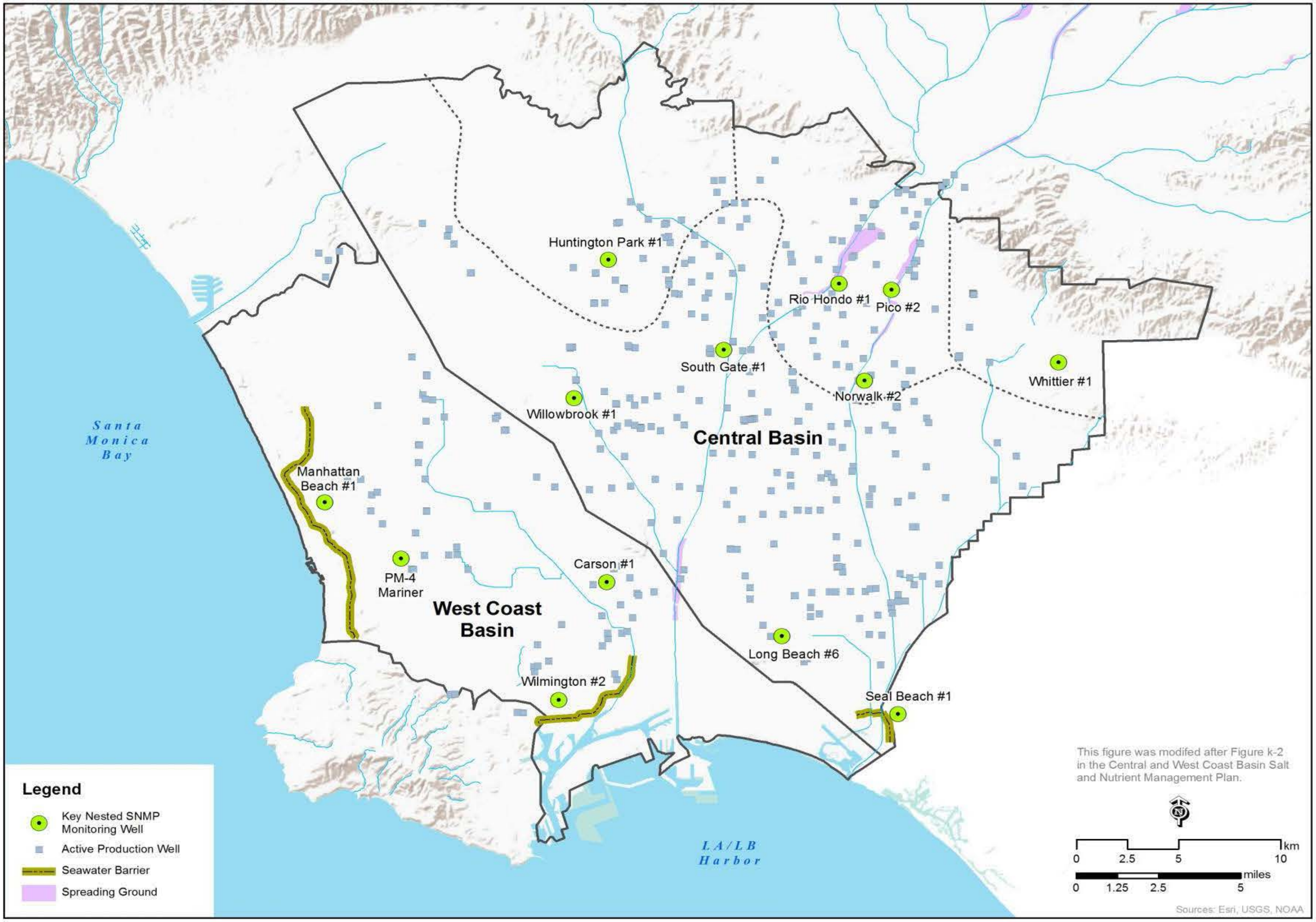

Figure 8.1-2. Location of SNMP Monitoring Wells in the Central Basin and West Coast Basin.

Updates to the Salt and Nutrient Management Measures

Salt and nutrient management measures will be updated (i) as necessary to reflect changing conditions in the CBWCB (i.e. in accordance with actions that have been taken or in response to proposed actions not taken), (ii) where results from the SNMP Monitoring Program indicate that revisions/ modifications are warranted, and/or (iii) at the end of the planning horizon (i.e. 2025).

Regulatory Implications

The salt and nutrient management strategies developed by local water entities in the Central Basin and West Coast Basin are voluntary measures that are designed to maintain water quality that is protective of beneficial uses. Except for the permitting of existing and proposed facilities/projects, further Regional Water Board action pertaining to these implementation measures geared toward controlling salt and nutrient loading to these basins will only be necessary where data and/or other information indicate that the projected water quality conditions are not being met.

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Appendix I

TABLE 1: INVENTORY OF MAJOR SURFACE WATERS AND WATERS TO WHICH THEY ARE TRIBUTARY

WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
VENTURA COUNTY COASTAL STREAMS		
Arundell Barranca	*180701010203*	Ventura Marina
Barlow Canyon	*180701010203*	Arundell Barranca
Big Sycamore Canyon Creek	*180701040201*	Pacific Ocean
Deer Canyon	*180701040202*	Pacific Ocean
East Fork Hall Canyon Creek	*180701010203*	Hall Canyon Creek
Hall Canyon Creek	*180701010203*	Pacific Ocean
Javon Canyon	*180701010202*	Pacific Ocean
La Jolla Canyon Creek	*180701040202*	Pacific Ocean
Lake Canyon	*180701010203*	Arundell Barranca
Little Sycamore Canyon	*180701040202*	Pacific Ocean
Los Sauces Creek	*180701010202*	Pacific Ocean
Madranio Canyon	*180701010202*	Pacific Ocean
McGrath Lake	*180701010202*	
Oxnard Industrial Drain	*180701030202*	*Ormond Beach Wetlands*
Padre Juan Canyon	*180701010202*	Pacific Ocean
Poverty Canyon	*180701010202*	Los Sauces Creek
Prince Barranca	*180701010203*	Pacific Ocean
Sanjon Barranca	*180701010203*	Pacific Ocean
Serrano Canyon	*180701040201*	Big Sycamore Canyon Creek
Sexton Canyon	*180701010203*	Arundell Barranca
Wood Canyon	*180701040201*	Big Sycamore Canyon Creek
VENTURA RIVER WATERSHED		
Ayers Creek	180701010105	Lake Casitas
Bear Creek	180701010102	North Fork Matilija Creek
Big Canyon	180701010103	Lion Creek
Cañada de Aliso	180701010106	Cañada Larga
Cañada de las Encinas	180701010106	Ventura River Reach 2
Cañada de Rodriguez	180701010106	Ventura River Reach 2
Cañada de San Joaquin	180701010106	Ventura River Reach 2
Cañada del Diablo	180701010106	Ventura River Reach 2
Cañada Larga	180701010106	Ventura River Reach 2
Cañada Seca	180701010106	Cañada Larga
Chismahoo Creek	180701010105	Lake Casitas
Coche Canyon	180701010106	Cañada Larga
Copper Canyon	180701010105	Santa Ana Creek
Coyote Creek	180701010105	Lake Casitas
Coyote Creek below dam	180701010105	Ventura River Reach 4
Cozy Dell Canyon	180701010104	Ventura River Reach 4
East Fork Coyote Creek	180701010105	Coyote Creek
Fresno Canyon	180701010106	Ventura River Reach 4
Gridley Canyon	180701010103	San Antonio Creek
Hammond Canyon	180701010106	Sulfur Canyon
Kennedy Canyon	180701010104	Ventura River Reach 4
Lake Casitas	180701010105	Coyote Creek
Leon Canyon	180701010106	Cañada Larga
Lime Canyon	180701010101	Matilija Creek Reach 2
Lion Creek	180701010103	San Antonio Creek
Manuel Canyon	180701010106	Ventura River Reach 2
Matilija Creek Reach 1	180701010101	Ventura River Reach 5
Matilija Creek Reach 2	180701010101	Matilija Reservoir
Matilija Reservoir	180701010101	Matilija Creek Reach 1
McDonald Canyon	180701010104	Ventura River Reach 4
Mirror Lake	180701010104	
Murietta Canyon Creek	180701010101	Matilija Creek Reach 2
North Fork Matilija Creek	180701010102	Ventura River Reach 5
North Fork Santa Ana Creek	180701010105	Santa Ana Creek
Ojai Wetland	180701010104	
Old Man Canyon	180701010101	Matilija Creek Reach 2
Poplin Creek	180701010105	Coyote Creek
Rattlesnake Canyon	180701010101	Matilija Reservoir
Reeves Creek	180701010103	Thacher Creek
San Antonio Creek	180701010103	Ventura River Reach 4
Santa Ana Creek	180701010105	Lake Casitas
Senior Canyon	180701010103	San Antonio Creek

TABLE 1: INVENTORY OF MAJOR SURFACE WATERS AND WATERS TO WHICH THEY ARE TRIBUTARY

WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
VENTURA RIVER WATERSHED (CONT.)		
Stewart Canyon	180701010103	Isolated Lake
Sulfur Canyon	180701010106	Cañada Larga
Sycamore Creek	180701010103	Lion Creek
Thacher Creek	180701010103	San Antonio Creek
Upper North Fork Matilija Creek	180701010101	Matilija Creek Reach 2
Ventura River Estuary	180701010106	Pacific Ocean
Ventura River Reach 1	180701010106	Ventura River Estuary
Ventura River Reach 2	180701010106	Ventura River Reach 1
Ventura River Reach 3	180701010106	Ventura River Reach 2
Ventura River Reach 4	180701010106	Ventura River Reach 3
Ventura River Reach 4	180701010104	Ventura River Reach 3
Ventura River Reach 5	180701010104	Ventura River Reach 4
Weldon Canyon	180701010106	Ventura River Reach 3
West Fork Coyote Creek	180701010105	Coyote Creek
West Fork Santa Ana Creek	180701010105	Santa Ana Creek
Willow Creek	180701010105	Lake Casitas
Wills Canyon	180701010104	Ventura River Reach 4
SANTA CLARA RIVER WATERSHED		
Abadi Creek	180701020701	Sespe Creek
Abrams Canyon	180701020301	Pine Canyon
Acton Canyon	180701020103	Santa Clara River Reach 8
Adams Barranca	180701020903	Santa Clara River Reach 3
Adams Canyon	180701020903	Adams Barranca
Adobe Creek	180701020701	Sespe Creek
Agua Blanca Creek	180701020601	Piru Creek
Agua Dulce Canyon Creek	180701020104	Santa Clara River Reach 8
Alder Creek	180701020705	Sespe Creek
Aliso Canyon	180701020903	Ellsworth Barranca
Aliso Canyon Creek	180701020101	Santa Clara River Reach 8
Amargosa Creek	180701020504	Lockwood Creek
Anlauf Canyon	180701020901	Santa Paula Creek
Apple Canyon	180701020507	Fish Creek
Arrastre Canyon	180701020105	Santa Clara River Reach 8
Baird Canyon	180701020402	San Francisquito Canyon
Balcom Canyon	180701020902	Santa Clara River Reach 3
Bear Canyon	180701020107	Santa Clara River Reach 8
Bear Canyon	180701020303	Castaic Creek
Bear Canyon	180701020901	Sisar Creek
Bear Canyon	180701020703	Sespe Creek
Bear Canyon	180701020107	Sand Canyon
Bear Creek	180701020704	Maple Creek
Beartrap Canyon	180701020101	Aliso Canyon Creek
Beartrap Canyon	180701020508	Pyramid Lake
Bee Canyon	180701020402	San Francisquito Canyon
Bee Canyon	180701020107	Santa Clara River Reach 7
Big Cedar Creek	180701020505	Snowy Creek
Bitter Canyon	180701020306	Charlie Canyon
Blanchard Canyon	180701020604	Piru Creek
Bobcat Canyon	180701020105	Santa Clara River Reach 8
Bootleggers Canyon	180701020105	Santa Clara River Reach 8
Boulder Creek	180701020706	Santa Clara River Reach 3
Bouquet Canyon	180701020202	Santa Clara River Reach 6
Bouquet Canyon	180701020201	Santa Clara River Reach 6
Bouquet Reservoir	180701020201	Bouquet Canyon
Brown Barranca	180701020904	Santa Clara River Reach 2
Buck Creek	180701020508	Piru Creek
Burns Canyon	180701020301	Lake Elizabeth
Burnt Peak Canyon	180701020302	Fish Canyon
Burr Canyon	180701020302	Fish Canyon
Burro Creek	180701020701	Sespe Creek
Cabin Canyon	180701020101	Aliso Canyon Creek
Calumet Canyon	180701020802	Santa Clara River Reach 4A
Cañada de Los Alamos	180701020506	Fish Creek

TABLE 1: INVENTORY OF MAJOR SURFACE WATERS AND WATERS TO WHICH THEY ARE TRIBUTARY

WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
SANTA CLARA RIVER WATERSHED (CONT.)		
Canton Canyon	180701020603	Piru Creek
Carlos Canyon	180701020508	Piru Creek
Castaic Creek	180701020303	Santa Clara River Reach 5
Castaic Creek	180701020305	Santa Clara River Reach 5
Castaic Creek	180701020306	Santa Clara River Reach 5
Castaic Lagoon	180701020306	Castaic Creek
Castaic Lake	180701020305	Castaic Creek
Cedar Creek	180701020502	Piru Creek
Centennial Creek	180701020706	Little Sespe Creek
Charlie Canyon	180701020306	Castaic Creek
Cherry Canyon	180701020602	Piru Creek
Cherry Canyon	180701020402	San Francisquito Canyon
Cherry Creek	180701020701	Sespe Creek
Chorro Grande Canyon	180701020701	Sespe Creek
Clearwater Canyon	180701020402	San Francisquito Canyon
Coarse Gold Canyon	180701020201	Bouquet Canyon
Cold Canyon	180701020303	Salt Creek
Coldwater Canyon	180701020706	Sespe Creek
Coldwater Fork	180701020705	Hot Springs Canyon
Coyote Canyon	180701020507	Gorman Creek
Coyote Canyon	180701020107	Sand Canyon
Dead Horse Creek	180701020505	Snowy Creek
Deer Canyon	180701020304	Elizabeth Lake Canyon
Derrydale Creek	180701020702	Sespe Creek
Devil Canyon	180701020603	Lake Piru
Dominguez Canyon	180701020603	Reasoner Canyon
Dowd Canyon	180701020402	San Francisquito Canyon
Drinkwater Canyon	180701020402	San Francisquito Canyon
Drinkwater Reservoir	180701020402	Drinkwater Canyon
Dry Canyon Creek	180701020202	Bouquet Canyon
Dry Canyon Reservoir	180701020202	Dry Canyon Creek
Dry Creek	180701020505	Piru Creek
East Fork Alder Creek	180701020705	Alder Creek
East Fork Fish Canyon	180701020302	Fish Canyon
East Fork Salt Canyon	180701020403	Salt Canyon
East Fork Santa Paula Creek	180701020901	Santa Paula Creek
Echo Falls Canyon	180701020901	Santa Paula Creek
Edwards Canyon	180701020802	Santa Clara River Reach 4A
Eismere Canyon	180701020401	Newhall Creek
Elderberry Canyon	180701020305	Castaic Creek
Elderberry Forebay	180701020305	Castaic Lake
Elizabeth Lake Canyon	180701020304	Castaic Creek
Ellsworth Barranca	180701020903	Santa Clara River Reach 2
Elm Creek	180701020704	Tar Creek
Escondido Canyon	180701020104	Agua Dulce Canyon Creek
Eureka Canyon	180701020802	Santa Clara River Reach 4A
Fagan Canyon	180701020903	Santa Clara River Reach 3
Fairview Canyon	180701020802	Santa Clara River Reach 4A
Fall Canyon	180701020201	Texas Canyon
Fish Canyon	180701020302	Castaic Creek
Fish Creek	180701020602	Piru Creek
Fish Creek	180701020304	Elizabeth Lake Canyon
Forsythe Canyon	180701020301	Pine Canyon
Fourfork Creek	180701020706	Little Sespe Creek
Frazier Creek	180701020505	Piru Creek
Freeman Canyon	180701020506	Canada de Los Alamos
Frey Canyon	180701020802	Santa Clara River Reach 4A
Fryer Canyon	180701020105	Santa Clara River Reach 8
Gleason Canyon	180701020101	Aliso Canyon Creek
Godwin Canyon	180701020701	Sespe Creek
Gorman Canyon	180701020107	Sand Canyon
Gorman Creek	180701020507	Piru Creek
Grasshopper Canyon	180701020306	Castaic Creek
Grimes Canyon	180701020802	Santa Clara River Reach 3
Haines Barranca	180701020903	Santa Clara River Reach 3

TABLE 1: INVENTORY OF MAJOR SURFACE WATERS AND WATERS TO WHICH THEY ARE TRIBUTARY

WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
SANTA CLARA RIVER WATERSHED (CONT.)		
Hampton Canyon	180701020903	Wheeler Canyon
Harmon Barranca	180701020904	Santa Clara River Reach 1
Harmon Canyon	180701020904	Harmon Barranca
Haskell Canyon	180701020202	Bouquet Canyon
Hasley Canyon	180701020306	Castaic Creek
Hauser Canyon	180701020104	Agua Dulce Canyon Creek
Hiati Canyon	180701020304	Elizabeth Lake Canyon
Holser Canyon	180701020604	Piru Creek
Hopper Creek	180701020801	Santa Clara River Reach 4A
Hot Springs Canyon	180701020705	Sespe Creek
Howard Creek	180701020702	Rose Valley Creek
Hughes Canyon	180701020105	Santa Clara River Reach 8
Indian Canyon	180701020105	Santa Clara River Reach 8
Jones Canyon	180701020103	Santa Clara River Reach 8
Kashmere Canyon	180701020103	Santa Clara River Reach 8
Kentucky Springs Canyon	180701020102	Santa Clara River Reach 8
Kleine Canyon	180701020304	Elizabeth Lake Canyon
La Broche Canyon	180701020901	Santa Paula Creek
Lacosca Creek	180701020601	Agua Blanca Creek
Lake Elizabeth	180701020301	Munz Lake
Lake Hughes	180701020301	Elizabeth Lake Canyon
Lake Piru	180701020603	Piru Creek
Ladybug Creek	180701020701	Sespe Creek
Lechler Canyon	180701020603	Lake Piru
Letteau Canyon	180701020104	Agua Dulce Canyon Creek
Liebre Gulch	180701020509	Piru Creek
Lima Canyon	180701020604	Piru Creek
Lion Canyon	180701020302	Sespe Creek
Lion Canyon	180701020702	Burnt Peak Canyon
Little Mutau Creek	180701020501	Mutau Creek
Little Sespe Creek	180701020706	Sespe Creek
Lockwood Creek	180701020504	Piru Creek
Loftus Canyon	180701020902	Santa Clara River Reach 3
Long Canyon	180701020105	Santa Clara River Reach 8
Long Dave Canyon	180701020504	Lockwood Creek
Los Pinetos Canyon	180701020401	Placerita Creek
Lucky Canyon	180701020301	Munz Lake
Maher Canyon	180701020105	Santa Clara River Reach 8
Maple Canyon	180701020603	Dominguez Canyon
Maple Creek	180701020704	Tar Creek
Marple Canyon	180701020306	Castaic Creek
Martindale Canyon	180701020201	Bouquet Canyon
Mattox Canyon	180701020105	Santa Clara River Reach 8
Maxy Canyon	180701020506	Freeman Canyon
Michael Creek	180701020602	Piru Creek
Middle Fork Lockwood Creek	180701020504	North Fork Lockwood Creek
Mill Canyon	180701020105	Santa Clara River Reach 8
Mint Canyon Creek Reach 2	180701020106	Mint Canyon Creek Reach 1
Mint Canyon Creek Reach 1	180701020106	Santa Clara River Reach 7
Modelo Canyon	180701020604	Piru Creek
Moody Canyon	180701020105	Arrastre Canyon
Morgan Canyon	180701020902	Santa Clara River Reach 3
Mud Creek Canyon	180701020901	Santa Paula Creek
Munson Creek	180701020701	Sespe Creek
Munz Canyon	180701020301	Lake Elizabeth
Munz Lake	180701020301	Lake Hughes
Mutau Creek	180701020501	Piru Creek
Mystic Canyon	180701020201	Texas Canyon
Mystic Canyon	180701020507	Gorman Creek
Necktie Canyon	180701020305	Castaic Creek
Negro Creek	180701020502	Piru Creek
Nellus Canyon	180701020105	Santa Clara River Reach 8
Nelson Canyon	180701020105	Santa Clara River Reach 8
Newhall Creek	180701020401	South Fork Santa Clara River
North Fork Fish Canyon	180701020302	Fish Canyon

TABLE 1: INVENTORY OF MAJOR SURFACE WATERS AND WATERS TO WHICH THEY ARE TRIBUTARY

WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
SANTA CLARA RIVER WATERSHED (CONT.)		
North Fork Fish Creek	180701020602	Fish Creek
North Fork Lockwood Creek	180701020504	Lockwood Creek
North Fork Piedra Blanca Creek	180701020703	Piedra Blanca Creek
Nuevo Canyon	180701020604	Holser Canyon
Oak Canyon	180701020603	Santa Felicia Canyon
Oak Spring Canyon	180701020107	Santa Clara River Reach 7
O'Hara Canyon	180701020903	Haines Barranca
Old Spring Canyon	180701020301	Pine Canyon
Orcutt Canyon	180701020902	Santa Clara River Reach 3
Oro Fino Canyon	180701020401	Quigley Canyon
Osito Canyon	180701020602	Piru Creek
Palomas Canyon	180701020306	Violin Canyon
Park Creek	180701020703	Sespe Creek
Peppertree Canyon	180701020904	Wason Barranca
Pettinger Canyon	180701020202	Haskell Canyon
Piedra Blanca Creek	180701020703	Sespe Creek
Pine Canyon	180701020301	Elizabeth Lake Canyon
Pine Canyon	180701020303	Bear Canyon
Pine Canyon	180701020706	Sespe Creek
Piru Creek	180701020604	Santa Clara River Reach 4A
Piru Creek (Santa Clara River Reach 11)	180701020603	Santa Clara River Reach 4A
Piru Creek (Santa Clara River Reach 11)	180701020508	Santa Clara River Reach 4A
Piru Creek (Santa Clara River Reach 11)	180701020505	Santa Clara River Reach 4A
Piru Creek (Santa Clara River Reach 11)	180701020502	Santa Clara River Reach 4A
Piru Creek (Santa Clara River Reach 11)	180701020602	Santa Clara River Reach 4A
Piru Creek (Santa Clara River Reach 11)	180701020603	Santa Clara River Reach 4A
Placerita Creek	180701020401	South Fork Santa Clara River
Plum Canyon	180701020202	Bouquet Canyon
Pole Canyon	180701020107	Santa Clara River Reach 7
Pole Creek	180701020802	Santa Clara River Reach 4A
Poplar Creek	180701020705	Hot Springs Canyon
Posey Canyon	180701020509	Liebre Gulch
Potrero Canyon	180701020403	Santa Clara River Reach 5
Potrero John Creek	180701020701	Sespe Creek
Prospect Canyon	180701020304	Elizabeth Lake Canyon
Pyramid Lake	180701020509	Piru Creek
Quail Canyon	180701020507	Fish Creek
Quigley Canyon	180701020401	Placerita Creek
Ramona Canyon	180701020604	Holser Canyon
Rattlesnake Canyon	180701020302	East Fork Fish Canyon
Real Wash	180701020802	Santa Clara River Reach 4A
Reasoner Canyon	180701020603	Piru Creek
Red Fox Canyon	180701020304	Elizabeth Lake Canyon
Red Reef Canyon	180701020703	Sespe Creek
Redrock Canyon	180701020303	Castaic Creek
Redrock Creek	180701020704	Tar Creek
Reynier Canyon	180701020107	Sand Canyon
Richardson Canyon	180701020902	Santa Clara River Reach 3
Rock Creek	180701020702	Sespe Creek
Rock Creek	180701020502	Sheep Creek
Romero Canyon	180701020306	Hasley Canyon
Rose Valley Creek	180701020702	Sespe Creek
Rowher Canyon	180701020106	Mint Canyon Creek Reach 1
Ruby Canyon	180701020602	Piru Creek
Ruby Canyon	180701020304	Elizabeth Lake Canyon
Rush Canyon	180701020106	Mint Canyon Creek Reach 1
Salt Canyon	180701020403	Santa Clara River Reach 5
Salt Creek	180701020303	Castaic Creek
Saltmarsh Canyon	180701020903	Adams Canyon
San Francisquito Canyon	180701020402	Santa Clara River Reach 6
San Guillermo Creek	180701020504	Lockwood Creek
San Martinez Chiquito Canyon	180701020403	Santa Clara River Reach 5
San Martinez Grande Canyon	180701020403	Santa Clara River Reach 5
Sand Canyon	180701020107	Santa Clara River Reach 7
Santa Clara River Estuary	180701020904	Pacific Ocean

TABLE 1: INVENTORY OF MAJOR SURFACE WATERS AND WATERS TO WHICH THEY ARE TRIBUTARY

WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
SANTA CLARA RIVER WATERSHED (CONT.)		
Santa Clara River Reach 1	180701020904	Santa Clara River Estuary
Santa Clara River Reach 2	180701020904	Santa Clara River Reach 1
Santa Clara River Reach 2	180701020903	Santa Clara River Reach 1
Santa Clara River Reach 3	180701020903	Santa Clara River Reach 2
Santa Clara River Reach 3	180701020902	Santa Clara River Reach 2
Santa Clara River Reach 3	180701020802	Santa Clara River Reach 2
Santa Clara River Reach 4A	180701020802	Santa Clara River Reach 3
Santa Clara River Reach 4B	180701020403	Santa Clara River Reach 4A
Santa Clara River Reach 5	180701020403	Santa Clara River Reach 4B
Santa Clara River Reach 6	180701020403	Santa Clara River Reach 5
Santa Clara River Reach 7	180701020107	Santa Clara River Reach 6
Santa Clara River Reach 8	180701020107	Santa Clara River Reach 7
Santa Clara River Reach 8	180701020105	Santa Clara River Reach 7
Santa Clara River Reach 8	180701020102	Santa Clara River Reach 7
Santa Felicia Canyon	180701020603	Piru Creek
Santa Margarita Canyon	180701020104	Escondido Canyon
Santa Paula Creek (Santa Clara River Reach 9)	180701020901	Santa Clara River Reach 3
Sespe Creek	180701020706	Santa Clara River Reach 3
Sespe Creek (Santa Clara River Reach 10)	180701020701	Santa Clara River Reach 3
Sespe Creek (Santa Clara River Reach 10)	180701020702	Santa Clara River Reach 3
Sespe Creek (Santa Clara River Reach 10)	180701020705	Santa Clara River Reach 3
Sespe Creek (Santa Clara River Reach 10)	180701020703	Santa Clara River Reach 3
Seymour Creek	180701020503	Lockwood Creek
Shake Canyon	180701020301	Pine Canyon
Sharps Canyon	180701020603	Piru Creek
Sheep Creek	180701020502	Piru Creek
Shiells Canyon	180701020802	Santa Clara River Reach 4A
Sisar Creek	180701020901	Santa Paula Creek
Sloan Canyon	180701020306	Hasley Canyon
Smith Canyon	180701020802	Santa Clara River Reach 4A
Smith Fork	180701020505	Piru Creek
Snow Canyon	180701020706	Sespe Creek
Snowy Creek	180701020505	Piru Creek
South Fork Santa Clara River	180701020401	Santa Clara River Reach 6
South Portal Canyon	180701020402	San Francisquito Canyon
South Tule Canyon	180701020304	Tule Canyon
Spade Canyon	180701020106	Rowher Canyon
Spring Canyon	180701020107	Santa Clara River Reach 7
Spring Canyon	180701020106	Mint Canyon Creek Reach 2
Spring Canyon Creek	180701020704	Tar Creek
Spunky Canyon	180701020201	Bouquet Canyon
Squaw Creek	180701020704	Redrock Creek
Steiner Canyon	180701020301	Pine Canyon
Stone Corral Creek	180701020705	Sespe Creek
Sulphur Creek	180701020601	Agua Blanca Creek
Sycamore Canyon	180701020705	Alder Creek
Sycamore Creek	180701020703	Sespe Creek
Tapia Canyon	180701020306	Castaic Creek
Tapie Canyon	180701020107	Spring Canyon
Tapo Canyon	180701020403	Santa Clara River Reach 4B
Tar Creek	180701020704	Sespe Creek
Texas Canyon	180701020201	Bouquet Canyon
Tick Canyon	180701020107	Santa Clara River Reach 7
Tie Canyon	180701020101	Aliso Canyon Creek
Timber Creek	180701020703	Sespe Creek
Todd Barranca	180701020903	Santa Clara River Reach 2
Toms Canyon	180701020801	Hopper Creek
Torrey Canyon	180701020802	Santa Clara River Reach 4A
Trail Canyon	180701020505	Piru Creek
Trough Canyon	180701020303	Salt Creek
Trout Creek	180701020703	Sespe Creek
Trust Me Canyon	180701020507	Fish Creek
Tule Canyon	180701020304	Ruby Canyon
Tule Creek	180701020702	Sespe Creek
Turkey Canyon	180701020304	Elizabeth Lake Canyon

TABLE 1: INVENTORY OF MAJOR SURFACE WATERS AND WATERS TO WHICH THEY ARE TRIBUTARY

WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
SANTA CLARA RIVER WATERSHED (CONT.)		
Turtle Canyon	180701020602	Piru Creek
Vasquez Canyon	180701020202	Bouquet Canyon
Villa Canyon	180701020306	Castaic Creek
Violin Canyon	180701020306	Marple Canyon
Warm Springs Canyon	180701020304	Elizabeth Lake Canyon
Warring Canyon	180701020802	Santa Clara River Reach 4A
Wason Barranca	180701020904	Santa Clara River Reach 2
Wayside Canyon	180701020306	Castaic Creek
West Fork Liebre Gulch	180701020509	Piru Creek
West Fork Sespe Creek	180701020705	Sespe Creek
Wheeler Canyon	180701020903	Todd Barranca
Whitney Canyon	180701020401	Newhall Creek
Wiley Canyon	180701020802	Santa Clara River Reach 4A
Willard Canyon	180701020902	Santa Clara River Reach 3
Willow Creek	180701020701	Sespe Creek
Willow Springs Canyon	180701020104	Hauser Canyon
Young Canyon	180701020105	Santa Clara River Reach 8
CALLEGUAS-CONEJO CREEK WATERSHED		
Alamos Canyon	180701030102	Arroyo Simi
Arroyo Colorado	180701030106	Beardsley Wash
Arroyo Conejo (Calleguas Creek Reach 10)	*180701030105*	*Conejo Creek*
Arroyo Conejo (Calleguas Creek Reach 13)	180701030104	Arroyo Conejo
Arroyo Las Posas (Calleguas Creek Reach 6)	180701030105	Calleguas Creek Reach 3
Arroyo Las Posas (Calleguas Creek Reach 6)	180701030103	Calleguas Creek Reach 3
Arroyo Santa Rosa (Calleguas Creek Reach 11)	180701030105	Conejo Creek
Arroyo Simi (Calleguas Creek Reach 7)	180701030103	Arroyo Las Posas
Arroyo Simi (Calleguas Creek Reach 7)	180701030102	Arroyo Las Posas
Arroyo Simi (Calleguas Creek Reach 7)	180701030101	Arroyo Las Posas
Beardsley Wash (Calleguas Creek Reach 5)	180701030106	Revolon Slough
Black Canyon	180701030101	*~~Arroyo Simi~~*
Boone Canyon	180701030103	Fox Canyon
Brea Canyon	180701030102	Arroyo Simi
Bus Canyon	180701030102	Arroyo Simi
Calleguas Creek Estuary	180701030107	Calleguas Creek Reach 1
~~Calleguas Creek Reach 1~~	*~~180701030107~~*	*~~Calleguas Creek Estuary~~*
Calleguas Creek Reach 2	180701030107	Calleguas Creek Reach 1
~~Calleguas Creek Reach 2~~	*~~180701030105~~*	*~~Calleguas Creek Reach 1~~*
Calleguas Creek Reach 3	180701030107	Calleguas Creek Reach 2
Chivo Canyon	180701030101	Arroyo Simi
Conejo Creek (Calleguas Creek Reach 9A)	180701030105	Calleguas Creek Reach 3
Conejo Creek (Calleguas Creek Reach 9B)	180701030105	Calleguas Creek Reach 3
Coyote Canyon	180701030103	Arroyo Las Posas
Dry Canyon	180701030102	Arroyo Simi
El Toro Canyon	180701030101	Las Llajas Canyon
Fox Barranca	180701030103	Coyote Canyon
Fox Canyon	180701030103	Fox Barranca
Gillibrand Canyon	180701030101	Tapo Canyon
Happy Camp Canyon	180701030102	Arroyo Simi
Honda Barranca	180701030106	Beardsley Wash
Iron Trough Canyon	180701030101	Tripas Canyon
Lake Bard (Wood Ranch Reservoir)	180701030102	*~~Sycamore Canyon~~*
Las Llajas Canyon	180701030101	Chivo Canyon
Lone Oak Canyon	180701030102	Bus Canyon
Long Canyon	180701030102	Oak Canyon
Long Canyon	180701030103	Arroyo Las Posas
Long Grade Canyon	180701030107	Calleguas Creek Reach 3
Meier Canyon	180701030101	Arroyo Simi
Milligan Barranca	180701030106	Beardsley Wash
Montgomery Canyon	180701030102	Oak Canyon
Mugu Lagoon (Calleguas Creek Reach 1)	180701030202	
North Fork Arroyo Conejo (Calleguas Creek Reach 12)	180701030104	Arroyo Conejo
Oak Canyon	180701030102	Dry Canyon
Revolon Slough (Calleguas Creek Reach 4)	180701030106	Calleguas Creek Reach 1
Revolon Slough (Calleguas Creek Reach 4)	180701030107	Calleguas Creek Reach 1
Runkle Canyon	180701030102	Arroyo Simi

TABLE 1: INVENTORY OF MAJOR SURFACE WATERS AND WATERS TO WHICH THEY ARE TRIBUTARY

WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
CALLEGUAS-CONEJO CREEK WATERSHED (CONT.)		
Skeleton Canyon	180701030104	
South Branch Arroyo Conejo	180701030104	Arroyo Conejo
Sulphur Canyon	180701030101	Las Llajas Canyon
Sycamore Canyon	180701030102	Arroyo Simi
Tapo Canyon (Calleguas Creek Reach 8)	180701030101	Arroyo Simi
Tripas Canyon	180701030101	Tapo Canyon
Trough Canyon	180701030102	Bus Canyon
Windmill Canyon	180701030101	Gillibrand Canyon Creek
LOS ANGELES COUNTY COASTAL STREAMS		
Agua Amarga Canyon	*180701040500*	Santa Monica Bay
Altamira Canyon	*180701040500*	Santa Monica Bay
Arroyo Sequit	*180701040202*	Pacific Ocean
Brookside Canyon	*180701040401*	Topanga Canyon Creek
Carbon Canyon Creek	*180701040403*	Santa Monica Bay
Corral Canyon Creek	*180701040204*	Santa Monica Bay
Dix Canyon	*180701040401*	Topanga Canyon Creek
Dry Canyon	*180701040204*	Solstice Canyon Creek
Dume Creek (Zuma Canyon)	*180701040203*	Pacific Ocean
Dume Lagoon	*180701040403*	
East Fork Arroyo Sequit	*180701040202*	Arroyo Sequit
Encinal Canyon Creek	*180701040202*	Pacific Ocean
Escondido Canyon Creek	*180701040204*	Santa Monica Bay
Garapito Creek	*180701040401*	Topanga Canyon Creek
Greenleaf Canyon	*180701040401*	Topanga Canyon Creek
Hondo Canyon	*180701040401*	Old Topanga Canyon Creek
Klondike Canyon	*180701040500*	Santa Monica Bay
La Pulga Canyon	*180701040403*	Santa Monica Bay
Latigo Canyon Creek	*180701040204*	Santa Monica Bay
Lachusa Canyon Creek	*180701040202*	Pacific Ocean
Little Las Flores Canyon	*180701040403*	Las Flores Canyon Creek
Los Alisos Canyon Creek	*180701040202*	Pacific Ocean
Malaga Canyon	*180701040500*	Santa Monica Bay
Mandeville Canyon Creek	*180701040402*	Santa Monica Canyon Channel
Marie Canyon	*180701040204*	Santa Monica Bay
Newton Canyon	*180701040203*	Zuma Canyon
Old Topanga Canyon	*180701040401*	Topanga Canyon Creek
Peña Canyon Creek	*180701040403*	Santa Monica Bay
Piedra Gorda Canyon Creek	*180701040403*	Santa Monica Bay
Portuguese Canyon	*180701040500*	Santa Monica Bay
Puerco Canyon Creek	*180701040204*	Santa Monica Bay
Quarry Canyon	*180701040403*	Santa Ynez Canyon
Ramirez Canyon Creek	*180701040204*	Santa Monica Bay
Red Rock Canyon	*180701040401*	Old Topanga Canyon Creek
Rustic Canyon Creek	*180701040402*	Santa Monica Canyon Channel
San Nicholas Canyon Creek	*180701040202*	Pacific Ocean
Santa Maria Creek	*180701040401*	Garapito Creek
Santa Monica Canyon Channel	*180701040402*	Santa Monica Bay
Santa Ynez Canyon	*180701040403*	Santa Monica Bay
Santa Ynez Lake (Lake Shrine)	*180701040403*	
Solstice Canyon Creek	*180701040204*	Santa Monica Bay
Steep Hill Canyon	*180701040202*	Pacific Ocean
Sullivan Canyon Creek	*180701040402*	Santa Monica Canyon Channel
Temescal Canyon	*180701040403*	
Topanga Canyon Creek	*180701040401*	Topanga Lagoon
Topanga Lagoon	*180701040401*	Pacific Ocean
Trailer Canyon	*180701040403*	Santa Ynez Canyon
Trancas Canyon Creek	*180701040203*	Pacific Ocean
Tuna Canyon Creek	*180701040403*	Santa Monica Bay
Walnut Canyon	*180701040204*	Santa Monica Bay
West Fork Arroyo Sequit	*180701040202*	Arroyo Sequit
Winter Canyon	*180701040204*	Santa Monica Bay

TABLE 1: INVENTORY OF MAJOR SURFACE WATERS AND WATERS TO WHICH THEY ARE TRIBUTARY

WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
MALIBU CREEK WATERSHED		
Century Reservoir	180701040104	Malibu Creek
Cheeseboro Canyon	180701040102	Palo Comado Canyon
Cold Creek	180701040104	Malibu Creek
Dark Canyon	180701040104	Cold Creek
East Las Virgenes Canyon	180701040103	Las Virgenes Creek
Gates Canyon	180701040103	Las Virgenes Creek
Hidden Valley Creek	180701040101	Lake Sherwood
La Sierra Canyon	180701040104	Triunfo Creek
Lake Eleanor	180701040101	Lake Eleanor Creek
Lake Eleanor Creek	180701040101	Portrero Valley Creek
Lake Lindero	180701040102	Lindero Creek Reach 1
Lake Sherwood	180701040101	Portrero Valley Creek
Las Virgenes Creek	180701040103	Malibu Creek
Las Virgenes (Westlake) Reservoir	180701040101	Westlake Lake
Liberty Canyon	180701040103	Las Virgenes Creek
Lindero Creek Reach 1	180701040102	Medea Creek Reach 1
Lindero Creek Reach 2	180701040102	Lindero Creek Reach 1
Lobo Canyon	180701040101	Triunfo Creek
Malibou Lake	180701040104	Malibu Creek
Malibu Creek	180701040104	Malibu Lagoon
Malibu Lagoon	180701040104	Pacific Ocean
Medea Creek Reach 1	180701040102	Malibou Lake
Medea CreekReach 2	180701040102	Medea Creek Reach 1
Palo Comado Canyon	180701040102	Medea Creek
Portrero Valley Creek	180701040101	Westlake Lake
Schoolhouse Canyon	180701040101	
Sleeper Canyon	180701040104	Malibu Creek
Stokes Canyon	180701040103	Las Virgenes Creek
Triunfo Creek Reach 1	180701040104	Malibou Lake
Triunfo Creek Reach 2	180701040101	Triunfo Creek Reach 1
Trough Canyon	180701040101	Lobo Canyon
Westlake Lake	180701040101	Triunfo Creek Reach 2
BALLONA CREEK WATERSHED		
Ballona Creek Estuary	*180701040300*	Santa Monica Bay
Ballona Creek Reach 1	*180701040300*	Ballona Creek Reach 2
Ballona Creek Reach 2	*180701040300*	Ballona Creek Estuary
Ballona Lagoon/Venice Canals	*180701040403*	Marina del Rey
Ballona Wetlands	*180701040300*	Ballona Creek Estuary
Brush Canyon	*180701040300*	Storm drain system
Centinela Creek	*180701040300*	Ballona Creek Estuary
Del Rey Lagoon	*180701040500*	
Franklin Canyon Reservoir	*180701040300*	
Grand Canal	*180701040403*	Ballona Lagoon
Hollywood Reservoir	*180701040300*	
Ivanhoe Reservoir	*180701040300*	
Sepulveda Channel	*180701040300*	Ballona Creek Estuary
Silver Lake Reservoir	*180701040300*	
Stone Canyon Reservoir	*180701040300*	
Upper Franklin Canyon Reservoir	*180701040300*	
LOS CERRITOS CHANNEL WATERSHED		
Colorado Lagoon	*180701060702*	Alamitos Bay
Heather Channel	*180701060702*	Los Cerritos Channel
Los Cerritos Channel	*180701060702*	Los Cerritos Channel Estuary
Los Cerritos Channel Estuary	*180701060702*	Alamitos Bay
Los Cerritos Channel Line E	*180701060702*	Los Cerritos Channel
Los Cerritos Wetlands	*180701060702*	Alamitos Bay
Sims Pond	*180701060702*	Alamitos Bay
DOMINGUEZ CHANNEL WATERSHED		
Agua Magna Canyon	*180701060701*	Wilmington Drain
Averill Canyon	*180701060701*	Los Angeles Harbor

TABLE 1: INVENTORY OF MAJOR SURFACE WATERS AND WATERS TO WHICH THEY ARE TRIBUTARY

WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
DOMINGUEZ CHANNEL WATERSHED (CONT.)		
Bent Spring Canyon	*180701060701*	Machado Lake
Bixby Slough	*180701060701*	Los Angeles Harbor
Dominguez Channel	*180701060101*	Dominguez Channel Estuary
Dominguez Channel	*180701060102*	Dominguez Channel Estuary
Dominguez Channel Estuary	*180701060102*	Los Angeles Harbor
George F Canyon	*180701060701*	Los Angeles Harbor
Machado Lake	*180701060701*	Los Angeles Harbor
Madrona Marsh	*180701060701*	
Miraleste Canyon	*180701060701*	Los Angeles Harbor
San Pedro Canyon	*180701060701*	Los Angeles Harbor
Sepulveda Canyon	*180701060701*	Agua Magna Canyon
Torrance Lateral	*180701060102*	Dominguez Channel Estuary
Wilmington Drain	*180701060701*	Machado Lake
LOS ANGELES RIVER WATERSHED		
Agua Canyon	*180701050209*	Arroyo Seco Reach 3
Akens Canyon	180701050105	Big Tujunga Canyon Creek
Alder Creek	180701050101	Big Tujunga Canyon Creek
Alder Creek	180701050104	Gold Creek
Alhambra Wash	180701050303	Rio Hondo Reach 2
Aliso Canyon Creek	180701050203	Aliso Canyon Wash
Aliso Canyon Wash	180701050203	Los Angeles River Reach 6
Annandale	*180701050209*	Arroyo Seco Reach 1
Ant Canyon	180701050205	Pacoima Canyon Creek
Arcadia Wash	180701050302	Rio Hondo Reach 2
Arroyo Calabasas	180701050201	Los Angeles River Reach 6
Arroyo Seco Reach 1	*180701050209*	Los Angeles River Reach 2
Arroyo Seco Reach 2	*180701050209*	Arroyo Seco Reach 1
Arroyo Seco Reach 3	*180701050209*	Arroyo Seco Reach 2
Bad Canyon	180701050205	Pacoima Canyon Creek
Bailey Canyon	180701050302	Arcadia Wash
Bartholomaus Canyon	180701050105	Little Tujunga Canyon Creek
Bear Canyon	*180701050209*	Arroyo Seco Reach 3
Bee Canyon	180701050205	Pacoima Canyon Creek
Bee Canyon	180701050204	Van Norman Complex
Bell Creek	180701050201	Los Angeles River Reach 6
Berry Canyon	180701050208	Los Angeles River Reach 4
Big Cienega	180701050105	Trail Canyon
Big Santa Anita Reservoir	180701050302	Santa Anita Wash
Big Tujunga Canyon Creek	180701050103	Tujunga Wash
Big Tujunga Canyon Creek	180701050105	Tujunga Wash
Big Tujunga Reservoir	180701050103	Big Tujunga Canyon Creek
Blanchard Canyon Channel	180701050207	Verdugo Wash Reach 2
Blind Canyon	180701050202	Devil Canyon
Bluegum Canyon	180701050105	Hanes Canyon Creek
Boulder Canyon	180701050104	Gold Creek
Box Canyon	180701050201	Chatsworth Reservoir
Brace Canyon	180701050208	Burbank Western Channel
Brand Canyon	180701050208	Verdugo Wash Reach 1
Breakneck Canyon	180701050105	Big Tujunga Canyon Creek
Brockman Canyon	180701050208	Verdugo Wash Reach 1
Brown Canyon	*180701050209*	Arroyo Seco Reach 3
Browns Canyon Creek	180701050202	Browns Canyon Wash
Browns Canyon Wash	180701050202	Los Angeles River Reach 6
Bryant Canyon	180701050105	Big Tujunga Canyon Creek
Buck Canyon	180701050104	Little Tujunga Canyon Creek
Buck Canyon	180701050205	Pacoima Canyon Creek
Buena Vista Channel	180701050302	Sawpit Wash
Bull Creek	180701050204	Los Angeles River Reach 5
Burbank Western Channel	180701050208	Los Angeles River Reach 3
Caballero Creek	180701050208	Los Angeles River Reach 6
Cabrini Canyon	180701050208	Burbank Western Channel
Cassara Canyon	180701050105	Big Tujunga Canyon Creek
Castle Canyon	180701050301	Rubio Canyon
Center Creek	180701050104	Gold Creek

TABLE 1: INVENTORY OF MAJOR SURFACE WATERS AND WATERS TO WHICH THEY ARE TRIBUTARY

WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
LOS ANGELES RIVER WATERSHED (CONT.)		
Central Branch Tujunga Wash	180701050208	Los Angeles River Reach 4
Chandler Canyon	180701050208	Burbank Western Channel
Chatsworth Creek	180701050201	Bell Creek
Chatsworth Reservoir	180701050201	Chatsworth Creek
Cherry Canyon	*180701050209*	Flint Canyon Channel
Chilao Creek	180701050101	East Fork Alder Creek
Childs Canyon	180701050208	Burbank Western Channel
Chimney Canyon	180701050205	Pacoima Canyon Creek
Chiquita Canyon	*180701050209*	Arroyo Seco Reach 3
Clamshell Canyon	180701050302	Santa Anita Wash (upper)
Clear Creek	180701050105	Big Tujunga Canyon Creek
Cloudburst Canyon	*180701050209*	Arroyo Seco Reach 3
Colby Canyon	*180701050209*	Arroyo Seco Reach 3
Coldwater Canyon	180701050103	Big Tujunga Canyon Creek
Compton Creek	*180701050402*	Los Angeles River Reach 1
Condor Canyon	180701050105	Trail Canyon
Cooks Canyon Channel	180701050207	Verdugo Wash Reach 2
Cottonwood Canyon	180701050104	Little Tujunga Canyon Creek
Cougar Canyon	180701050205	Pacoima Reservoir
Craig Canyon	180701050208	Burbank Western Channel
Cunningham Canyon	180701050207	Verdugo Wash Reach 2
Dagger Flat Canyon	180701050205	Pacoima Canyon Creek
Daisy Canyon	*180701050209*	Colby Canyon
Dark Canyon	*180701050209*	Arroyo Seco Reach 3
Dark Canyon	180701050208	Los Angeles River Reach 4
Dayton Canyon Creek	180701050201	Chatsworth Creek
Dead Horse Canyon	180701050207	Verdugo Wash Reach 1
Deer Canyon	180701050208	Sunset Canyon
Deer Park Branch	180701050301	Eaton Canyon Creek
Delta Canyon	180701050105	Big Tujunga Canyon Creek
Devil Canyon	180701050202	Browns Canyon Wash
Devils Gate Reservoir	180701050401	Arroyo Seco Reach 2
Doane Canyon	180701050105	Big Tujunga Canyon Creek
Dorothy Canyon	180701050205	Pacoima Canyon Creek
Dry Canyon Creek	180701050201	Arroyo Calabasas
Dunsmore Canyon Creek	180701050207	Verdugo Wash Reach 2
Eagle Canyon Channel	180701050207	Verdugo Wash Reach 2
Eagle Rock Reservoir	180701050402	
East Branch Arcadia Wash	180701050302	Arcadia Wash
East Fork Alder Creek	180701050101	Alder Creek
East Fork Santa Anita Canyon	180701050302	Santa Anita Canyon Creek
Eaton Canyon Creek	180701050301	Eaton Wash (above dam)
Eaton Reservoir	180701050301	Eaton Wash (below dam)
Eaton Wash (above dam)	180701050301	Eaton Wash (below dam)
Eaton Wash (below dam)	180701050301	Rio Hondo Reach 2
Ebey Canyon	180701050105	Big Tujunga Canyon Creek
Echo Lake	180701040200	
El Prieto Canyon Creek	*180701050209*	Arroyo Seco Reach 3
Elmwood Canyon	180701050208	Burbank Western Channel
Elysian Reservoir	180701050403	
Encino Creek	180701050208	Sepulveda Flood Control Basin
Encino Reservoir	180701050208	
Engleheard Canyon	180701050207	Verdugo Wash Reach 2
Fall Creek	180701050103	Big Tujunga Canyon Creek
Falls Canyon	*180701050209*	Arroyo Seco Reach 3
Falls Creek	180701050202	Devil Canyon
Fern Canyon	*180701050209*	Arroyo Seco Reach 3
Fern Canyon	*180701050210*	Los Angeles River Reach 3
Fisher Canyon	180701050208	Burbank Western Channel
Flint Canyon Channel	*180701050209*	Arroyo Seco Reach 2
Fox Creek	180701050103	Big Tujunga Reservoir
Fryman Canyon	180701050208	Berry Canyon
Fusier Canyon	180701050105	Big Tujunga Canyon Creek
Gold Canyon	180701050105	Big Tujunga Canyon Creek
Gold Creek	180701050104	Little Tujunga Canyon Creek

TABLE 1: INVENTORY OF MAJOR SURFACE WATERS AND WATERS TO WHICH THEY ARE TRIBUTARY

WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
LOS ANGELES RIVER WATERSHED (CONT.)		
Gooseberry Canyon	180701050205	Pacoima Canyon Creek
Gordon Canyon	180701050205	Pacoima Canyon Creek
Goss Canyon	180701050207	Eagle Canyon Channel
Gould Canyon	*180701050209*	Flint Canyon Channel
Grand Canyon	*180701050209*	Millard Canyon Creek
Grapevine Canyon	180701050204	Van Norman Complex
Grotto Creek	180701050103	Big Tujunga Canyon Creek
Haines Canyon Creek	180701050105	Big Tujunga Canyon Creek
Hall Beckley Canyon	180701050207	Halls Canyon Channel
Halls Canyon Channel	180701050207	Verdugo Wash Reach 2
Hansen Canyon	180701050105	Big Tujunga Canyon Creek
Hansen Flood Control Basin & Lakes	180701050208	Tujunga Wash
Hansen Heights Channel	180701050208	Burbank Western Channel
Harvard Branch	180701050301	Eaton Canyon Creek
Hastings Canyon	180701050301	Eaton Wash (below dam)
Henderson Canyon	180701050207	Verdugo Wash Reach 2
Hillcrest Canyon	180701050208	Verdugo Wash Reach 1
Hog Canyon	180701050204	Van Norman Complex
Idlewood Canyon	180701050208	Verdugo Wash Reach 1
Indian Canyon	180701050105	Lopez Canyon Creek
Iredall Canyon	180701050208	Berry Canyon
Iron Canyon	180701050205	Pacoima Canyon Creek
Jeffries Canyon	180701050208	Burbank Western Channel
Josephine Creek	180701050103	Big Tujunga Canyon Creek
Kagel Canyon Creek	180701050104	Little Tujunga Canyon Creek
La Tuna Canyon Creek	180701050208	La Tuna Canyon Lateral
La Tuna Canyon Lateral	180701050208	Burbank Western Channel
Ladybug Canyon	*180701050209*	Arroyo Seco Reach 3
Las Flores Canyon	180701050301	Rubio Canyon
Laurel Canyon	180701050205	Pacoima Canyon Creek
Limekiln Canyon	180701050206	Pacoima Wash
Limekiln Canyon Wash	180701050203	Aliso Canyon Wash
Limerock Canyon	180701050104	Little Tujunga Canyon Creek
Lincoln Park Lake	180701050403	
Little Bear Canyon Creek	*180701050209*	Arroyo Seco Reach 3
Little Santa Anita Canyon Creek	180701050302	Sierra Madre Wash
Little Tujunga Canyon Creek	180701050104	Big Tujunga Canyon Creek
Lockheed Channel	180701050208	Burbank Western Channel
Lonetree Canyon	180701050205	Pacoima Canyon Creek
Long Canyon	*180701050209*	Arroyo Seco Reach 3
Loop Canyon	180701050206	Pacoima Wash
Lopez Canyon Creek	180701050105	Tujunga Wash
Los Angeles Reservoir	180701050204	Van Norman Complex
Los Angeles River Estuary	*180701050402*	Long Beach Harbor
Los Angeles River Reach 1	*180701050402*	Los Angeles River Estuary
Los Angeles River Reach 2	*180701050402*	Los Angeles River Reach 1
Los Angeles River Reach 2	*180701050401*	Los Angeles River Reach 1
Los Angeles River Reach 3	*180701050210*	Los Angeles River Reach 2
Los Angeles River Reach 3	180701050208	Los Angeles River Reach 2
Los Angeles River Reach 4	180701050208	Los Angeles River Reach 3
Los Angeles River Reach 5	180701050208	Los Angeles River Reach 4
Los Angeles River Reach 6	180701050208	Los Angeles River Reach 5
Lovell Canyon	180701050104	Little Tujunga Canyon Creek
Lower Van Norman Reservoir	180701050204	Van Norman Complex
Lucas Creek	180701050103	Big Tujunga Canyon Creek
Lynx Gulch	180701050103	Big Tujunga Canyon Creek
Mand Canyon	180701050208	Verdugo Wash Reach 1
Maple Canyon	180701050302	Sawpit Canyon Creek
Maple Canyon	180701050205	Pacoima Reservoir
Marok Canyon	180701050104	Little Tujunga Canyon Creek
May Canyon Creek	180701050206	Pacoima Wash
McClure Canyon	180701050208	Burbank Western Channel
McCoy Canyon Creek	180701050201	Arroyo Calabasas
McDonald Creek	180701050208	La Tuna Canyon Lateral
Middle Fork Alder Creek	180701050101	Alder Creek

TABLE 1: INVENTORY OF MAJOR SURFACE WATERS AND WATERS TO WHICH THEY ARE TRIBUTARY

WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
LOS ANGELES RIVER WATERSHED (CONT.)		
Middle Fork Mill Creek	180701050102	Mill Creek
Mill Creek	180701050102	Big Tujunga Canyon Creek
Millard Canyon Creek	*180701050209*	Arroyo Seco Reach 3
Mission Creek	180701050303	Rio Hondo Reach 2
Monrovia Canyon Creek	180701050302	Sawpit Canyon Creek
Monte Cristo Creek	180701050102	Mill Creek
Mule Fork	180701050101	Alder Creek
Mullally Canyon	180701050207	Pickens Canyon
Nehr Canyon	180701050104	Little Tujunga Canyon Creek
Noel Canyon	180701050205	Pacoima Canyon Creek
North Fork Alder Creek	180701050101	Alder Creek
North Fork Pacoima Canyon	180701050205	Pacoima Canyon Creek
North Fork Santa Anita Canyon	180701050302	Santa Anita Canyon Creek
North Fork Trail Canyon	180701050105	Trail Canyon
Oak Spring Canyon	180701050104	Little Tujunga Canyon Creek
Oliver Canyon	180701050105	Big Tujunga Canyon Creek
Pacoima Canyon Creek	180701050205	Pacoima Wash
Pacoima Diversion Channel	180701050208	Tujunga Wash
Pacoima Reservoir	180701050205	Pacoima Wash
Pacoima Wash	180701050206	Los Angeles River Reach 4
Pasadena Glen	180701050301	Eaton Wash (below dam)
Peck Road Park Lake	180701050302	Rio Hondo Reach 3
Pickens Canyon	180701050207	Verdugo Wash Reach 2
Pine Canyon	*180701050209*	Arroyo Seco Reach 3
Pine Canyon	180701050104	Gold Creek
Pipe Canyon	180701050105	Big Tujunga Canyon Creek
Pomeroy Canyon	180701050208	Brand Canyon
Rattlesnake Canyon	180701050205	Pacoima Canyon Creek
Rio Hondo Reach 1	180701050303	Los Angeles River Reach 2
Rio Hondo Reach 2	180701050303	Rio Hondo Reach 1
Rio Hondo Reach 3	180701050303	Rio Hondo Reach 2
Rio Hondo Reach 3	180701050302	Rio Hondo Reach 2
Rubio Canyon	180701050301	Rubio Wash
Rubio Wash	180701050303	Rio Hondo Reach 2
Ruby Canyon	180701050302	Sawpit Wash
San Olene Canyon	180701050302	Santa Anita Canyon Creek
San Pascual Creek	180701050303	Alhambra Wash
Santa Anita Canyon Creek	180701050302	Santa Anita Wash (upper)
Santa Anita Wash (lower)	180701050302	Rio Hondo Reach 2
Santa Anita Wash (upper)	180701050302	Santa Anita Wash (lower)
Santa Susana Pass Wash	180701050202	Browns Canyon Wash
Saucer Branch	*180701050209*	Millard Canyon Creek
Sawpit Canyon Creek	180701050302	Sawpit Wash
Sawpit Reservoir	180701050302	Sawpit Canyon Creek
Sawpit Wash	180701050302	Rio Hondo Reach 2
Schoolhouse Canyon	180701050206	Wilson Canyon Creek
Schwartz Canyon	180701050105	Big Tujunga Canyon Creek
Sennet Canyon	180701050208	Los Angeles River Reach 4
Sepulveda Flood Control Basin	180701050208	Los Angeles River Reach 5
Sheep Corral Canyon	180701050207	Verdugo Wash Reach 2
Sherer Canyon	180701050208	Verdugo Wash Reach 1
Shields Canyon	180701050207	Eagle Canyon Channel
Silver Creek	180701050105	Big Tujunga Canyon Creek
Slaughter Canyon	180701050104	Gold Creek
Snover Canyon	180701050207	Halls Canyon Channel
Sold Canyon	180701050205	Pacoima Canyon Creek
Sombrero Canyon	180701050204	Van Norman Complex
Spanish Canyon	180701050302	Sawpit Canyon Creek
Spring Canyon	*180701050210*	Los Angeles River Reach 3
Spring Creek	180701050205	Pacoima Canyon Creek
Stetson Canyon Creek	180701050204	Van Norman Complex
Stone Canyon	180701050105	Big Tujunga Canyon Creek
Story Canyon	180701050208	Burbank Western Channel
Stough Canyon	180701050208	Burbank Western Channel
Sunset Canyon	180701050208	Burbank Western Channel

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WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
LOS ANGELES RIVER WATERSHED (CONT.)		
Sutton Canyon	180701050207	Pickens Canyon
Sycamore Canyon	*180701050210*	Los Angeles River Reach 3
Sycamore Canyon	180701050302	Sawpit Canyon Creek
Sycamore Canyon	180701050303	Rio Hondo Reach 2
Toll Canyon	180701050208	Verdugo Wash Reach 1
Toluca Lake	180701050208	
Trail Canyon	180701050105	Big Tujunga Canyon Creek
Tujunga Wash	180701050208	Los Angeles River Reach 4
Twin Canyon	*180701050209*	Arroyo Seco Reach 3
Twin Springs Canyon	180701050302	Sawpit Canyon Creek
Upper Big Tujunga Creek	180701050103	Big Tujunga Canyon Creek
Vasquez Creek	180701050105	Big Tujunga Canyon Creek
Vassar Canyon	180701050302	Sawpit Canyon Creek
Verdugo Wash Reach 1	180701050207	Los Angeles River Reach 3
Verdugo Wash Reach 2	180701050207	Verdugo Wash Reach 1
Vogel Canyon	180701050105	Big Tujunga Canyon Creek
Ward Canyon	180701050207	Dunsmore Canyon Creek
Webber Canyon	180701050207	Snover Canyon
Weldon Canyon	180701050204	Van Norman Complex
West Fork Alder Creek	180701050101	Alder Creek
West Fork Fox Creek	180701050103	Fox Creek
West Fork Sombrero Canyon	180701050204	Van Norman Complex
West Ravine	*180701050209*	Arroyo Seco Reach 3
White Oak Canyon	180701050103	Big Tujunga Canyon Creek
Whitewater Canyon	180701050205	Pacoima Canyon Creek
Whittier Narrows Flood Control Basin	180701050303	Rio Hondo Reach 2
Wickiup Canyon	180701050103	Big Tujunga Canyon Creek
Wildcat Gulch	180701050103	Big Tujunga Canyon Creek
Wildwood Canyon	180701050208	Burbank Western Channel
Wilson Canyon Creek	180701050206	Pacoima Wash
Winter Creek	180701050302	Santa Anita Canyon Creek
Woodwardia Canyon	*180701050209*	Dark Canyon
Woolsey Canyon	180701050201	Chatsworth Reservoir
Ybarra Canyon	180701050105	Big Tujunga Canyon Creek
Ybarra Canyon	180701050202	Devil Canyon
SAN GABRIEL RIVER WATERSHED		
Alder Gulch	*180701060301*	East Fork San Gabriel River
Allison Gulch	*180701060303*	East Fork San Gabriel River
Alpine Canyon	*180701060204*	Cloudburst Canyon
Arroyo Jalisco	*180701060602*	Leffingwell Creek
Arroyo Pescadero	*180701060602*	La Canada Verde Creek
Arroyo Salinas	*180701060602*	Leffingwell Creek
Arroyo San Miguel	*180701060602*	Leffingwell Creek
Avocado Creek	*180701060601*	San Gabriel River Reach 3
Bacon Creek	*180701060602*	Sorensen Avenue Drain
Bear Creek	*180701060203*	West Fork San Gabriel River
Bear Gulch	*180701060301*	Prairie Fork
Bell Canyon Creek	*180701060402*	Big Dalton Canyon Creek
Bichota Canyon	*180701060204*	North Fork San Gabriel River
Big Dalton Canyon Creek	*180701060402*	Big Dalton Wash
Big Dalton Reservoir	*180701060402*	Big Dalton Canyon Creek
Big Dalton Wash	*180701060402*	Walnut Creek
Big Mermaids Canyon	*180701060205*	West Fork San Gabriel River
Blind Canyon	*180701060302*	Coldwater Canyon Creek
Bliss Canyon	*180701060601*	San Gabriel River Reach 5
Bobcat Canyon	*180701060202*	West Fork San Gabriel River
Bradbury Canyon Creek	*180701060601*	Santa Fe Flood Control Basin
Brea Canyon	*180701060502*	San Jose Creek
Brea Creek	*180701060603*	Coyote Creek
Browns Gulch	*180701060601*	Morris Reservoir
Burbank Canyon	*180701060501*	Thompson Creek Reservoir
Burro Canyon	*180701060303*	San Gabriel Reservoir
Butterfield Canyon	*180701060205*	West Fork San Gabriel River
Cape Horn Canyon	*180701060303*	East Fork San Gabriel River
Carbon Creek	*180701060605*	Coyote Creek

TABLE 1: INVENTORY OF MAJOR SURFACE WATERS AND WATERS TO WHICH THEY ARE TRIBUTARY

WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
SAN GABRIEL RIVER WATERSHED (CONT.)		
Cattle Canyon Creek	*180701060302*	East Fork San Gabriel River
Cedar Canyon	*180701060202*	West Fork San Gabriel River
Cedar Creek	*180701060204*	Soldier Creek
Charter Oak Creek	*180701060402*	Walnut Creek Wash
Chicken Canyon	*180701060501*	Thompson Creek
Chileno Canyon	*180701060205*	West Fork San Gabriel River
Clark Gulch	*180701060303*	East Fork San Gabriel River
Cloudburst Canyon	*180701060204*	North Fork San Gabriel River
Cobal Canyon	*180701060501*	Palmer Canyon
Cogswell Reservoir	*180701060202*	West Fork San Gabriel River
Cold Springs Canyon	*180701060601*	Fish Canyon Creek
Coldbrook Creek	*180701060204*	North Fork San Gabriel River
Coldwater Canyon Creek	*180701060302*	Cattle Canyon Creek
Cow Canyon Creek	*180701060302*	Cattle Canyon Creek
Coyote Creek	*180701060606*	San Gabriel River Estuary
Coyote Creek	*180701060603*	San Gabriel River Estuary
Crystal Lake	*180701060204*	
Devil Gulch	*180701060303*	East Fork San Gabriel River
Devils Canyon Creek	*180701060201*	Cogswell Reservoir
Diamond Bar Creek	*180701060501*	San Jose Creek
Dime Canyon	*180701060302*	Cattle Canyon Creek
Dry Gulch	*180701060302*	Coldwater Canyon Creek
East Branch Big Dalton Wash	*180701060402*	Big Dalton Wash
East Fork Horse Canyon	*180701060303*	Horse Canyon
East Fork San Dimas Canyon	*180701060401*	San Dimas Canyon Creek
East Fork San Gabriel River	*180701060301*	San Gabriel Reservoir
East Fork San Gabriel River	*180701060303*	San Gabriel Reservoir
East Fork Susanna Canyon	*180701060303*	Susanna Canyon
El Dorado Lakes	*180701060606*	
Emerald Creek And Wash	*180701060402*	Live Oak Wash
Englewood Canyon	*180701060402*	Little Dalton Wash
Falls Canyon	*180701060202*	West Fork San Gabriel River
Falls Gulch	*180701060303*	East Fork San Gabriel River
Fern Canyon	*180701060601*	Fish Canyon Creek
Fish Canyon Creek	*180701060601*	San Gabriel River Reach 5
Fish Fork	*180701060301*	East Fork San Gabriel River
Fossil Canyon	*180701060302*	Coldwater Canyon Creek
Fullerton Creek	*180701060604*	Coyote Creek
Gail Canyon	*180701060501*	Thompson Creek
Garcia Canyon	*180701060601*	Morris Reservoir
Glen Canyon	*180701060205*	West Fork San Gabriel River
Gordon Canyon	*180701060402*	Mull Canyon
Graveyard Canyon	*180701060303*	East Fork San Gabriel River
Hacienda Channel	*180701060502*	San Jose Creek
Ham Canyon	*180701060401*	San Dimas Wash (lower)
Harrow Canyon	*180701060402*	Little Dalton Wash
Horse Canyon	*180701060303*	East Fork San Gabriel River
Hummingbird Creek	*180701060401*	Tanbark Creek
Iron Fork	*180701060303*	East Fork San Gabriel River
Islip Canyon	*180701060601*	Morris Reservoir
Keril Canyon	*180701060402*	Big Dalton Canyon Creek
La Canada Verde Creek	*180701060602*	Coyote Creek
La Mirada Creek	*180701060602*	La Canada Verde Creek
Laurel Gulch	*180701060303*	East Fork San Gabriel River
Leffingwell Creek	*180701060602*	La Canada Verde Creek
Legg Lake	180701050303	Whittier Narrows Flood Control Basin
Lemon Creek	*180701060501*	San Jose Creek
Lewis Paul Canyon	*180701060402*	Big Dalton Canyon Creek
Little Dalton Canyon Creek	*180701060402*	Little Dalton Wash
Little Dalton Wash	*180701060402*	Big Dalton Wash
Little Mermaids Canyon	*180701060205*	West Fork San Gabriel River
Live Oak Creek	*180701060402*	Live Oak Reservoir
Live Oak Reservoir	*180701060402*	Live Oak Wash
Live Oak Wash	*180701060402*	Puddingstone Reservoir
Lobo Canyon	*180701060202*	Cogswell Reservoir

TABLE 1: INVENTORY OF MAJOR SURFACE WATERS AND WATERS TO WHICH THEY ARE TRIBUTARY

WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
SAN GABRIEL RIVER WATERSHED (CONT.)		
Lodi Canyon	*180701060401*	San Dimas Wash (upper)
Loftus Channel	*180701060604*	Fullerton Creek
Lost Canyon Creek	*180701060204*	North Fork San Gabriel River
Maddock Canyon Creek	*180701060601*	Santa Fe Flood Control Basin
Maple Canyon	*180701060204*	North Fork San Gabriel River
Marshall Creek and Wash	*180701060402*	Live Oak Wash
Mine Gulch	*180701060301*	East Fork San Gabriel River
Minero Canyon	*180701060303*	San Gabriel Reservoir
Monroe Canyon	*180701060402*	Big Dalton Canyon Creek
Moody Creek	*180701060606*	Coyote Creek
Morgan Canyon	*180701060402*	East Branch Big Dalton Wash
Morris Reservoir	*180701060601*	San Gabriel River Reach 5
Mull Canyon	*180701060402*	Big Dalton Wash
Mystic Canyon	*180701060402*	Big Dalton Canyon Creek
North Fork San Gabriel River	*180701060204*	West Fork San Gabriel River
Oak Canyon	*180701060303*	East Fork San Gabriel River
Oak Canyon	*180701060502*	San Jose Creek
Palmer Canyon	*180701060501*	Thompson Creek Reservoir
Peacock Canyon	*180701060302*	Cattle Canyon Creek
Persinger Canyon	*180701060601*	San Gabriel Reservoir
Phipps Canyon	*180701060205*	West Fork San Gabriel River
Pine Canyon	*180701060601*	Morris Reservoir
Pine Canyon	*180701060402*	Big Dalton Canyon Creek
Polecat Gulch	*180701060601*	San Gabriel Reservoir
Powder Canyon	*180701060502*	San Jose Creek
Prairie Fork	*180701060301*	East Fork San Gabriel River
Puddingstone Reservoir	*180701060402*	Walnut Creek Wash
Puddingstone Wash	*180701060402*	Walnut Creek Wash
Puente Creek	*180701060502*	San Jose Creek
Rattlesnake Canyon	*180701060303*	East Fork San Gabriel River
Rincon Canyon	*180701060205*	San Gabriel Reservoir
Robbs Canyon	*180701060601*	San Gabriel Reservoir
Roberts Canyon Creek	*180701060601*	San Gabriel River Reach 5
Rockbound Canyon	*180701060204*	Soldier Creek
Ross Gulch	*180701060303*	Iron Fork
Rush Creek	*180701060202*	West Fork San Gabriel River
San Dimas Canyon Creek	*180701060401*	San Dimas Reservoir
San Dimas Reservoir	*180701060401*	San Dimas Wash (upper)
San Dimas Wash (lower)	*180701060402*	Big Dalton Wash
San Dimas Wash (upper)	*180701060401*	San Dimas Wash (lower)
San Gabriel Reservoir	*180701060601*	San Gabriel River Reach 5
San Gabriel River Estuary	*180701060606*	Pacific Ocean
San Gabriel River Reach 1	*180701060606*	San Gabriel River Estuary
San Gabriel River Reach 2	*180701060606*	San Gabriel River Reach 1
San Gabriel River Reach 3	*180701060601*	San Gabriel River Reach 2
San Gabriel River Reach 4	*180701060601*	San Gabriel River Reach 3
San Gabriel River Reach 5	*180701060601*	San Gabriel River Reach 4
San Jose Creek Reach 1	180701060502	San Gabriel River Reach 3
San Jose Creek Reach 2	180701060501	*San Jose Creek Reach 1*
Santa Fe Flood Control Basin	*180701060601*	San Gabriel River Reach 5
Savage Creek	*180701060602*	Sorensen Avenue Drain
Scott Canyon	*180701060601*	San Gabriel River Reach 5
Sharps Canyon	*180701060601*	Morris Reservoir
Shay Canyon	*180701060402*	San Dimas Wash (lower)
Shoemaker Canyon	*180701060303*	East Fork San Gabriel River
Shortcut Canyon	*180701060202*	West Fork San Gabriel River
Snowslide Canyon	*180701060204*	Cedar Creek
Soldier Creek	*180701060204*	Coldbrook Creek
Sorensen Avenue Drain	*180701060602*	La Canada Verde Creek
South Fork Iron Fork	*180701060303*	Iron Fork
South San Jose Creek	*180701060501*	San Jose Creek
Spinks Canyon Creek	*180701060601*	Scott Canyon
Spring Canyon	*180701060402*	East Branch Big Dalton Wash
Strayns Canyon	*180701060202*	West Fork San Gabriel River
Susanna Canyon	*180701060303*	East Fork San Gabriel River

TABLE 1: INVENTORY OF MAJOR SURFACE WATERS AND WATERS TO WHICH THEY ARE TRIBUTARY

WATERBODY	HYDROLOGIC UNIT CODE	TRIBUTARY OF
SAN GABRIEL RIVER WATERSHED (CONT.)		
Sycamore Canyon	*180701060606*	San Gabriel River Reach 2
Sycamore Canyon	*180701060402*	San Dimas Wash (lower)
Tacobi Creek	*180701060602*	Arroyo San Miguel
Tanbark Creek	*180701060401*	San Dimas Canyon Creek
Thompson Creek	*180701060501*	Thompson Wash
Thompson Reservoir	*180701060501*	Thompson Creek
Thompson Wash	*180701060501*	San Jose Creek
Tonner Canyon	*180701060603*	Brea Creek
Trail Fork	*180701060202*	Shortcut Canyon
Tumbler Canyon	*180701060202*	Cogswell Reservoir
Turnbull Canyon	*180701060602*	Sorensen Avenue Drain
Valley Forge Canyon	*180701060202*	West Fork San Gabriel River
Van Tassel Canyon	*180701060601*	San Gabriel River Reach 5
Venedo Canyon	*180701060601*	San Gabriel Reservoir
Vincent Gulch	*180701060301*	East Fork San Gabriel River
Volfe Canyon	*180701060402*	Big Dalton Canyon Creek
Walnut Creek Wash	*180701060402*	San Gabriel River Reach 3
Water Canyon	*180701060601*	Morris Reservoir
Web Canyon	*180701060501*	Thompson Creek
West Fork Bear Creek	*180701060203*	Bear Creek
West Fork Palmer Canyon	*180701060501*	Palmer Canyon
West Fork San Dimas Canyon	*180701060401*	San Dimas Canyon Creek
West Fork San Gabriel River	*180701060202*	Cogswell Reservoir
West Fork San Gabriel River	*180701060205*	San Gabriel Reservoir
Wildwood Canyon	*180701060402*	East Branch Big Dalton Wash
Williams Canyon	*180701060303*	East Fork San Gabriel River
Williams Canyon	*180701060501*	Palmer Canyon
Wolfskill Canyon	*180701060401*	San Dimas Canyon Creek
Worsham Creek	*180701060602*	Sorensen Avenue Drain
ISLAND WATERCOURSES		
Big Springs Canyon	180701070003	Pacific Ocean
Cherry Valley	180701070002	Pacific Ocean
Cottonwood Canyon	180701070003	Pacific Ocean
Gallagher Canyon	180701070002	Pacific Ocean
Grand Canyon	180701070003	Silver Canyon
Little Springs Canyon	180701070003	Pacific Ocean
Middle Canyon	180701070003	Pacific Ocean
Silver Canyon	180701070003	Pacific Ocean
Swains Canyon	180701070002	Pacific Ocean
Valley of Ollas	180701070002	Pacific Ocean

Table A2-1 Cross Reference Table for Inland Surface Waters

1994 Basin Plan Name	Hydro Unit No. (Calwater 1.0)	2011 Basin Plan Name	HUC 12 No. (Watershed Boundary Dataset)
VENTURA COUNTY COASTAL STREAMS			
Los Sauces Creek	401.00	Los Sauces Creek	*180701010202*
Poverty Canyon	401.00	Poverty Canyon	*180701010202*
Madranio Canyon	401.00	Madranio Canyon	*180701010202*
Javon Canyon	401.00	Javon Canyon	*180701010202*
Padre Juan Canyon	401.00	Padre Juan Canyon	*180701010202*
McGrath Lake	403.11	McGrath Lake	*180701010202*
Big Sycamore Canyon Creek	404.47	Big Sycamore Canyon Creek	*180701040201*
Little Sycamore Canyon Creek	404.45	Little Sycamore Canyon Creek	*180701040202*
VENTURA RIVER WATERSHED			
Ventura River Estuary	402.10	Ventura River Estuary	180701010106
Ventura River	402.10	*Ventura River Reach 1 (Ventura River Estuary to Main St.)*	180701010106
Ventura River	402.10	*Ventura River Reach 2 (Main St. to Weldon Canyon)*	180701010106
Ventura River	402.10	*Ventura River Reach 3 (Weldon Canyon to Casitas Vista Rd.)*	180701010106
Ventura River	402.10	*Ventura River Reach 4 (Casitas Vista Rd. to San Antonio Creek)*	180701010106
Ventura River	402.20	*Ventura River Reach 4 (San Antonio Creek to Camino Cielo Rd.)*	180701010104
Ventura River	402.20	Ventura River Reach 5 (above Camino Cielo Rd.)	180701010104
Cañada Larga	402.10	Cañada Larga	180701010106
Lake Casitas	402.20	Lake Casitas	180701010105
Lake Casitas tributaries	402.20	Lake Casitas tributaries	180701010105
Coyote Creek below dam	402.20	Coyote Creek	180701010105
San Antonio Creek	402.20	*San Antonio Creek (Ventura River Reach 4 to Lion Creek)*	180701010103
San Antonio Creek	402.32	San Antonio Creek (above Lion Creek)	180701010103
Lion Creek	402.31	Lion Creek	180701010103
Reeves Creek	402.32	Reeves Creek	180701010103
Mirror Lake	402.20	Mirror Lake	180701010104
Ojai Wetland	402.20	Ojai Wetland	180701010104
Matilija Creek	402.20	*Matilija Creek Reach 1 (Ventura River Reach 5 to Matilija Reservoir)*	180701010101
Matilija Creek	402.20	Matilija Creek Reach 2 (above Matilija reservoir)	180701010104
Murietta Canyon Creek	402.20	Murietta Canyon Creek	180701010101
North Fork Matilija Creek	402.20	North Fork Matilija Creek	180701010102
Matilija Reservoir	402.20	Matilija Reservoir	180701010101
SANTA CLARA RIVER WATERSHED			
Santa Clara River Estuary	403.11	Santa Clara River Estuary	180701020904
Santa Clara River	403.11	*Santa Clara River Reach 1 (Estuary to Highway 101 bridge)*	180701020904
Santa Clara River	403.11	*Santa Clara River Reach 2 (Highway 101 bridge to Freeman Diversion)*	180701020904
Santa Clara River	403.21	*Santa Clara River Reach 3 (Freeman Diversion Dam to Santa Paula Creek)*	180701020903
Santa Clara River	403.31	*Santa Clara River Reach 3 (Santa Paula Creek to Sespe Creek)*	180701020902
Santa Clara River	403.31	*Santa Clara River Reach 3 (Sespe Creek to A Street, Fillmore)*	180701020802
Santa Clara River	403.41	*Santa Clara River Reach 4A (A Street, Fillmore to Piru Creek)*	180701020802
Santa Clara River	403.41	*Santa Clara River Reach 4B (Piru Creek to Blue Cut gaging station)*	180701020403
Santa Clara River	403.51	*Santa Clara River Reach 5 (Blue Cut gaging station to West Pier Highway 99)*	180701020403
Santa Clara River	403.51	*Santa Clara River Reach 6 (West Pier Highway 99 to Bouquet Canyon Rd.)*	180701020403
Santa Clara River	403.51	*Santa Clara River Reach 7 (Bouquet Canyon Rd. to Lang gaging station)*	180701020107
Santa Clara River (Soledad Cyn)	403.55	*Reach 8-Soledad Canyon (Lang gaging station to Agua Dulce Canyon Creek)*	180701020107
Santa Clara River (Soledad Cyn)	403.55	*Reach 8-Soledad Canyon (Agua Dulce Canyon Creek to Aliso Canyon Creek)*	180701020105
Santa Clara River (Soledad Cyn)	403.55	Reach 8-Soledad Canyon (above Aliso Canyon Creek)	180701020102
Santa Paula Creek	403.21	*Santa Paula Creek (Santa Clara River to Santa Paula Water Works Diversion Dam*	180701020901
Santa Paula Creek	403.21	Reach 9-Santa Paula Creek (above Santa Paula Water Works Diversion Dam)	180701020901
Sisar Creek	403.21	Sisar Creek	180701020901
Sisar Creek	403.22	Sisar Creek	180701020901
Sespe Creek	403.31	*Sespe Creek (Santa Clara River R3 to gaging station below Little Sespe Creek)*	180701020706
Sespe Creek	403.32	*Reach 10-Sespe Creek (gaging station below Little Sespe Creek to Hot Springs Ca*	180701020705
Sespe Creek	403.32	*Reach 10-Sespe Creek (Hot Springs Canyon to Piedra Blanca Creek)*	180701020703
Sespe Creek	403.32	*Reach 10-Sespe Creek (Piedra Blanca Creek to Potrero John Creek)*	180701020702
Sespe Creek	403.32	Reach 10-Sespe Creek (above Potrero John Creek)	180701020701
Timber Creek	403.32	Timber Creek	180701020703
Bear Canyon	403.32	Bear Canyon	180701020703
Trout Creek	403.32	Trout Creek	180701020703
Piedra Blanca Creek	403.32	Piedra Blanca Creek	180701020703
Lion Canyon	403.32	Lion Canyon	180701020702
SANTA CLARA RIVER WATERSHED (CONT.)			
Rose Valley Creek	403.32	Rose Valley Creek	180701020702

Table A2-1 Cross Reference Table for Inland Surface Waters

1994 Basin Plan Name	Hydro Unit No. (Calwater 1.0)	2011 Basin Plan Name	HUC 12 No. (Watershed Boundary Dataset)
Howard Creek	403.32	Howard Creek	180701020702
Tule Creek	403.32	Tule Creek	180701020702
Potrero John Creek	403.32	Potrero John Creek	180701020701
Hopper Creek	403.41	Hopper Creek	180701020801
Piru Creek	403.41	*Piru Creek (Santa Clara River R4A to Santa Paula Water Works Diversion Dam)*	180701020604
Piru Creek	403.41	*Reach 11-Piru Creek (gaging station below Santa Felicia Dam to Agua Blanca Cree*	180701020603
Piru Creek	403.42	*Reach 11-Piru Creek (Agua Blanca Creek to Pyramid Lake)*	180701020602
Piru Creek	403.42	*Reach 11-Piru Creek (Pyramid Lake to Snowy Creek)*	180701020508
Piru Creek	403.42	*Reach 11-Piru Creek (Snowy Creek to Lockwood Creek)*	180701020505
Piru Creek	403.42	Reach 11-Piru Creek (above Lockwood Creek)	180701020502
Lake Piru	403.41	Lake Piru	180701020603
Lake Piru	403.42	Lake Piru	180701020603
Pyramid Lake	403.42	Pyramid Lake	180701020509
Canada de los Alamos	403.43	Canada de los Alamos	180701020506
Gorman Creek	403.43	Gorman Creek	180701020507
Lockwood Creek	403.42	Lockwood Creek	180701020504
Lockwood Creek	403.44	Lockwood Creek	180701020504
Tapo Canyon	403.41	Tapo Canyon	180701020403
Castaic Creek	403.51	*Castaic Creek (Santa Clara River R5 to Castaic Lake)*	180701020306
Castaic Creek	403.51	*Castaic Creek (Castaic Lake to Fish Canyon)*	180701020305
Castaic Creek	403.51	Castaic Creek (above Fish Canyon)	180701020304
Castaic Lagoon	403.51	Castaic Lagoon	180701020306
Castaic Lake	403.51	Castaic Lake	180701020305
Castaic Lake	403.51	Castaic Lake	180701020304
Elderberry Forebay	403.51	Elderberry Forebay	180701020305
Elizabeth Lake Canyon	403.51	Elizabeth Lake Canyon	180701020304
San Francisquito Canyon	403.51	San Francisquito Canyon	180701020402
South Fork (Santa Clara River)	403.51	South Fork Santa Clara River	180701020401
Drinkwater Reservoir	403.51	Drinkwater Reservoir	180701020402
Bouquet Canyon	403.51	*Bouquet Canyon (Santa Clara River R6 to Vasquez Canyon)*	180701020401
Bouquet Canyon	403.52	Bouquet Canyon (above Vasquez Canyon)	180701020401
Dry Canyon Creek	403.51	Dry Canyon Creek	180701020202
Dry Canyon Reservoir	403.51	Dry Canyon Reservoir	180701020201
Bouquet Reservoir	403.52	Bouquet Reservoir	180701020201
Mint Canyon Creek	403.51	*Mint Canyon Creek Reach 1 (Santa Clara River R7 to Rowher Canyon)*	180701020106
Mint Canyon Creek	403.53	Mint Canyon Creek Reach 2 (above Rowher Canyon)	180701020106
Agua Dulce Canyon Creek	403.54	*Agua Dulce Canyon Creek (Santa Clara River R8 to Escondido Canyon Rd.)*	180701020104
Agua Dulce Canyon Creek	403.55	Agua Dulce Canyon Creek (above Escondido Canyon Rd.)	180701020104
Aliso Canyon Creek	403.55	Aliso Canyon Creek	180701020101
Lake Hughes	403.51	Lake Hughes	180701020301
Munz Lake	403.51	Munz Lake	180701020301
Lake Elizabeth	403.51	Lake Elizabeth	180701020301
CALLEGUAS-CONEJO CREEK WATERSHED			
Mugu Lagoon	403.11	Calleguas Creek Reach 1	180701030102
Calleguas Creek Estuary	403.11	Calleguas Creek Estuary	180701030107
Calleguas Creek	403.11	*Calleguas Creek Reach 2 (Estuary to Potrero Rd.)*	180701030107
Calleguas Creek	403.12	Calleguas Creek Reach 3 (Potrero Rd. to Conejo Creek)	180701030107
Revolon Slough	403.11	*Reach 4-Revolon Slough (Calleguas Creek Rch 2 to Pleasant Valley Rd.)*	*180701030106*
Revolon Slough	403.11	*Reach 4-Revolon Slough (Pleasant Valley Rd. to Central Ave.)*	*180701030107*
Beardsley Wash	403.61	Reach 5-Beardsley Channel (above Central Ave.)	180701030106
Conejo Creek	403.12	*Reach 9B-Conejo Creek(Calleguas Creek Rch 3 to Camrosa Diversion)*	180701030105
Conejo Creek	403.12	*Reach 9A-Conejo Creek (Camrosa diversion to Camarillo Rd.)*	180701030105
Conejo Creek	403.63	*Reach 9A-Conejo Creek (Camarillo Rd. to Arroyo Santa Rosa)*	180701030105
Arroyo Conejo	403.64	*Reach 10-Arroyo Conejo (Conejo Creek to North Fork Arroyo Conejo)*	180701030107
Arroyo Conejo	*403.68*	*Reach 13-North Fork Arroyo Conejo (above confl. with North Fork Arroyo Conejo)*	180701030104
Arroyo Santa Rosa	403.63	*Reach 11-Arroyo Santa Rosa (above confl. with Conejo Creek)*	180701030105
Arroyo Santa Rosa	403.65	*Reach 11-Arroyo Santa Rosa (above confl. with Conejo Creek)*	180701030105
North Fork Arroyo Conejo	403.64	*Reach 12-North Fork Arroyo Conejo (above confl. with Arroyo Conejo)*	180701030104
Arroyo Las Posas	403.12	*Reach 6-Arroyo Las Posas (Calleguas Creek Rch 3 to Long Canyon)*	180701030105
Arroyo Las Posas	403.62	*Reach 6-Arroyo Las Posas (Long Canyon to Hitch Rd.)*	180701030103
Arroyo Simi	403.62	*Reach 7-Arroyo Simi (Hitch Rd. to Happy Camp Canyon)*	180701030103
Arroyo Simi	403.62	*Reach 7-Arroyo Simi (Happy Camp Canyon to Alamos Canyon)*	180701030102
Arroyo Simi	*403.67*	*Reach 7-Arroyo Simi (Alamos Canyon to Tapo Canyon Creek)*	*180701030102*
Arroyo Simi	*403.67*	*Reach 7-Arroyo Simi (above Tapo Canyon Creek)*	*180701030101*
Tapo Canyon Creek	*403.66*	Reach 8-Tapo Canyon Creek (above Arroyo Simi)	180701030101
Tapo Canyon Creek	403.67	Reach 8-Tapo Canyon Creek (above Arroyo Simi)	180701030101

Table A2-1 Cross Reference Table for Inland Surface Waters

1994 Basin Plan Name	Hydro Unit No. (Calwater 1.0)	2011 Basin Plan Name	HUC 12 No. (Watershed Boundary Dataset)
Gillibrand Canyon Creek	403.66	*Gillibrand Canyon Creek (Tapo Canyon Creek to Windmill Canyon)*	180701030101
Gillibrand Canyon Creek	403.67	Gillibrand Canyon Creek (above Windmill Canyon)	180701030101
Lake Bard (Wood Ranch Reservoir)	403.67	Lake Bard (Wood Ranch Reservoir)	180701030102
LOS ANGELES COUNTY COASTAL STREAMS			
Arroyo Sequit	404.44	Arroyo Sequit	*180701040202*
San Nicholas Canyon Creek	404.43	San Nicholas Canyon Creek	*180701040202*
Los Alisos Canyon Creek	404.42	Los Alisos Canyon Creek	*180701040202*
Lachusa Canyon Creek	404.42	Lachusa Canyon Creek	*180701040202*
Encinal Canyon Creek	404.41	Encinal Canyon Creek	*180701040202*
Trancas Canyon Creek	404.37	Trancas Canyon Creek	*180701040203*
Dume Lagoon	404.36	Dume Lagoon	*180701040203*
Dume Creek (Zuma Canyon)	404.36	Dume Creek (Zuma Canyon)	*180701040203*
Ramirez Canyon Creek	404.35	Ramirez Canyon Creek	*180701040204*
Escondido Canyon Creek	404.34	Escondido Canyon Creek	*180701040204*
Latigo Canyon Creek	404.33	Latigo Canyon Creek	*180701040204*
Solstice Canyon Creek	404.32	Solstice Canyon Creek	*180701040204*
Puerco Canyon Creek	404.31	Puerco Canyon Creek	*180701040204*
Corral Canyon Creek	404.31	Corral Canyon Creek	*180701040204*
Carbon Canyon Creek	404.16	Carbon Canyon Creek	*180701040403*
Las Flores Canyon Creek	404.15	Las Flores Canyon Creek	*180701040403*
Piedra Gorda Canyon Creek	404.14	Piedra Gorda Canyon Creek	*180701040403*
Pena Canyon Creek	404.13	Pena Canyon Creek	*180701040403*
Tuna Canyon Creek	404.12	Tuna Canyon Creek	*180701040403*
Topanga Lagoon	404.11	Topanga Lagoon	*180701040401*
Topanga Canyon Creek	404.11	Topanga Canyon Creek	*180701040401*
Santa Ynez Canyon	405.13	Santa Ynez Canyon	*180701040403*
Santa Ynez Lake (Lake Shrine)	405.13	Santa Ynez Lake (Lake Shrine)	*180701040403*
Santa Monica Canyon Channel	405.13	Santa Monica Canyon Channel	*180701040402*
Rustic Canyon Creek	405.13	Rustic Canyon Creek	*180701040402*
Sullivan Canyon Creek	405.13	Sullivan Canyon Creek	*180701040402*
Mandeville Canyon Creek	405.13	Mandeville Canyon Creek	*180701040402*
Coastal Streams of Palos Verdes	405.11	Coastal Streams of Palos Verdes	*180701040500*
Canyon Streams trib. to Coastal Streams of Palos Verdes	405.12	Canyon Streams of Palos Verdes	*180701040701*
Bixby Slough and Harbor Lake	405.12	Bixby Slough	*180701040701*
Bixby Slough and Harbor Lake	405.12	Machado Lake	*180701040701*
Los Cerritos Wetlands	405.15	Los Cerritos Wetlands	*180701040702*
Los Cerritos Channel Estuary	405.12	Los Cerritos Channel Estuary	*180701040702*
Sims Pond	405.15	Sims Pond	*180701040702*
Los Cerritos Channel to Estuary	405.15	Los Cerritos Channel	*180701040702*
Colorado Lagoon	405.12	Colorado Lagoon	*180701040702*
Madrona Marsh	405.12	Madrona Marsh	*180701040701*
Stone Canyon Reservoir	405.13	Stone Canyon Reservoir	*180701040300*
Hollywood Reservoir	405.14	Hollywood Reservoir	*180701040300*
Franklin Canyon Reservoir	405.14	Franklin Canyon Reservoir	*180701040300*
Upper Franklin Canyon Reservoir	405.14	Upper Franklin Canyon Reservoir	*180701040300*
MALIBU CREEK WATERSHED			
Malibu Lagoon	404.21	Malibu Lagoon	180701040104
Malibu Creek	404.21	Malibu Creek	180701040104
Cold Creek	404.21	Cold Creek	180701040104
Las Virgenes Creek	404.22	Las Virgenes Creek	180701040103
Century Reservoir	404.21	Century Reservoir	180701040104
Malibou Lake	404.24	Malibou Lake	180701040104
Medea Creek	404.23	*Medea Creek Reach 1 (Malibou Lake to Lindero Creek Reach 1)*	180701040102
Medea Creek	404.24	Medea Creek Reach 2 (above Lindero Creek Reach 1)	180701040102
Lindero Creek	404.23	*Lindero Creek Reach 1 (Medea Creek Reach 1 to Lake Lindero)*	180701040102
Lindero Creek	404.23	Lindero Creek Reach 2 (above Lake Lindero)	180701040102
Triunfo Creek	404.24	*Triunfo Creek Reach 1 (Malibou Lake to Lobo Canyon)*	180701040104
Triunfo Creek	404.25	*Triunfo Creek Reach 2 (Lobo Canyon to Westlake Lake)*	180701040101
Westlake Lake	404.25	Westlake Lake	180701040101
Potrero Valley Creek	404.25	Potrero Valley Creek	180701040101
Lake Eleanor Creek	404.25	Lake Eleanor Creek	180701040101
Lake Eleanor	404.25	Lake Eleanor	180701040101
Las Virgenes (Westlake) Reservoir	404.25	Las Virgenes (Westlake) Reservoir	180701040101
Hidden Valley Creek	404.26	Hidden Valley Creek	180701040101
Lake Sherwood	404.26	Lake Sherwood	180701040101

Table A2-1 Cross Reference Table for Inland Surface Waters

1994 Basin Plan Name	Hydro Unit No. (Calwater 1.0)	2011 Basin Plan Name	HUC 12 No. (Watershed Boundary Dataset)
BALLONA CREEK WATERSHED			
Ballona Creek Estuary	405.13	Ballona Creek Estuary	*180701040300*
Ballona Lagoon/ Venice Canals	405.13	Ballona Lagoon/ Venice Canals	*180701040403*
Ballona Wetlands	405.13	Ballona Wetlands	*180701040300*
Del Rey Lagoon	405.13	Del Rey Lagoon	*180701040500*
Ballona Creek to Estuary	405.13	*Ballona Creek Reach 2 (Estuary to National Blvd.)*	*180701040300*
Ballona Creek	405.15	Ballona Creek Reach 1 (above National Blvd.)	*180701040300*
DOMINGUEZ CHANNEL WATERSHED			
Dominguez Channel Estuary	405.12	Dominguez Channel Estuary	*180701060102*
Dominguez Channel to Estuary	405.12	*Dominguez Channel (Estuary to 135th St.)*	*180701060102*
Dominguez Channel to Estuary	405.12	Dominguez Channel (above 135th St)	*180701060101*
LOS ANGELES RIVER WATERSHED			
Los Angeles River Estuary	405.12	Los Angeles River Estuary	*180701050402*
Los Angeles River to Estuary	405.12	*Los Angeles River Reach 1 (Estuary to Carson St.)*	*180701050402*
Los Angeles River	405.15	*Los Angeles River Reach 2 (Carson St. to Rio Hondo Reach 1)*	*180701050402*
Los Angeles River	405.15	*Los Angeles River Reach 2 (Rio Hondo Reach 1 to Figueroa St.)*	*180701050401*
Los Angeles River	405.21	*Los Angeles River Reach 3 (Figueroa St. to Riverside Dr.)*	*180701050210*
Los Angeles River	405.21	*Los Angeles River Reach 4 (Riverside Dr. to Sepulveda Dam)*	180701050208
Los Angeles River	405.21	*Los Angeles River Reach 5 (Sepulveda Dam to Balboa Blvd.)*	180701050208
Los Angeles River	405.21	Los Angeles River Reach 6 (above Balboa Blvd.)	180701050208
Compton Creek	405.15	Compton Creek	*180701050402*
Rio Hondo below Spreading Grounds	405.15	*Rio Hondo Reach 1 (Los Angeles River Reach 2 to Santa Ana Freeway)*	180701050303
Rio Hondo to Spreading Grounds	405.15	*Rio Hondo Reach 2 (Santa Ana Freeway to Whittier Narrows Dam)*	180701050303
Rio Hondo	405.41	Rio Hondo Reach 3 (above Whittier Narrows Dam)	180701050302
Alhambra Wash	405.41	Alhambra Wash	180701050303
Rubio Wash	405.41	Rubio Wash	180701050303
Rubio Canyon	*405.31*	*Rubio Canyon*	*180701050401*
Eaton Wash	*405.41*	*Eaton Wash (Rio Hondo Reach 3 to Del Mar Blvd.)*	*180701050303*
Eaton Wash (below dam)	405.41	*Eaton Wash (below dam) (Del Mar Blvd. to Eaton Dam)*	180701050301
Eaton Wash (above dam)	405.31	*Eaton Wash (above dam) (Eaton Dam to Mount Wilson Toll Rd.)*	180701050301
Eaton Dam and Reservoir	405.31	Eaton Reservoir	180701050301
Eaton Canyon Creek	405.31	Eaton Canyon Creek (above Mount Wilson Toll Rd.)	180701050301
Arcadia Wash (upper)	*405.33*	Arcadia Wash	180701050302
Aracdia Wash (lower)	*405.41*	Arcadia Wash	180701050302
Santa Anita Wash (lower)	405.41	*Santa Anita Wash (lower) (Rio Hondo Reach 3 to Elkins Ave.)*	180701050302
Santa Anita Wash (upper)	405.33	*Santa Anita Wash (upper) (Elkins Ave. to Big Santa Anita Reservoir)*	180701050302
Little Santa Anita Canyon Creek	405.33	Little Santa Anita Canyon Creek	180701050302
Big Santa Anita Reservoir	405.33	Big Santa Anita Reservoir	180701050302
Santa Anita Canyon Creek	405.33	Santa Anita Canyon Creek	180701050302
Winter Creek	405.33	Winter Creek	180701050302
East Fork Santa Anita Canyon	405.33	East Fork Santa Anita Canyon	180701050302
Sawpit Wash	405.41	Sawpit Wash	180701050302
Sawpit Canyon Creek	405.41	Sawpit Canyon Creek	180701050302
Sawpit Dam and Reservoir	405.41	Sawpit Reservoir	180701050302
Monrovia Canyon Creek	405.41	Monrovia Canyon Creek	180701050302
Arroyo Seco S. Of Devil's Gates. (L)	405.15	*Arroyo Seco Reach 1 (Los Angeles River Reach 2 to Holly St.)*	*180701050209*
Arroyo Seco S. Of Devil's Gates. (U)	405.31	*Arroyo Seco Reach 2 (Holly St. to Devils Gate Dam)*	*180701050209*
Devil's Gate Reservoir (lower)	405.31	Devils Gate Reservoir (lower)	*180701050209*
Devil's Gate Reservoir (upper)	405.32	Devils Gate Reservoir (upper)	*180701050209*
Arroyo Seco	405.32	Arroyo Seco Reach 3 (above Devils Gate Dam)	*180701050209*
Millard Canyon Creek	405.32	Millard Canyon Creek	*180701050209*
El Prieto Canyon Creek	405.32	El Prieto Canyon Creek	*180701050209*
Little Bear Canyon Creek	405.32	Little Bear Canyon Creek	*180701050209*
Verdugo Wash	405.24	*Verdugo Wash Reach 1 (Los Angeles River Rch 3 to Verdugo Rd./Towne St.)*	180701050207
Verdugo Wash	405.24	Verdugo Wash Reach 2 (above Verdugo Rd. @ Towne St.)	180701050207
Halls Canyon Channel	405.24	Halls Canyon Channel	180701050207
Snover Canyon	405.32	Snover Canyon	180701050207
Pickens Canyon	405.24	Pickens Canyon	180701050207
Shields Canyon	405.24	Shields Canyon	180701050207
Dunsmore Canyon Creek	405.24	Dunsmore Canyon Creek	180701050207
Burbank Western Channel	405.21	Burbank Western Channel	180701050208
La Tuna Canyon Creek	405.21	La Tuna Canyon Lateral and Creek	180701050208
Tujunga Wash	405.21	Tujunga Wash	180701050208
Hansen Flood Control Basin & Lakes	405.23	Hansen Flood Control Basin & Lakes	180701050105

Table A2-1 Cross Reference Table for Inland Surface Waters

1994 Basin Plan Name	Hydro Unit No. (Calwater 1.0)	2011 Basin Plan Name	HUC 12 No. (Watershed Boundary Dataset)
Lopez Canyon Creek	405.21	Lopez Canyon Creek	180701050105
Little Tujunga Canyon Creek	405.23	Little Tujunga Canyon Creek	180701050104
Kegel Canyon Creek	405.23	Kegel Canyon Creek	180701050104
Big Tujunga Canyon Creek	405.23	*Big Tujunga Canyon Creek (Hansen Flood Control Basin to Big Tujunga Reservoir)*	180701050105
Big Tujunga Canyon Creek	405.23	Big Tujunga Canyon Creek (above Big Tujunga Reservoir)	180701050103
Upper Big Tujunga Canyon Creek	405.23	Upper Big Tujunga Canyon Creek	180701050103
Haines Canyon Creek	405.23	Haines Canyon Creek	180701050105
Vasquez Creek	405.23	Vasquez Creek	180701050105
Clear Creek	405.23	Clear Creek	180701050105
Big Tujunga Reservoir	405.23	Big Tujunga Reservoir	180701050105
Mill Creek	405.23	Mill Creek	180701050102
Pacoima Wash	405.21	Pacoima Wash	180701050206
Pacoima Reservoir	405.22	Pacoima Reservoir	180701050205
LOS ANGELES RIVER WATERSHED			
Pacoima Canyon Creek	405.22	Pacoima Canyon Creek	180701050205
Stetson Canyon Creek	405.22	Stetson Canyon Creek	180701050204
Wilson Canyon Creek	405.22	Wilson Canyon Creek	180701050206
May Canyon Creek	405.22	May Canyon Creek	180701050206
Sepulveda Flood Control Basin	405.21	Sepulveda Flood Control Basin	180701050208
Bull Creek	405.21	Bull Creek	180701050204
Los Angeles Reservoir	405.21	Los Angeles Reservoir	180701050204
Lower Van Norman Reservoir	405.21	Lower Van Norman Reservoir	180701050204
Solano Reservoir	405.21	Upper Van Norman Reservoir	180701050204
Caballero Creek	405.21	Caballero Creek	180701050208
Aliso Canyon Wash and Creek	405.21	*Aliso Canyon Wash (Los Angeles River Reach 6 to State Hwy 118)*	180701050203
Aliso Canyon Wash and Creek	405.21	Aliso Canyon Creek (above State Hwy 118)	180701050203
Limekiln Canyon Wash	405.21	Limekiln Canyon Wash	180701050203
Browns Canyon Wash and Creek	405.21	*Browns Canyon Wash (Los Angeles River Reach 6 to State Hwy 118)*	180701050202
Browns Canyon Wash and Creek	405.21	Browns Canyon Creek (above State Hwy 118)	180701050202
Arroyo Calabasas	405.21	Arroyo Calabasas	180701050201
McCoy Canyon Creek	405.21	McCoy Canyon Creek	180701050201
Dry Canyon Creek	405.21	Dry Canyon Creek	180701050201
Bell Creek	405.21	Bell Creek	180701050201
Chatsworth Reservoir	405.21	Chatsworth Reservoir	180701050201
Dayton Canyon Creek	405.21	Dayton Canyon Creek	180701050201
ISOLATED LAKES AND RESERVOIRS:			
Eagle Rock Reservoir	405.25	Eagle Rock Reservoir	180701050402
Echo Lake	405.15	Echo Lake	180701040200
El Dorado Lakes	405.15	El Dorado Lakes	*180701060606*
Elysian Reservoir	405.15	Elysian Reservoir	180701050403
Encino Reservoir	405.21	Encino Reservoir	180701050208
Ivanhoe Reservoir	405.15	Ivanhoe Reservoir	180701040200
Lincoln Park Lake	405.15	Lincoln Park Lake	180701050403
Silver Lake Reservoir	405.15	Silver Lake Reservoir	180701040200
Toluca Lake	405.21	Toluca Lake	180701050208
SAN GABRIEL RIVER WATERSHED			
San Gabriel River Estuary	405.15	San Gabriel River Estuary	*180701060606*
San Gabriel River: Firestone Blvd.-Estuary)	405.15	San Gabriel River Reach 1 (San Gabriel River Estuary to Firestone Blvd.)	*180701060606*
San Gabriel River: Whittier N-Firestone	405.15	San Gabriel River Reach 2 (Firestone Blvd. to Whittier Narrows Dam)	*180701060606*
San Gabriel River	405.41	San Gabriel River Reach 3 (Whittier Narrows Dam to San Jose Creek)	*180701060601*
San Gabriel River	405.41	San Gabriel River Reach 3 (San Jose Creek to Ramona Blvd.)	*180701060601*
San Gabriel River	405.41	San Gabriel River Reach 4 (Ramona Blvd. to Santa Fe Dam)	*180701060601*
San Gabriel River	*405.41*	*San Gabriel River Reach 5 (Santa Fe Dam to Huntington Dr.)*	*180701060601*
San Gabriel River	*405.42*	*San Gabriel River Reach 5 (Huntington Dr. to Van Tassel Canyon)*	*180701060601*
San Gabriel River: Main Stem	*405.43*	*San Gabriel River Reach 5 (Van Tassel Canyon to San Gabriel Reservoir)*	*180701060601*
North Fork San Gabriel River	405.43	North Fork San Gabriel River	*180701060204*
West Fork San Gabriel River	405.43	West Fork San Gabriel River (San Gabriel Reservoir to Bear Creek)	*180701060202*
West Fork San Gabriel River	405.43	West Fork San Gabriel River (above Bear Creek)	*180701060205*
East Fork San Gabriel River	405.43	East Fork San Gabriel River (San Gabriel Reservoir to Fish Fork)	*180701060301*
East Fork San Gabriel River	405.43	East Fork San Gabriel River (above Fish Fork)	*180701060303*
Coyote Creek to Estuary	405.15	Coyote Creek (San Gabriel River Estuary to La Cañada Verde Creek)	*180701060506*
Coyote Creek to Estuary	405.15	Coyote Creek (above La Cañada Verde Creek)	*180701060603*
Whittier Narrows Flood Control Basin	405.41	Whittier Narrows Flood Control Basin	180701060303

Table A2-1 Cross Reference Table for Inland Surface Waters

1994 Basin Plan Name	Hydro Unit No. (Calwater 1.0)	2011 Basin Plan Name	HUC 12 No. (Watershed Boundary Dataset)
Legg Lake	405.41	Legg Lake	180701060303
San Jose Creek	405.41	San Jose Creek Reach 1 (San Gabriel River Reach 3 to Temple Ave.)	*180701060502*
San Jose Creek	405.51	*San Jose Creek Reach 2 (Temple Ave. to Thompson Wash)*	*180701060501*
Puente Creek	405.41	Puente Creek	*180701060502*
Thompson Wash	405.52	Thompson Wash	*180701060501*
Thompson Creek	405.53	Thompson Creek	*180701060501*
Thompson Creek Dam & Reservoir	405.53	Thompson Creek Reservoir	*180701060501*
Walnut Creek Wash	405.41	Walnut Creek Wash	*180701060402*
Big Dalton Wash	405.41	Big Dalton Wash	*180701060402*
Big Dalton Canyon Creek	405.41	Big Dalton Canyon Creek	*180701060402*
Mystic Canyon	405.41	Mystic Canyon	*180701060402*
Big Dalton Dam & Reservoir	405.41	Big Dalton Reservoir	*180701060402*
Bell Canyon Creek	405.41	Bell Canyon Creek	*180701060402*
Little Dalton Wash	405.41	Little Dalton Wash	*180701060402*
Little Dalton Canyon Creek	405.41	Little Dalton Canyon Creek	*180701060402*
San Dimas Wash (lower)	405.41	San Dimas Wash (lower)	*180701060402*
San Dimas Wash (upper)	405.44	San Dimas Wash (upper)	*180701060401*
SAN GABRIEL RIVER WATERSHED (CONT.)			
San Dimas Dam & Reservoir	405.44	San Dimas Dam & Reservoir	*180701060401*
San Dimas Canyon Creek	405.44	San Dimas Canyon Creek	*180701060401*
West Fork San Dimas Canyon Creek	405.44	West Fork San Dimas Canyon Creek	*180701060401*
Wolfskill Canyon	405.44	Wolfskill Canyon	*180701060401*
Puddingstone Dam and Reservoir	405.52	Puddingstone Dam and Reservoir	*180701060402*
Puddingstone Wash	*405.41*	Puddingstone Wash	*180701060402*
Marshall Creek and Wash	405.41	Marshall Creek and Wash (Puddingstone Reservoir to Via Arroyo)	*180701060402*
Marshall Creek and Wash	405.53	Marshall Creek and Wash (above Via Arroyo)	*180701060402*
Live Oak Wash	405.52	Live Oak Wash	*180701060402*
Live Oak Creek And Wash	405.53	Live Oak Creek	*180701060402*
Live Oak Dam and Reservoir	405.53	Live Oak Reservoir	*180701060402*
Emerald Creek And Wash	405.53	Emerald Creek And Wash	*180701060402*
Santa Fe Flood Control Basin	405.41	Santa Fe Flood Control Basin	*180701060601*
Bradbury Canyon Creek	405.41	Bradbury Canyon Creek	*180701060601*
Spinks Canyon Creek	405.41	Spinks Canyon Creek	*180701060601*
Maddock Canyon Creek	405.43	Maddock Canyon Creek	*180701060601*
Van Tassel Canyon	405.43	Van Tassel Canyon	*180701060601*
Fish Canyon Creek	405.43	Fish Canyon Creek	*180701060601*
Roberts Canyon Creek	405.43	Roberts Canyon Creek	*180701060601*
Morris Reservoir	405.43	Morris Reservoir	*180701060601*
San Gabriel Reservoir	405.43	San Gabriel Reservoir	*180701060601*
UPPER SAN GABRIEL RIVER TRIBUTARIES			
San Gabriel River: Main Stem	405.42	*San Gabriel River Reach 5 (Huntington Dr. to Van Tassel Canyon)*	*180701060601*
San Gabriel River: Main Stem	405.43	San Gabriel River Reach 5 (Van Tassel Canyon to San Gabriel Reservoir)	*180701060601*
Cattle Canyon Creek	405.43	Cattle Canyon Creek	*180701060302*
Coldwater Canyon Creek	405.43	Coldwater Canyon Creek	*180701060302*
Cow Canyon Creek	405.43	Cow Canyon Creek	*180701060302*
East Fork San Gabriel River	405.43	East Fork San Gabriel River (San Gabriel Reservoir to Fish Fork)	*180701060301*
East Fork San Gabriel River	405.43	East Fork San Gabriel River (above Fish Fork)	*180701060303*
Allison Gulch	405.43	Allison Gulch	*180701060303*
Fish Fork	405.43	Fish Fork	*180701060301*
North Fork San Gabriel River	405.43	North Fork San Gabriel River	*180701060204*
Bichota Canyon	405.43	Bichota Canyon	*180701060204*
Coldbrook Creek	405.43	Coldbrook Creek	*180701060204*
Cedar Creek	405.43	Cedar Creek	*180701060204*
Crystal Lake	405.43	Crystal Lake	*180701060204*
Soldier Creek	405.43	Soldier Creek	*180701060204*
West Fork San Gabriel River	405.43	West Fork San Gabriel River (San Gabriel Reservoir to Bear Creek)	*180701060205*
West Fork San Gabriel River	405.43	West Fork San Gabriel River (above Bear Creek)	*180701060202*
Bear Creek	405.43	Bear Creek	*180701060205*
Cogswell Reservoir	405.43	Cogswell Reservoir	*180701060202*
Devils Canyon Creek	405.43	Devils Canyon Creek	*180701060201*
ISLAND WATERCOURSES			
Anacapa Island	406.10	Anacapa Island	
San Nicolas Island	406.20	San Nicolas Island	180701020104

Table A2-1 Cross Reference Table for Inland Surface Waters

1994 Basin Plan Name	Hydro Unit No. (Calwater 1.0)	2011 Basin Plan Name	HUC 12 No. (Watershed Boundary Dataset)
Santa Barbara Island	406.30	Santa Barbara Island	180701020101
Santa Catalina Island	406.40	Santa Catalina Island	180701070003
Santa Catalina Island	406.40	Santa Catalina Island	180701070002
Middle Ranch System	406.40	Middle Canyon	180701070003
San Clemente Island	406.50	San Clemente Island	180701070004

Table A2-2 Cross Reference Table for Ground Waters

1994 Basin Plan Name	Bulletin 118-80 number	2011 Basin Plan Name	Bulletin 118-2003 update number
OJAI VALLEY	**4-1**	**UPPER OJAI VALLEY**	**4-1**
Upper Ojai Valley	4-1	Upper Ojai Valley	4-1
West of Sulfur Mountain Road	4-1	Upper Ojai Valley	4-1
Central area	4-1	Upper Ojai Valley	4-1
Sisar area	4-1	Upper Ojai Valley	4-1
LOWER OJAI VALLEY	4-2	**OJAI VALLEY**	**4-2**
West of San Antonio-Senior Canyon	4-2	Ojai Valley	4-2
East of San Antonio-Senior Canyon	4-2	Ojai Valley	4-2
VENTURA RIVER VALLEY	**4-3**	**VENTURA RIVER VALLEY**	**4-3**
Upper Ventura	4-3	Upper Ventura River	4-3.01
San Antonio Creek area	4-3	Upper Ventura River	4-3.01
Lower Ventura	4-3	Lower Ventura River	4-3.02
VENTURA CENTRAL	**4-4**	**SANTA CLARA RIVER VALLEY**	**4-4**
Santa Clara-Piru Creek area	4-4	Piru	4-4.06
Upper area (above Lake Piru)	4-4	Piru	4-4.06
Lower area east of Piru Creek	4-4	Piru	4-4.06
Lower area west of Piru Creek	4-4	Piru	4-4.06
Santa Clara-Sespe Creek area	4-4	Fillmore	4-4.05
Topa Topa (upper Sespe) area	4-4	Fillmore	4-4.05
Fillmore area	4-4	Fillmore	4-4.05
Pole Creek Fan area	4-4	Fillmore	4-4.05
South side of Santa Clara River	4-4	Fillmore	4-4.05
Remaining Fillmore area	4-4	Fillmore	4-4.05
Santa Clara-Santa Paula area	4-4	Santa Paula	4-4.04
East of Peck Road	4-4	Santa Paula	4-4.04
West of Peck Road	4-4	Santa Paula	4-4.04
Oxnard Plain	4-4	Oxnard	4-4.02
Oxnard Plain	4-4	Mound	4-4.03
Oxnard Forebay	4-4	Oxnard	4-4.02
Confined aquifers	4-4	Oxnard	4-4.02
Unconfined and perched aquifers	4-4	Oxnard	4-4.02
PLEASANT VALLEY	**4-6**	**PLEASANT VALLEY**	**4-6**
Confined aquifers	4-6	Pleasant Valley	4-6
Unconfined and perched aquifers	4-6	Pleasant Valley	4-6
ARROYO SANTA ROSA	**4-7**	**ARROYO SANTA ROSA VALLEY**	**4-7**
LAS POSAS VALLEY	**4-8**	**LAS POSAS VALLEY**	**4-8**
South Las Posas area	4-8	Las Posas Valley	4-8
NW of Grimes Cyn Rd. and LA Ave. & Somis Rd.	4-8	Las Posas Valley	4-8
E of Grimes Cyn Rd and Hitch Blvd.	4-8	Las Posas Valley	4-8
S of LA Ave between Somis Rd and Hitch Blvd.	4-8	Las Posas Valley	4-8
Grimes Canyon Rd. and Broadway area	4-8	Las Posas Valley	4-8
North Las Posas area	4-8	Las Posas Valley	4-8
UPPER SANTA CLARA	**4-5**	**ACTON VALLEY**	**4-5**
Acton Valley	4-5	Acton Valley	4-5
Sierra Pelona Valley (Agua Dulce)	4-5	Acton Valley	4-5
Upper Mint Canyon	4-5	Acton Valley	4-5
Upper Bouquet Canyon	4-5	Acton Valley	4-5
Green Valley	4-5	Acton Valley	4-5
Lake Elizabeth-Lake Hughes area	4-5	Acton Valley	4-5
EASTERN SANTA CLARA	**4-4.07**	**SANTA CLARA RIVER VALLEY EAST**	**4-4.07**
Santa Clara-Mint Canyon	4-4.07	Santa Clara River Valley East	4-4.07
South Fork	4-4.07	Santa Clara River Valley East	4-4.07
Placentia Canyon	4-4.07	Santa Clara River Valley East	4-4.07
Santa Clara-Bouquet and San Fransisquito Canyons	4-4.07	Santa Clara River Valley East	4-4.07
Castaic Valley	4-4.07	Santa Clara River Valley East	4-4.07
Saugus Aquifer	4-4.07	Santa Clara River Valley East	4-4.07
SIMI VALLEY	**4-9**	**SIMI VALLEY**	**4-9**
Simi Valley Basin	4-9	Simi Valley	4-9

Table A2-2 Cross Reference Table for Ground Waters

1994 Basin Plan Name	Bulletin 118-80 number	2011 Basin Plan Name	Bulletin 118-2003 update number
Confined aquifers	4-9	Simi Valley	4-10
Unconfined and perched aquifers	4-9	Simi Valley	4-11
Gillibrand Basin	4-9	Simi Valley	4-12
CONEJO VALLEY	**4-10**	**CONEJO *~~VALLEY~~***	**4-10**
LOS ANGELES COASTAL PLAIN	**4-11**	**COASTAL PLAIN OF LOS ANGELES**	**4-11**
Central Basin	4-11	Central	4-11.04
West Coast Basin	4-11	West Coast	4-11.03
Hollywood Basin	4-11	Hollywood	4-11.02
Santa Monica Basin	4-11	Santa Monica	4-11.01
SAN FERNANDO VALLEY	**4-12**	**SAN FERNANDO VALLEY**	**4-12**
Sylmar Basin	4-12	San Fernando Valley	4-12
Verdugo Basin	4-12	San Fernando Valley	4-12
San Fernando Basin	4-12	San Fernando Valley	4-12
West of Highway 405	4-12	San Fernando Valley	4-12
East of Highway 405 (overall)	4-12	San Fernando Valley	4-12
Sunland-Tujunga area	4-12	San Fernando Valley	4-12
Foothill area	4-12	San Fernando Valley	4-12
Area encompassing RT-Tujunga-Erwin-N. Hollywood-W	4-12	San Fernando Valley	4-12
Narrows area (below confluence of Verdugo Wash with the	4-12	San Fernando Valley	4-12
Eagle Rock Basin	4-12	San Fernando Valley	4-12
SAN GABRIEL VALLEY	**4-13**	**SAN GABRIEL VALLEY/RAYMOND/SAN FERNANDO VALLEY**	**4-13**
Raymond Basin	4-13	Raymond	4-23
Monk Hill sub-basin	4-13	San Fernando Valley	4-12
Santa Anita area	4-13	Raymond	4-23
Pasadena area	4-13	Raymond	4-23
Main San Gabriel Basin	4-13	San Gabriel Valley	4-13
Western area	4-13	San Gabriel Valley	4-13
Eastern area	4-13	San Gabriel Valley	4-13
Puente Basin	4-13	San Gabriel Valley	4-13
UPPER SANTA ANA VALLEY	**4-14**	**UPPER SANTA ANA VALLEY/SAN GABRIEL VALLEY**	**8-2.01**
Live Oak area	8-2	San Gabriel Valley	4-13
Claremont Heights area	8-2	San Gabriel Valley	4-13
Pomona area	8-2	San Gabriel Valley	4-13
Chino area	8-2	Upper Santa Ana Valley/San Gabriel Valley	8-2.01/4-13
Spadra area	8-2	San Gabriel Valley	4-13
TIERRA REJADA	**4-15**	**TIERRA REJADA**	**4-15**
HIDDEN VALLEY	**4-16**	**HIDDEN VALLEY**	**4-16**
LOCKWOOD VALLEY	**4-17**	**LOCKWOOD VALLEY**	**4-17**
HUNGRY VALLEY AND PEACE VALLEY	**4-18**	**HUNGRY VALLEY**	**4-18**
THOUSAND OAKS AREA	**4-19**	**CONEJO VALLEY**	**4-10**
RUSSELL VALLEY	**4-20**	**RUSSELL VALLEY**	**4-20**
Russell Valley	4-20	Russell Valley	4-20
Triunfo Canyon area	4-20	Thousand Oaks Area	4-19
Lindero Canyon area	4-20	Thousand Oaks Area	4-20
Las Virgenes Canyon area	4-20	Thousand Oaks Area	4-21
CONEJO-TIERRA REJADA VOLCANIC AREA	**4-21**	**Deleted**	**Deleted**
SANTA MONICA MOUNTAINS-SOUTHERN SLOPES	**4-22**	**MALIBU VALLEY**	**4-22**
Camarillo area	4-22	Malibu Valley	4-22
Point Dume area	4-22	Malibu Valley	4-22
Malibu Valley	4-22	Malibu Valley	4-22
Topanga Canyon area	4-22	Malibu Valley	4-22
SAN PEDRO CHANNEL ISLANDS		**SAN PEDRO CHANNEL ISLANDS**	
Anacapa Island	no DWR #	Anacapa Island	no DWR #
San Nicholas Island	no DWR #	San Nicholas Island	no DWR #
Santa Catalina Island	no DWR #	Santa Catalina Island	no DWR #

Table A2-2 Cross Reference Table for Ground Waters

1994 Basin Plan Name	Bulletin 118-80 number	2011 Basin Plan Name	Bulletin 118-2003 update number
San Clemente Island	no DWR #	San Clemente Island	no DWR #
Santa Barbara Island	no DWR #	Santa Barbara Island	no DWR #

Table A2-3 Cross Reference for Coastal Features

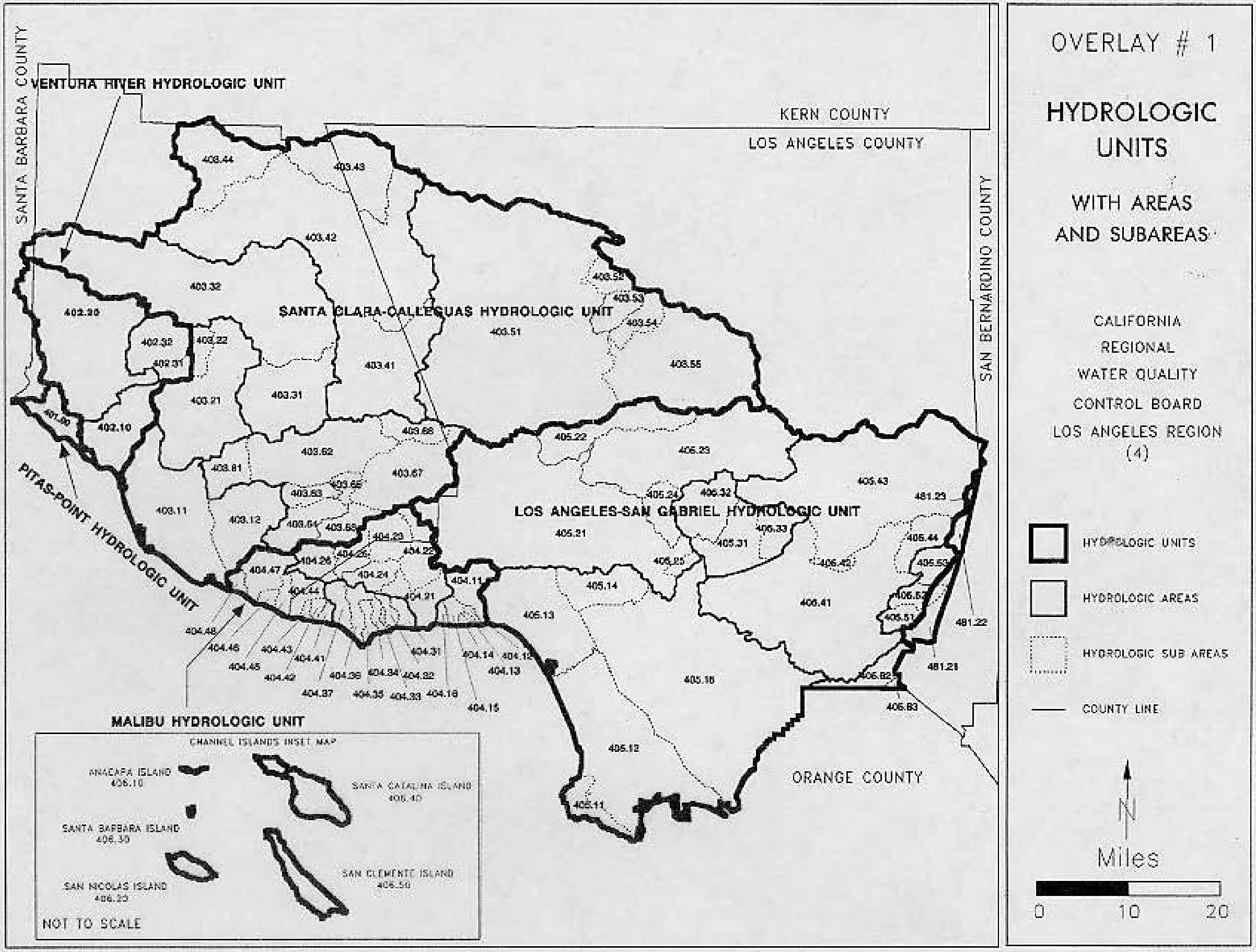
1994 Basin Plan Name	Hydro Unit No. (Calwater 1.0)	2011 Basin Plan Name	HUC 12 No. (Watershed Boundary Dataset)
VENTURA COUNTY COASTAL			
Nearshore		Nearshore	
Offshore Zone		Offshore Zone	
Rincon Beach	401.00	Rincon Beach	*180701010106*
Ventura River Estuary	402.10	Ventura River Estuary	180701010106
Ventura Keys (Marina)	403.11	Ventura Keys (Marina)	*180701010203*
Ventura Marina	403.11	Ventura Marina	180701020904
Santa Clara River Estuary	403.11	Santa Clara River Estuary	180701020904
Mandalay Beach	403.11	Mandalay Beach	*180701030202*
McGrath Lake	403.11	McGrath Lake	*180701030202*
Edison Canal Estuary	403.11	Edison Canal Estuary	*180701030202*
Channel Islands Harbor	403.11	Channel Islands Harbor	*180701030202*
Mandalay Bay (Marina)	403.11	Mandalay Bay (Marina)	*180701030202*
Port Hueneme (Harbor)	403.11	Port Hueneme (Harbor)	*180701030202*
Ormond Beach	403.11	Ormond Beach	*180701030202*
Ormond Beach Wetlands	403.11	Ormond Beach Wetlands	*180701030202*
Mugu Lagoon	403.11	Mugu Lagoon	*180701030202*
Calleguas Creek Estuary	403.11	Calleguas Creek Estuary	*180701030107*
LOS ANGELES COUNTY COASTAL			
Nearshore Zone		Nearshore Zone	
Offshore Zone		Offshore Zone	
Nicholas Canyon Beach	404.43	Nicholas Canyon Beach	*180701040202*
Trancas Beach	404.37	Trancas Beach	*180701040203*
Zuma County (Westward) Beach	404.36	Zuma County (Westward) Beach	*180701040203*
Dume State Beach	404.36	Dume State Beach	*180701040204*
Dume Lagoon	404.36	Dume Lagoon	*180701040203*
Escondido Beach	404.34	Escondido Beach	*180701040204*
Dan Blocker Memorial (Corral) Beach	404.31	Dan Blocker Memorial (Corral) Beach	*180701040204*
Puerco Beach	404.31	Puerco Beach	*180701040204*
Amarillo Beach	404.21	Amarillo Beach	*180701040204*
Malibu Beach	404.21	Malibu Beach	*180701040204*
Malibu Lagoon	404.21	Malibu Lagoon	180701040104
Carbon Beach	404.16	Carbon Beach	*180701040403*
La Costa Beach	404.16	La Costa Beach	*180701040403*
Las Flores Beach	404.15	Las Flores Beach	*180701040403*
Las Tunas Beach	404.12	Las Tunas Beach	*180701040403*
Topanga Beach	404.11	Topanga Beach	*180701040403*
Topanga Lagoon	405.11	Topanga Lagoon	*180701040401*
Will Rogers State Beach	405.13	Will Rogers State Beach	*180701040403*
Santa Monica Beach	405.13	Santa Monica Beach	*180701040403*
Venice Beach	405.13	Venice Beach	*180701040403*
Marina Del Rey		Marina Del Rey	
Harbor	405.13	Harbor	*180701040403*
Public Beach Areas	405.13	Public Beach Areas	*180701040403*
All other Areas	405.13	All other Areas	*180701040403*
Entrance Channel	405.13	Entrance Channel	*180701040403*
Ballona Creek Estuary	405.13	Ballona Creek Estuary	*180701040300*
Ballona Lagoon/Venice Canals	405.13	Ballona Lagoon/Venice Canals	*180701040403*
Ballona Wetlands	405.13	Ballona Wetlands	*180701040300*
Del Rey Lagoon	405.13	Del Rey Lagoon	*180701040500*
Dockweiler Beach	405.12	Dockweiler Beach	*180701040500*
Manhattan Beach	405.12	Manhattan Beach	*180701040500*
King Harbor	405.12	King Harbor	*180701040500*
Redondo Beach	405.12	Redondo Beach	*180701040500*
Torrance Beach	405.12	Torrance Beach	*180701040500*
Point Vicente Beach	405.11	Point Vicente Beach	*180701040500*
Royal Palms Beach	405.11	Royal Palms Beach	*180701040500*
Whites Point County Beach	405.11	Whites Point County Beach	*180701040500*
Cabrillo Beach	405.12	Cabrillo Beach	*180701060703*
Los Angeles-Long Beach Harbor	405.12	Los Angeles-Long Beach Harbor	*180701060703*
Outer Harbor	405.12	Outer Harbor	*180701060703*
Marinas	405.12	Marinas	*180701060701*
LOS ANGELES COUNTY COASTAL (CONT.)			
Public Beach Areas	405.12	Public Beach Areas	*180701060701*

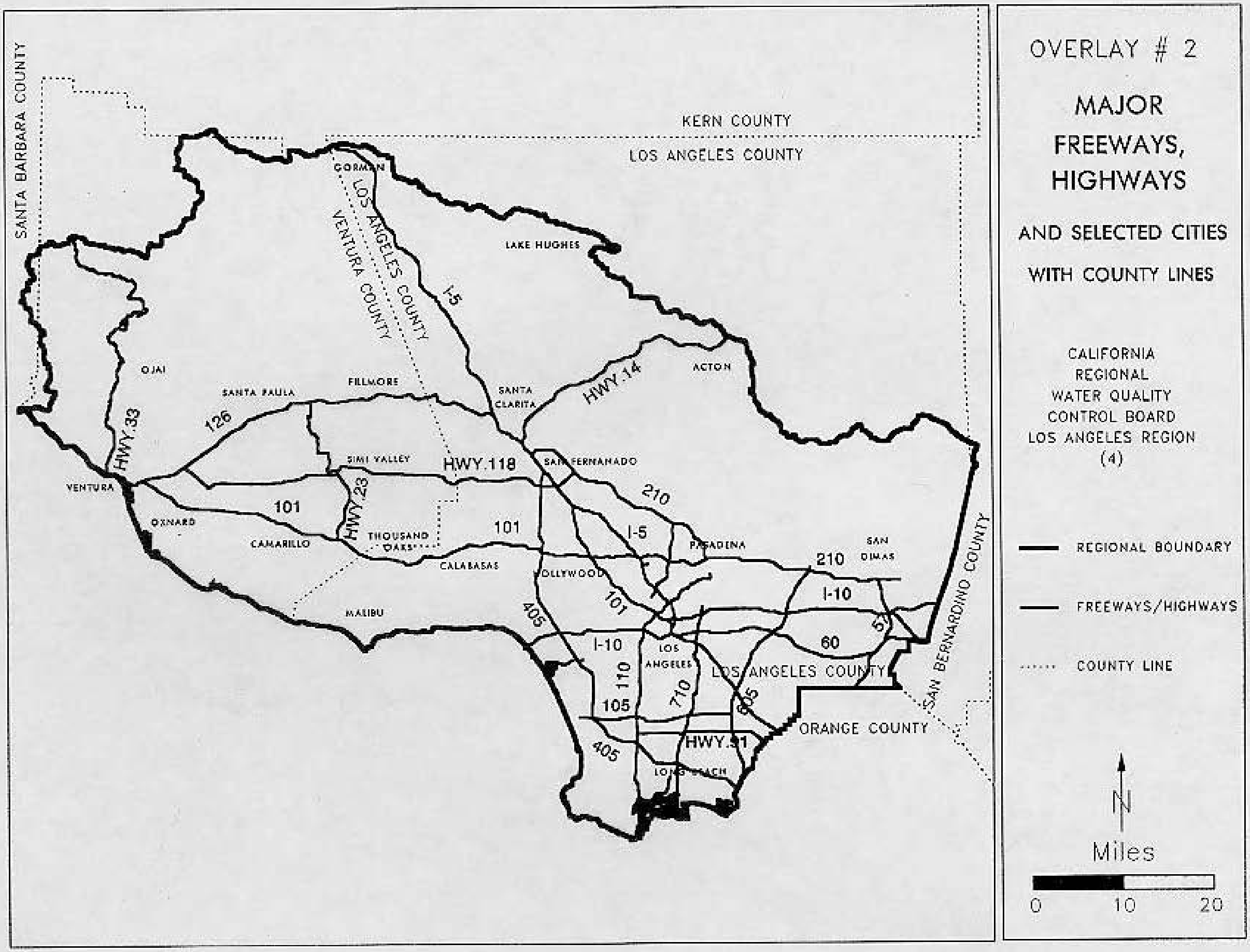
Table A2-3 Cross Reference for Coastal Features

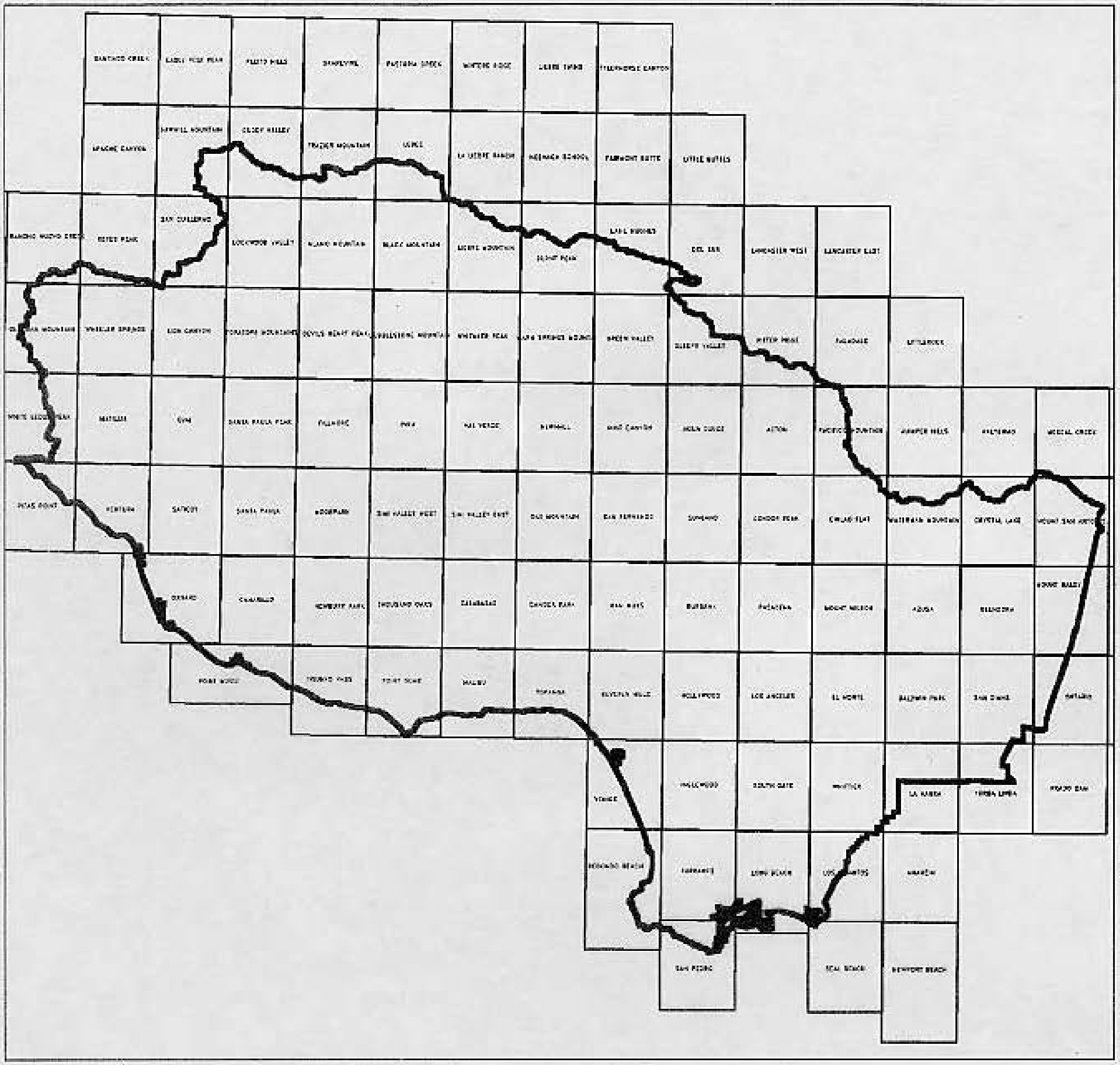
1994 Basin Plan Name	Hydro Unit No. (Calwater 1.0)	2011 Basin Plan Name	HUC 12 No. (Watershed Boundary Dataset)
All Other Inner Areas	405.12	All Other Inner Areas	*180701060701*
Dominguez Channel Estuary	405.12	Dominguez Channel Estuary	*180701060102*
Los Angeles River Estuary	405.12	Los Angeles River Estuary	*180701050402*
Alamitos Bay	405.12	Alamitos Bay	*180701060702*
Los Cerritos Wetlands	405.15	Los Cerritos Wetlands	*180701060702*
Los Cerritos Channel Estuary	405.12	Los Cerritos Channel Estuary	*180701060702*
San Gabriel River Estuary	405.15	San Gabriel River Estuary	*180701060606*
Long Beach Marina	405.12	Long Beach Marina	*180701060703*
Public Beach Areas	405.12	Public Beach Areas	*180701060703*
All other Areas	405.12	All other Areas	*180701060703*
Marine Stadium	405.12	Marine Stadium	*180701060703*
Long Beach	405.12	Long Beach	*180701060703*
ISLAND NEARSHORE ZONES			
Anacapa Island	406.10	Anacapa Island	180600140203
San Nicholas Island	406.20	San Nicholas Island	180701070001
Begg Rock Nearshore Zone	406.20	Begg Rock Nearshore Zone	180701070001
Santa Barbara Island	406.30	Santa Barbara Island	180701070003
Santa Catalina Island	406.40	Santa Catalina Island	180701070003
Santa Catalina Island	406.40	Santa Catalina Island	180701070002
San Clemente Island	406.50	San Clemente Island	180701070004

Table A2-4 Cross Reference Table for Coastal Wetlands

1994 Basin Plan Name	Hydro Unit No. (Calwater 1.0)	2011 Basin Plan Name	HUC 12 No. (Watershed Boundary Dataset)
Ventura River Estuary	402.10	Ventura River Estuary	180701010106
Santa Clara River Estuary	403.11	Santa Clara River Estuary	180701020904
McGrath Lake	403.11	McGrath Lake	*180701030202*
Ormond Beach Wetlands	403.11	Ormond Beach Wetlands	*180701030202*
Mugu Lagoon	403.11	Mugu Lagoon	*180701030202*
Dume Lagoon	404.36	Dume Lagoon	*180701040203*
Malibu Lagoon	404.21	Malibu Lagoon	180701040104
Topanga Lagoon	405.11	Topanga Lagoon	*180701040401*
Ballona Lagoon/Venice Canals	405.13	Ballona Lagoon/Venice Canals	*180701040403*
Ballona Wetlands	405.13	Ballona Wetlands	*180701040300*
Del Rey Lagoon	405.13	Del Rey Lagoon	*180701040500*
Los Cerritos Wetlands	405.15	Los Cerritos Wetlands	*180701060702*


OVERLAY # 1
HYDROLOGIC UNITS
WITH AREAS AND SUBAREAS
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD LOS ANGELES REGION (4)
HYDROLOGIC UNITS
HYDROLOGIC AREAS
HYDROLOGIC SUB AREAS
COUNTY LINE
N
Miles
0
10
20
SANTA BARBARA COUNTY
KERN COUNTY
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
ORANGE COUNTY
VENTURA RIVER HYDROLOGIC UNIT
SANTA CLARA-CALLEGUAS HYDROLOGIC UNIT
LOS ANGELES-SAN GABRIEL HYDROLOGIC UNIT
PITAS-POINT HYDROLOGIC UNIT
MALIBU HYDROLOGIC UNIT
CHANNEL ISLANDS INSET MAP
ANACAPA ISLAND 406.10
SANTA CATALINA ISLAND 406.40
SANTA BARBARA ISLAND 406.30
SAN CLEMENTE ISLAND 406.50
SAN NICOLAS ISLAND 406.20
NOT TO SCALE


OVERLAY # 2
MAJOR FREEWAYS, HIGHWAYS
AND SELECTED CITIES WITH COUNTY LINES
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD LOS ANGELES REGION (4)
REGIONAL BOUNDARY
FREEWAYS/HIGHWAYS
COUNTY LINE
N
Miles
0
10
20
SANTA BARBARA COUNTY
KERN COUNTY
LOS ANGELES COUNTY
VENTURA COUNTY
GORMAN
LAKE HUGHES
I-5
OJAI
SANTA PAULA
FILLMORE
SANTA CLARITA
HWY.14
ACTON
126
HWY.33
SIMI VALLEY
HWY.118
SAN FERNANADO
VENTURA
101
HWY.23
210
OXNARD
CAMARILLO
THOUSAND OAKS
CALABASAS
PASADENA
SAN DIMAS
HOLLYWOOD
I-10
MALIBU
405
LOS ANGELES
60
57
110
710
605
105
HWY.91
LONG BEACH
ORANGE COUNTY
SAN BERNARDINO COUNTY



OVERLAY # 3

USGS

7.5 MINUTE QUAD
BOUNDARIES

CALIFORNIA
REGIONAL
WATER QUALITY
CONTROL BOARD
LOS ANGELES REGION
(4)

RWQCB BOUNDARY

USGS QUADS

N

Miles

0 10 20