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.

WATER QUALITY CONTROL PLAN

FOR THE SAN DIEGO BASIN (9)

SEPTEMBER 8, 1994

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN DIEGO REGION

WATER QUALITY CONTROL PLAN
FOR THE
SAN DIEGO BASIN (9)

Adopted by the
California Regional Water Quality Control Board
San Diego Region
on September 8, 1994

Approved by the
State Water Resources Control Board
on December 13, 1994
and the
Office of Administrative Law
on April 26, 1995

(Includes amendment adopted through October 13, 1994)

Cover Photograph: San Diego Bay Skyline (1989) by Greig Peters

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FOREWORD

The most basic goal of the California Regional Water Quality Control Board, San Diego Region (Regional Board) is to preserve and enhance the quality of water resources in the San Diego Region for the benefit of present and future generations. The federal Clean Water Act and the California Porter-Cologne Water Quality Control Act require that the Regional Board adopt a water quality control plan to guide and coordinate the management of water quality in the Region. The purpose of the plan is to: (1) designate beneficial uses of the Region's surface and ground waters; (2) designate water quality objectives for the reasonable protection of those uses; and (3) establish an implementation plan to achieve the objectives. In conformance with this legislative mandate, the Regional Board adopted the *Comprehensive Water Quality Control Plan for the San Diego Basin* (Basin Plan) in 1975. The Regional Board subsequently adopted numerous amendments modifying specific Basin Plan water quality standards and policies to reflect current water quality conditions and priorities.

Over twenty years have passed since the Basin Plan was published in 1975. In the ensuing years the San Diego Region population has continued to grow and approaches to water quality management have changed. Water quality management has become a complex mix of public input, environmental legislation and regulations, regulatory programs, research, and litigation. Pollution from point source discharges such as sewage treatment plants and industry has largely been controlled through stringent pollution control laws and the efforts of the Regional Board and other agencies. The focus of the Regional Board's regulatory efforts in the coming years will be surface water bottom sediment contamination, ground water contamination and nonpoint sources of pollution. These concerns are the greatest remaining threats to water quality. To address these remaining challenges, pollution prevention needs to be emphasized and the cumulative effects of pollution on entire watersheds must be considered. These changes in the complexity and emphasis of the Regional Board's water quality program have resulted in the need for a major update and rewrite of the 1975 Basin Plan.

This Basin Plan, the *Water Quality Control Plan for the San Diego Basin* (9) was adopted by the Regional Board on September 8, 1994. It supersedes the previous 1975 Basin Plan and its amendments. Public involvement was extensive in the development and adoption of this Basin Plan. The Regional Board held several public hearings and workshops to allow interested persons, organizations, and governmental agencies an opportunity to comment on the content and adequacy of the Basin Plan prior to its adoption. All comments were responded to in writing and the Regional Board carefully considered them in developing the final Basin Plan. The Regional Board appreciates the efforts of all those who contributed a substantial amount of time and effort in commenting on the earlier administrative drafts.

The six chapters of this Basin Plan together comprise the "*blueprint*" plan the Regional Board will use for water quality management and control in the San Diego Region. Chapter 1 provides a summary overview of the physical features of the San Diego Region, the functions of the State and Regional Board, and the legal basis and authority for the Basin Plan. Chapter 2 designates the beneficial uses of surface and ground waters to be protected. Chapter 3 designates the water quality objectives necessary to ensure the reasonable protection of the beneficial uses. Chapter 4 describes the implementation plan for achieving and maintaining the beneficial uses and water quality objectives. The implementation plan describes the key Regional Board regulatory programs and policies the Board uses to manage and control water quality. The implementation plan also designates certain conditions and areas where waste discharges are prohibited. Chapter 5 describes applicable statewide water quality policies and plans developed by the State Water Resources Control Board. Finally, Chapter 6 provides a summary description of the Regional Board water quality monitoring and surveillance program.

This Basin Plan is a dynamic rather than fixed document and is always subject to modification based on changing needs and circumstances. Accordingly, the Regional Board will periodically consider changes to this Basin Plan as necessary and at a minimum of every three years. The Regional Board will continue to place a high priority on keeping the Basin Plan current with respect to applicable laws, policies, technologies, water quality conditions, and priorities in the Region.

CHAPTER 1
INTRODUCTION

CHAPTER 2
BENEFICIAL USES

CHAPTER 3
WATER QUALITY OBJECTIVES

CHAPTER 4
IMPLEMENTATION

CHAPTER 5
PLANS AND POLICIES

CHAPTER 6
SURVEILLANCE, MONITORING AND ASSESSMENT

APPENDICES

CHAPTER 1
INTRODUCTION

1. INTRODUCTION

INTRODUCTION

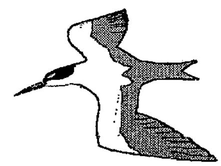
In California, the regulation, protection and administration of water quality are carried out by the State Water Resources Control Board (State Board) and nine California Regional Water Quality Control Boards. The State Board consists of five full-time members appointed by the Governor for four year terms. In general, the State Board has overall responsibility for setting statewide policy on the administration of water rights and water quality control in California. The work of the State Board is carried out by a technical, legal, and administrative staff supervised by an executive director.

In recognition of the regional differences in water quality and quantity, the State is divided into nine regions (see Figure 1-1) for the purposes of regional administration of California's water quality control program. Each of the nine regions has a California Regional Water Quality Control Board (Regional Board) comprised of nine part-time members who are appointed by the Governor for four year terms. The regional boards are responsible for adoption and implementation of water quality control plans, issuance of waste discharge requirements, and performing other functions concerning water quality control within their respective regions, subject to State Board review or approval. The work of each regional board is carried out by a technical and administrative staff supervised by an executive officer.

Each of the nine regional boards is required to adopt a Water Quality Control Plan, or Basin Plan, which recognizes and reflects regional differences in existing water quality, the beneficial uses of the Region's ground and surface waters, and local water quality conditions and problems. This document is called the *Water Quality Control Plan for the San Diego Basin (9)*. (The terms Water Quality Control Plan and Basin Plan are used interchangeably throughout this document.)

There are two types of Water Quality Control Plans, Regional Board Basin Plans such as this document and statewide Water Quality Control Plans such as the *Ocean Plan* and *Thermal Plan*. Statewide plans are discussed in Chapter 5, *Plans and Policies*. Key terms and abbreviations used throughout this Basin Plan are included as a glossary and acronyms respectively, in Appendix A.

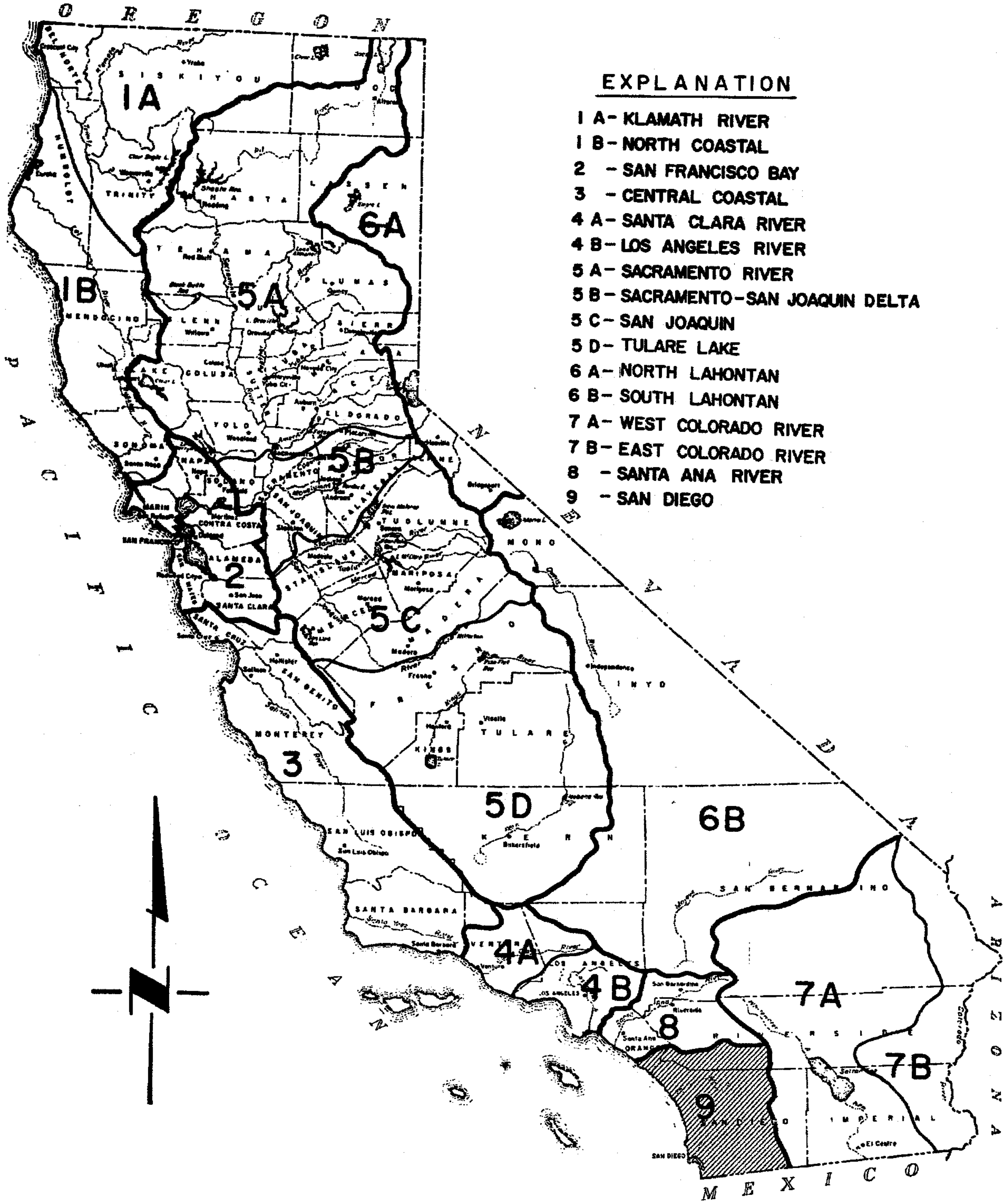
FUNCTION OF THE BASIN PLAN



The San Diego Regional Board's Basin Plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. Specifically, the Basin Plan: (1) designates beneficial uses for surface and ground waters; (2) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's antidegradation policy; (3) describes implementation programs to protect the beneficial uses of all waters in the Region; and (4) describes surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan [California Water Code §13240 - 13244, and §13050(j)]. Additionally, the Basin Plan incorporates by reference all applicable State and Regional Board plans and policies.

The goal of the Regional Board is to achieve a balance between the competing needs of mankind for water of varying quality. Often times the constituents and quality of water needed to protect various beneficial uses will be different. The Basin Plan is the Regional Board's plan for achieving the balance between competing uses of surface and ground waters in the San Diego Region. Accordingly, this Basin Plan establishes or designates beneficial uses and water quality objectives for all the ground and surface waters of the Region. Beneficial uses are the uses of water necessary for the survival and well being of man, plants and wildlife. These uses of water serve to promote the tangible and intangible economic, social, and environmental goals of mankind. Water quality objectives are the levels of water quality constituents or characteristics which must be met to protect the beneficial uses. This Basin Plan also establishes an implementation program describing the actions by the Regional Board and others that are necessary to achieve and maintain the designated beneficial uses and water quality objectives of the Region's waters.

The Regional Board regulates waste discharge and reclaimed water use to minimize and control adverse effects on the quality and beneficial uses of the Region's ground and surface waters. The Regional Board issues permits, called "*waste discharge requirements*" and "*master reclamation permits*"



VICINITY MAP, BASIN PLANNING AREAS

Figure 1 - 1.

which require that waste and reclaimed water not be discharged in a manner that would cause an exceedance of applicable water quality objectives or adversely affect beneficial uses designated in the Basin Plan. The Regional Boards enforce these permits through a variety of administrative means.

GEOGRAPHICAL SETTING

The geographical setting of the San Diego Region results in a number of physiographic and environmental characteristics. A discussion of each of the major elements is presented in the following subsections.

PHYSIOGRAPHY

The San Diego Region occurs within the Peninsula Range Physiographic Province of California. One of the most prominent physical features in the region is the northwest-trending Peninsula Range which includes from north to south, the Santa Ana, Agua Tibia, Palomar, Volcan, Cuyamaca and Laguna mountains. The region exhibits a gently sloping dissected western surface and a steep eastern slope and is separated from the West Colorado river area (Region 7A) by abrupt fault scarps of marked relief.

The San Diego Region is divided into a coastal plain area, a central mountain-valley area, and an eastern mountain valley area. The coastal plain area comprises a series of wave cut benches covered by thin terrace deposits. This terraced surface has been deeply dissected by streams draining to the sea, and has been smoothed and rounded by local erosion. The surface of this area ranges from sea level to about 1200 ft and extends from the coast inland in a band of about 10 miles in width. The central mountain-valley area is characterized by ridges and intermontane basins which extend from the coastal plain, northeastward to the Elsinore fault zone. The basins or valleys range in elevation from 500 to about 5000 ft and are generally of fault block origin modified by erosion. The floors of the intermontane valleys are generally underlain by moderate thicknesses of alluvium and residuum; notable examples occur near El Cajon, Escondido and Ramona which range in elevation from about 500 to 1500 ft above sea level. At higher elevations plateau surfaces have been developed in the central mountain-valley area. These surfaces are probably also of erosional origin; they occur at elevations ranging from 2000 to 6000 ft near the Laguna mountains, Santa Ysabel and Valley Center.

To the northeast of the Elsinore fault zone, the region has been designated as the eastern mountain-valley area. The area contains broad, relatively flat valleys which are structurally of block fault origin. Locally, the grabens contain thick sections of alluvial deposits. These valleys generally rise to the southeast from about 1000 ft elevations near Temecula to the rolling plateaus of Glenoak, Lewis and Reed valleys which range from 3000 to 3500 ft in elevation. Surrounding mountains including Red mountain, Cahuilla mountain and Bachelor mountain, attain elevations ranging from 4000 to 7500 ft.

CLIMATE

The San Diego Region's coastal climate is generally mild. Temperatures average about 65° F and precipitation averages 10 to 13 inches. Proceeding inland, as elevations increase, average temperatures decline to 57° F in the Laguna mountain area and precipitation increases to more than 45 inches in the Palomar mountain area. Most of the precipitation falls during November through February. Temperature and rainfall intensity variations are larger in the inland portions. The maximum rainfall intensity was recorded as 11.5 inches in 90 minutes, at Campo on August 12, 1891. Precipitation occurs principally as rain, with snow common only in the high mountains. Runoff in the Region results mainly from rainfall. The melting of snowpack and surfacing ground water springs also contribute small additional amounts of runoff. The flow of surface and ground waters in the Region is in an east to west direction toward the Pacific Ocean.

LAND USE / POPULATION

Land use within the Region varies considerably. The regional growth forecast for various land uses within the Region, for the San Diego Association of Governments', and for the Southern California Association of Governments' sphere of influence are shown in Appendix B-1 and B-2, respectively. The San Diego Association of Governments' regional growth forecast by hydrologic unit is shown in Appendix B-3.

The Region is experiencing and is expected to continue to experience population growth. Table 1-1 shows population projections for San Diego, Riverside, and Orange counties.

Table 1 - 1. Population Projections for the State of California and San Diego, Riverside, and Orange Counties

Location	Year 1990	1995	2000	2005	2010	2015
San Diego County	2,421,233	2,677,058	2,915,692	3,143,155	3,373,422	3,618,554
Riverside County	1,195,400	1,493,558	1,771,276	2,076,538	2,402,889	2,759,172
Orange County	2,415,269	2,667,706	2,862,106	2,992,855	3,099,374	3,193,64
Total for California	29,777,448	32,958,921	36,214,623	39,194,880	42,178,903	45,344,961

REGIONAL BOUNDARIES

The San Diego Region forms the southwest corner of California and occupies approximately 3,900 square miles of surface area. The western boundary of the Region consists of the Pacific Ocean coastline which extends approximately 85 miles north from the United States and Mexico border. The northern boundary of the Region is formed by the hydrologic divide starting near Laguna Beach and extending inland through El Toro and easterly along the ridge of the Elsinore Mountains into the Cleveland National Forest. The eastern boundary of the Region is formed by the Laguna Mountains and other lesser known mountains located in the Cleveland National Forest. The southern boundary of the Region is formed by the United States and Mexico border.

The San Diego Region encompasses most of San Diego county, parts of southwestern Riverside county and southwestern Orange county. The Region is divided into 11 major hydrologic units[1], 54 hydrologic areas[2], and 147 hydrologic subareas[3]. The geographic boundaries and names of these hydrologic units are shown in Table 1-2 and Figure 1-2[4]. A larger scale map of these hydrologic areas is contained in the rear pocket of this Basin Plan. The boundaries were initially designated by the State Department of Water Resources (DWR) and described in the report *Names and Areal Code Numbers of Hydrologic areas in the Southern District* which was published in April, 1964. The hydrologic units, areas and subareas were subsequently enumerated by the State Board in the early 1970's. In accordance with the early DWR definitions, hydrologic units are the entire watershed of one or more streams; hydrologic areas are major tributaries and/or major groundwater basins within the hydrologic unit; and hydrologic subareas are major subdivisions of hydrologic areas including both water-bearing and nonwater-bearing formations.

San Juan Hydrologic Unit (1.00)

The San Juan Hydrologic Unit is a generally trapezoid-shaped area of 500 square miles. Laguna Beach, San Juan Capistrano, Dana Point, and San Clemente are other major population centers. Several smaller towns are scattered along the coast.

The two major natural surface water bodies of the unit are San Juan Creek and San Mateo Creek. San Juan Creek divides the unincorporated communities of Dana Point and Capistrano Beach in Orange county, and enters the Pacific Ocean at Doheny Beach State Park. The mouth of the creek is normally open to the ocean. Usually, the water at the mouth of the creek is essentially the same as that of the adjacent coastal waters. The mouth of San Mateo Creek forms a salt water tidal marsh and is entirely within the Camp Pendleton Naval Reservation.

The San Juan Hydrologic Unit is comprised of the following five hydrologic areas; the Laguna, Mission Viejo, San Clemente, San Mateo, and San Onofre Hydrologic Areas.

Santa Margarita Hydrologic Unit (2.00)

The Santa Margarita Hydrologic Unit is a rectangular area of about 750 square miles. Included in it are portions of Camp Pendleton as well as the civilian population centers of Murrieta, Temecula and part of Fallbrook.

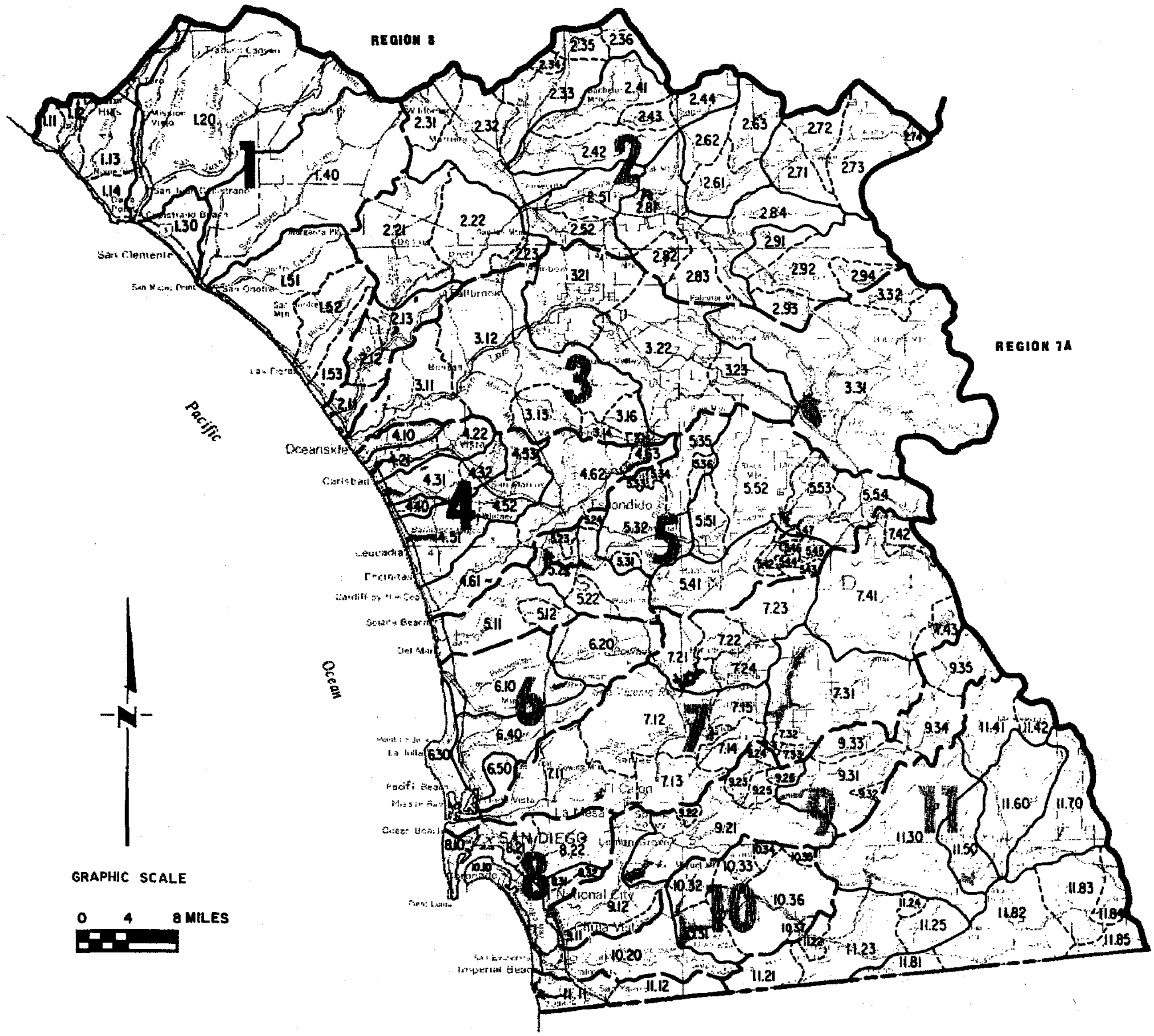
The unit is drained largely by the Santa Margarita River, Murrieta Creek and Temecula River. The only coastal lagoon of the unit is the Santa Margarita

TABLE 1 - 2. HYDROLOGIC UNITS, AREAS (HA) AND SUBAREAS (HSA) OF THE SAN DIEGO REGION

BASIN NUMBER	HYDROLOGIC BASIN	
1.00	SAN JUAN HYDROLOGIC UNIT	
1.10	Laguna	HA
1.11	San Joaquin Hills	HSA
1.12	Laguna Beach	HSA
1.13	Aliso	HSA
1.14	Dana Point	HSA
1.20	Mission Viejo	HA
1.21	Oso	HSA
1.22	Upper Trabuco	HSA
1.23	Middle Trabuco	HSA
1.24	Gobernadora	HSA
1.25	Upper San Juan	HSA
1.26	Middle San Juan	HSA
1.27	Lower San Juan	HSA
1.28	Ortega	HSA
1.30	San Clemente	HA
1.31	Prima Deshecha	HSA
1.32	Segunda Deshecha	HSA
1.40	San Mateo Canyon	HA
1.50	San Onofre	HA
1.51	San Onofre Valley	HSA
1.52	Las Pulgas	HSA
1.53	Stuart	HSA
2.00	SANTA MARGARITA HYDROLOGIC UNIT	
2.10	Ysidora	HA
2.11	Lower Ysidora	HSA
2.12	Chappo	HSA
2.13	Upper Ysidora	HSA
2.20	DeLuz	HA
2.21	DeLuz Creek	HSA
2.22	Gavilan	HSA
2.23	Vallecitos	HSA
2.30	Murrieta	HA
2.31	Wildomar	HSA
2.32	Murrieta	HSA
2.33	French	HSA
2.34	Lower Domenigoni	HSA
2.35	Domenigoni	HSA
2.36	Diamond	HSA
2.40	Auld	HA
2.41	Bachelor Mountain	HSA
2.42	Gertrudis	HSA
2.43	Lower Tucalota	HSA
2.44	Tucalota	HSA
2.50	Pechanga	HA
2.51	Pauba	HSA
2.52	Wolf	HSA
2.60	Wilson	HA
2.61	Lancaster Valley	HSA
2.62	Lewis	HSA
2.63	Reed Valley	HSA
2.70	Cave Rocks	HA
2.71	Lower Coahuila	HSA
2.72	Upper Coahuila	HSA
2.73	Anza	HSA
2.74	Burnt	HSA
2.80	Aguanga	HA
2.81	Vail	HSA
2.82	Devils Hole	HSA
2.83	Redec	HSA
2.84	Tule Creek	HSA
2.90	Oakgrove	HA
2.91	Lower Culp	HSA
2.92	Previtt Canyon	HSA
2.93	Dodge	HSA
2.94	Chihuahua	HSA
3.00	SAN LUIS REY HYDROLOGIC UNIT	
3.10	Lower San Luis	HA
3.11	Mission	HSA
3.12	Bonsall	HSA
3.13	Moosa	HSA
3.14	Valley Center	HSA
3.15	Woods	HSA
3.16	Rincon	HSA
3.20	Monserate	HA
3.21	Pala	HSA
3.22	Pauma	HSA
3.23	La Jolla Amago	HSA
3.30	Warner Valley	HA
3.31	Warner	HSA
3.32	Combs	HSA
4.00	CARLSBAD HYDROLOGIC UNIT	
4.10	Loma Alta	HA
4.20	Buena Vista Creek	HA
4.21	El Salto	HSA
4.22	Vista	HSA
4.30	Agua Hedionda	HA
4.31	Los Monos	HSA
4.32	Buena	HSA
4.40	Encinas	HA
4.50	San Marcos	HA
4.51	Batiquitos	HSA
4.52	Richland	HSA
4.53	Twin Oaks	HSA
4.60	Escondido Creek	HA
4.61	San Elijo	HSA
4.62	Escondido	HSA
4.63	Lake Wohlford	HSA
5.00	SAN DIEGUITO HYDROLOGIC UNIT	
5.10	Solana Beach	HA
5.11	Rancho Santa Fe	HSA
5.12	La Jolla	HSA
5.20	Hodges	HA
5.21	Del Dios	HSA
5.22	Green	HSA
5.23	Felicita	HSA
5.24	Bear	HSA

TABLE 1 - 2. HYDROLOGIC UNITS, AREAS (HA) AND SUBAREAS (HSA) OF THE SAN DIEGO REGION

BASIN NUMBER	HYDROLOGIC BASIN	
5.30	San Pasqual	HA
5.31	Highland	HSA
5.32	Las Lomas Muertas	HSA
5.33	Reed	HSA
5.34	Hidden	HSA
5.35	Guejito	HSA
5.36	Vineyard	HSA
5.40	Santa Maria Valley	HA
5.41	Ramona	HSA
5.42	Lower Hatfield	HSA
5.43	Wash Hollow	HSA
5.44	Upper Hatfield	HSA
5.45	Ballena	HSA
5.46	East Santa Teresa	HSA
5.47	West Santa Teresa	HSA
5.50	Santa Ysabel	HA
5.51	Boden	HSA
5.52	Pamo	HSA
5.53	Sutherland	HSA
5.54	Witch Creek	HSA
6.00	PENASQUITOS HYDROLOGIC UNIT	
6.10	Miramar Reservoir	HA
6.20	Poway	HA
6.30	Scripps	HA
6.40	Miramar	HA
6.50	Tecolote	HA
7.00	SAN DIEGO HYDROLOGIC UNIT	
7.10	Lower San Diego	HA
7.11	Mission San Diego	HSA
7.12	Santee	HSA
7.13	El Cajon	HSA
7.14	Coches	HSA
7.15	El Monte	HSA
7.20	San Vicente	HA
7.21	Fernbrook	HSA
7.22	Kimball	HSA
7.23	Gower	HSA
7.24	Barona	HSA
7.30	El Capitan	HA
7.31	Conejos Creek	HSA
7.32	Glen Oaks	HSA
7.33	Alpine	HSA
7.40	Boulder Creek	HA
7.41	Inaja	HSA
7.42	Spencer	HSA
7.43	Cuyamaca	HSA
8.00	PUEBLO SAN DIEGO HYDROLOGIC UNIT	
8.10	Point Loma	HA
8.20	San Diego Mesa	HA
8.21	Lindbergh	HSA
8.22	Chollas	HSA
8.30	National City	HA
8.31	El Toyan	HSA
8.32	Paradise	HSA
9.00	SWEETWATER HYDROLOGIC UNIT	
9.10	Lower Sweetwater	HA
9.11	Telegraph	HSA
9.12	La Nacion	HSA
9.20	Middle Sweetwater	HA
9.21	Jamacha	HSA
9.22	Hillsdale	HSA
9.23	Dehesa	HSA
9.24	Galloway	HSA
9.25	Sequan	HSA
9.26	Alpine Heights	HSA
9.30	Upper Sweetwater	HA
9.31	Loveland	HSA
9.32	Japatul	HSA
9.33	Viejas	HSA
9.34	Descanso	HSA
9.35	Garnet	HSA
10.00	OTAY HYDROLOGIC UNIT	
10.10	Coronado	HA
10.20	Otay Valley	HA
10.30	Dulzura	HA
10.31	Savage	HSA
10.32	Proctor	HSA
10.33	Jamul	HSA
10.34	Lee	HSA
10.35	Lyon	HSA
10.36	Hollenbeck	HSA
10.37	Engineer Springs	HSA
11.00	TIJUANA HYDROLOGIC UNIT	
11.10	Tijuana Valley	HA
11.11	San Ysidro	HSA
11.12	Water Tanks	HSA
11.20	Potrero	HA
11.21	Marron	HSA
11.22	Bee Canyon	HSA
11.23	Barrett	HSA
11.24	Round Potrero	HSA
11.25	Long Potrero	HSA
11.30	Barrett Lake	HA
11.40	Monument	HA
11.41	Pine	HSA
11.42	Mount Laguna	HSA
11.50	Morena	HA
11.60	Cottonwood	HA
11.70	Cameron	HA
11.80	Campo	HA
11.81	Tecate	HSA
11.82	Canyon City	HSA
11.83	Clover Flat	HSA
11.84	Hill	HSA
11.85	Hipass	HSA



LEGEND

DRAINAGE PROVINCE BOUNDARY
HYDROLOGIC UNIT BOUNDARY
HYDROLOGIC AREA BOUNDARY
HYDROLOGIC SUBAREA BOUNDARY

FIGURE 1-2. SAN DIEGO REGION HYDROLOGIC UNITS AREAS, AND SUBAREAS

Lagoon which lies totally within the Camp Pendleton Naval Reservation of the U.S. Marine Corps. The slough at the mouth of the river is normally closed off from the ocean by a sandbar.

The major surface water storage areas are Vail Lake and O'Neill Lake. Annual precipitation ranges from less than 12 inches near the coast to more than 45 inches inland near Palomar mountain.

The San Margarita Hydrologic Unit is comprised of the following nine hydrologic areas; the Ysidora, Deluz, Murrieta, Auld, Pechanga, Wilson, Cave Rocks, Aguanga, and Oak Grove Hydrologic Areas.

San Luis Rey Hydrologic Unit (3.00)

San Luis Rey Hydrologic Unit is a rectangular area of about 565 square miles, and includes the population centers of Oceanside, and Valley Center, and portions of Fallbrook and Camp Pendleton. In addition there are several Indian reservations in the unit. The major stream system, the San Luis Rey River, is interrupted by Lake Henshaw, one of the largest water storage areas in the San Diego Region. Annual precipitation is heavier than in other units, ranging from less than 12 inches near the ocean to 45 inches near Palomar mountain.

The San Luis Rey Unit contains two coastal lagoon areas, the mouth of the San Luis Rey River and Loma Alta Slough. The mouth of the San Luis Rey River is entirely within the city of Oceanside and is adjacent to the city's northern boundary. The slough area at the mouth of the river is contiguous with Oceanside harbor. Loma Alta Slough is entirely within the city of Oceanside and is the mouth of Loma Alta Creek. The slough is normally blocked off from the ocean by a sandbar.

The San Luis Rey Hydrologic Unit is comprised of the following three hydrologic areas; the Lower San Luis, Monserate and Warner Valley Hydrologic areas.

Carlsbad Hydrologic Unit (4.00)

Carlsbad Hydrologic Unit is a roughly triangular-shaped area of about 210 square miles, extending from Lake Wohlford on the east to the Pacific ocean on the west, and from Vista on the north to Cardiff-by-the-Sea on the south. The unit includes the cities of Oceanside, Carlsbad, Leucadia, Encinitas, Cardiff-by-the-Sea, Vista, and Escondido. The area is drained by Buena Vista, Agua Hedionda, San Marcos and Escondido creeks.

The Carlsbad Unit contains four major coastal lagoons; Buena Vista, Agua Hedionda, Batiquitos and San Elijo. Buena Vista lies between the cities of Carlsbad and Oceanside, and is partially within each city. A sandbar occasionally forms across the mouth forming an ocean beach. The water level in the lagoon is maintained by an inflow of rising groundwater and return irrigation water from the area upstream on Vista Creek. A portion of the lagoon has been designated as a bird sanctuary.

Agua Hedionda Lagoon, at the mouth of Agua Hedionda Creek, is within the city of Carlsbad. The lagoon is routinely dredged to keep it open to the ocean. The lagoon serves as an integral part of a utility's power plant cooling water intake system and also provides a reserve cooling water supply. The easterly portion of the lagoon is used for water oriented recreation.

Batiquitos Lagoon, at the mouth of San Marcos Creek, enters the Pacific Ocean between the city of Carlsbad and the unincorporated community of Leucadia. San Elijo Lagoon is the tidal marsh at the mouth of Escondido Creek. The marsh is normally closed off from the ocean but is subject to tidal fluctuations.

The Carlsbad Hydrologic Unit is comprised of the following six hydrologic areas; the Loma Alta, Buena Vista Creek, Agua Hedionda, Encinas, San Marcos and Escondido Creek Hydrologic Areas.

San Dieguito Hydrologic Unit (5.00)

San Dieguito Hydrologic Unit is a rectangular-shaped area of about 350 square miles. It includes the San Dieguito River and its tributaries, along with Santa Ysabel and Santa Maria creeks.

The unit contains two major reservoirs - Lake Hodges and Sutherland, and a smaller facility, the San Dieguito Reservoir.

The unit contains one coastal lagoon, the San Dieguito Slough, located at the mouth of the San Dieguito River, which forms the northerly edge of the city of Del Mar. The lagoon is normally closed off from the ocean by a sandbar.

The San Dieguito Hydrologic Unit is divided into five hydrologic areas; the Solana Beach, Hodges, San Pasqual, Santa Maria Valley and Santa Ysabel Hydrologic Areas.

Penasquitos Hydrologic Unit (6.00)

Penasquitos Hydrologic Unit is a triangular-shaped area of about 170 square miles, extending from Poway on the east to La Jolla on the west. There are no major streams in this unit although it is drained by numerous creeks. Miramar Reservoir, a major storage facility, contains imported Colorado River water.

The unit contains two coastal lagoons, Sorrento Lagoon and Mission Bay. Sorrento Lagoon is the mouth of Penasquitos Creek and empties into the ocean near the northerly boundary of the city of San Diego. Mission Bay and the mouth of the San Diego River form a 4000 acre aquatic park. Water quality within Mission Bay generally is lower than that of the coastal ocean water due to the poor flushing characteristics of the bay and the input of nutrient material from storm runoff. Sludge from the city of San Diego's Point Loma plant is piped to an island in Mission Bay (Fiesta Island) for use as a soil conditioner and fertilizer.

Annual precipitation in the unit ranges from less than 8 inches along the ocean to 18 inches inland. Poway, and La Jolla are the major population centers.

The Penasquitos Hydrologic Unit is comprised of the following five hydrologic areas; the Miramar Reservoir, Poway, Scripps, Miramar, and Tecolote Hydrologic Areas.

San Diego Hydrologic Unit (7.00)

San Diego Hydrologic Unit is a long, triangular-shaped area of about 440 square miles drained by the San Diego River. El Capitan, San Vicente, Cuyamaca, Jennings, and Murray reservoirs are the major storage facilities. San Vicente Reservoir, Murray Reservoir, Jennings, and Murray Reservoir store mainly Colorado River water, whereas, El Capitan mainly stores local runoff and some Colorado River water. Cuyamaca Reservoir stores only local runoff.

Much of the impounded water is used to serve major population centers, including a portion of the San Diego metropolitan area and the communities of El Cajon, Santee, Lakeside, Alpine and Julian. Annual precipitation ranges from less than 11 inches at the coast to about 35 inches around Cuyamaca and El Capitan Reservoir. The San Diego Hydrologic Unit is comprised of the following four hydrologic areas; Lower San Diego, San Vicente, El Capitan and Boulder Creek Hydrologic Areas.

Pueblo San Diego Hydrologic Unit (8.00)

Pueblo San Diego Hydrologic Unit is a triangular-shaped area of about 60 square miles with no major stream system. It is bordered to the north, by the watershed of the San Diego River and on the south, in part, by that of the Sweetwater River. The major population center is the city of San Diego. The unit is relatively dry with an annual precipitation of less than 11 inches to 13 inches. The Pueblo San Diego Hydrologic Unit is comprised of the following three hydrologic areas; the Point Loma, San Diego Mesa and National City Hydrologic Areas.

San Diego Bay lies offshore of this unit. The bay is approximately 13 miles long and varies from ½ to 1½ miles in width.

Sweetwater Hydrologic Unit (9.00)

Sweetwater Hydrologic Unit is an elongated northeasterly trending strip with an area of about 230 square miles. It is traversed along its length by the Sweetwater River. The annual precipitation varies from less than 11 inches at the coast to about 35 inches inland.

The Sweetwater Hydrologic Unit is comprised of the following three hydrologic areas; the Lower Sweetwater, Middle Sweetwater, and Upper Sweetwater Hydrologic Areas.

Otay Hydrologic Unit (10.00)

Otay Hydrologic Unit is a club-shaped area of about 160 square miles. The major stream system traversing the area is the Otay River and its tributaries. The Lower Otay Reservoir is the terminus of the second San Diego Aqueduct. Major population centers include the communities of Imperial Beach in the coastal area and Dulzura inland. The annual precipitation generally increases landward from the coast and varies from less than 11 to 19 inches.

The Coronado, Otay, and Dulzura Hydrologic Areas comprise the Otay Hydrologic Unit. The Coronado Hydrologic Area is composed of the North Island Naval Air Station, the city of Coronado and the Silver Strand.

Tijuana Hydrologic Unit (11.00)

Tijuana Hydrologic Unit is a triangular-shaped area that is drained by Cottonwood and Campo creeks, which are tributaries to the Tijuana River. It covers an area of about 470 square miles and lies mainly in the mountain-valley section.

The unit's only coastal lagoon is the Tijuana Estuary which occupies approximately 2000 acres and is generally open to the ocean. Most of the area can be classified as a salt water marsh with a number of arms of open water. Water quality is generally the same as that of the sea water except during periods of runoff when a variety of wastes, which originate in Mexico, are carried into the lagoon from the surface flow in the Tijuana River.

The unit is sparsely populated with the major population centers at San Ysidro and Campo. Annual precipitation varies from less than 11 inches near the coast to more than 25 inches farther inland near Laguna mountain. Runoff is captured by Morena Reservoir and Barrett Lake on Cottonwood Creek.

The Tijuana Hydrologic Unit is comprised of the following eight hydrologic areas; the Tijuana Valley, Potrero, Barrett Lake, Monument, Morena, Cottonwood, Cameron and Campo Hydrologic Areas. The Tijuana Valley Hydrologic Area is arbitrarily divided by the United States - Mexico boundary. Surface water quality has been adversely affected by runoff coming across the border from Mexico. Ground water quality has been affected by seawater intrusion and waste discharges in both the United States and Mexico.

WATER RESOURCES

The water resources in the San Diego Region are classified as coastal waters, surface waters, ground waters, imported surface waters, and reclaimed water. Fresh water supplied within the Region is obtained from local surface and ground water development projects and imported surface water programs.

COASTAL WATERS

Coastal waters in the Region include bays, harbors, estuaries, beaches, and open ocean. Deep draft commercial harbors include San Diego Bay and Oceanside Harbor. Shallower small craft harbors include Mission Bay and Dana Point Harbor. Important estuaries are represented by coastal lagoons such as Tijuana Estuary, Sweetwater Marsh, San Diego River flood control channel, Kendall-Frost wildlife reserve, San Dieguito River Estuary, San Elijo Lagoon, Batiquitos Lagoon, Agua Hedionda Lagoon, Buena Vista Lagoon, San Luis Rey River Estuary, and Santa Margarita River Estuary.

SURFACE WATERS

The San Diego Region has thirteen principal stream systems originating in the western highlands which flow to the Pacific Ocean. From north to south these stream systems are Aliso Creek, San Juan Creek, San Mateo Creek, San Onofre Creek, Santa Margarita River, San Luis Rey River, San Marcos Creek, Escondido Creek, San Dieguito River, San Diego River, Sweetwater River, Otay River, and the Tijuana River. Most of the streams of the San Diego Region are interrupted in character having both perennial and ephemeral components due to the rainfall pattern and the development of surface water impoundments. Surface water impoundments capture flow from nearly all the Region's major surface water streams. Many of the major surface water impoundments are a blend of natural runoff and imported water.

GROUND WATERS

All major drainage basins in the San Diego Region contain ground water basins. The basins are relatively small in area and usually shallow. Although these ground water basins are limited in size, the ground water yield from the basins has been historically important to the development of the Region. A number of the larger ground water basins can be of future significance in the Region for storage of both imported waters and reclaimed wastewaters. Nearly all of the local ground waters of the Region have been intensively developed for municipal and agricultural supply purposes.

IMPORTED SURFACE WATERS

The San Diego Region receives all of its imported water supplies from the Metropolitan Water District of Southern California (MWD). The MWD was created by the California State Legislature as a special district in 1928. MWD distributes wholesale water through 27 member agencies (cities and water districts) in portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura Counties. The MWD serves more than one-half of the drinking water supply used by 16 million persons in the coastal plain of Southern California.

The MWD supplies water to the following five member agencies in the San Diego Region: (1) Coastal Municipal Water District, (2) Municipal Water District of Orange County, (3) Western Municipal Water District of Riverside County, (4) Eastern Municipal Water District and (5) San Diego County Water Authority. The San Diego County Water Authority, the largest purveyor of MWD water in the San Diego Region, allocates water supplies to member agencies in San Diego County. The MWD obtains its water supplies from the Colorado River Aqueduct and the State Water Project.

The Colorado River Aqueduct is owned and operated by the MWD. Construction of the aqueduct began in 1931 and the first deliveries of imported water to member agencies took place in 1941. This aqueduct transports water from Lake Havasu on the Colorado River, 242 miles to its terminus at Lake Matthews in Riverside County. The aqueduct has an annual maximum capacity of 1.3 million acre-feet.

In 1964, the United States Supreme Court limited California's annual diversions from the Colorado River on a dependable basis to 4.4 million acre-feet in the case Arizona vs. California. As a result of the Supreme Court's decision, MWD's annual diversions from the Colorado River were limited to approximately 550,000 acre-feet. The United States Department of the Interior has the discretion to allow California to use any water that Arizona and Nevada have available from the Colorado River, but do not use. During declarations of surplus, MWD has the highest priority of any California contractor to divert surplus waters from the Colorado River.

MWD's other primary source of water is the State Water Project (SWP). The SWP is owned by the State of California and operated by the California Department of Water Resources. SWP water originates from Lake Oroville on the Feather River and surplus flows in the Sacramento - San Joaquin Delta in northern California. The project transports water from the Sacramento-San Joaquin Delta via the 444-mile long California Aqueduct to 29 contract agencies in the State.

The MWD has an annual entitlement to SWP water of 2,011,500 acre-feet out of a total maximum contractual entitlement of 4.2 million acre-feet for the 29 contractors. The current firm yield of the SWP, 2.4 million acre-feet, falls below the total SWP contractor requests of approximately 3.6 million acre-feet. The current firm yield of the SWP is based on the average annual water supplies available if the hydrologic conditions during the years 1928 - 1934 reoccurred. The firm yield of the SWP can supply only about one-half of the contract entitlement due to the lack of sufficient SWP water conveyance facilities. The demand for SWP water is expected to increase to 4.2 million acre-feet by the year 2010. MWD water supply from the SWP will be subject to limitations unless SWP supplies are increased.

Steadily increasing demands for water have led to the need to import water from the Colorado River and the State Water Project. In November 1947, construction was completed on the first pipeline of the San Diego Aqueduct to deliver Colorado River water into the Region. The pipeline was constructed by the U.S. Navy to meet the increased demand for water caused by accelerated population and industrial growth during the World War II years of 1941 - 1945. Additional pipelines to convey imported water were constructed in subsequent years. Beginning in 1978, State Water Project water from Lake Oroville on the Feather River and surplus flows in the Sacramento - San Joaquin Delta in northern California were blended with the Colorado River water.

In the recent past the MWD water supplies consisted of approximately seventy percent from the Colorado River and thirty percent from the State Water Project. In 1993, the drought reduced the availability of State Water Project waters during the year and MWD water supplies consisted of approximately ninety-three percent from the Colorado River and seven percent from the State Water Project. The San Diego Region is highly dependent upon imported water supplies to meet the residential, industrial, commercial, agricultural, and public water demand. Imported water (i.e., Colorado River and State Water Project) supplies about ninety percent of the demand; surface runoff into local reservoirs and local ground water supplies the remaining ten percent.

The delivery of the maximum amount of SWP water benefits the Region in the following ways:

- SWP water improves the potential for conjunctive uses of water resources;
- SWP water enhances and maintains designated beneficial uses of the Region's surface and ground waters;
- SWP water improves the potential for attainment of water quality objectives;

- SWP water improves the viability of recharge of ground water basins;

- SWP water increases the potential for water reclamation.

The effective implementation of water reclamation in the Region is contingent on the availability of supply waters with relatively low salinity, or total dissolved solids concentration. The Colorado River has a high total dissolved solids concentration of 600 - 750 mg/l. When this water is used for urban needs the TDS increases by about 300 mg/l to 900 -1050 mg/l. This quality of water is, at best, marginal for agricultural and ground water recharge uses of reclaimed water. In contrast, TDS concentrations in State Water Project (SWP) waters are approximately 250 mg/l except during drought periods. The lower TDS concentrations found in State Water Project waters enables water supply agencies to blend SWP waters with Colorado River water supplies to meet drinking water quality standards and reclaimed water discharge limitations.

Water supply demand is expected to continue to increase as a result of population growth in the Region. To meet the projected water demand, water supply agencies are working to increase both the capacity and flexibility of conveyance systems and to intensify development of local water supplies through wastewater reclamation, ground water management, and desalination of seawater. The increased use of local supplies is expected to meet eighteen percent of the total water supply needed by the year 2010. The remaining eighty-two percent of the demand will have to be met by imported water.

RECLAIMED WATER

Reclaimed water is an important and growing component of the Region's water supply. Reclaimed water is obtained through extensive treatment of municipal wastewater to produce a safe and reliable water supply for non-potable uses. Reclaimed water is used to irrigate parks, agriculture, planned community greenbelt areas, golf courses and freeway landscaping. Reclaimed water use to the maximum extent feasible is important because it reduces dependence on imported water supply and leaves the Region less vulnerable to imported water supply shortages. The use of reclaimed water in the Region is expanding. For example, the San Diego County Water Authority reported that in Fiscal Year 1993, the total volume of reclaimed water used in the Authority's service area was 9,713 acre-feet; this represented a 24 percent increase in reclaimed water use over the previous year. The Authority estimates that the total reclaimed water use volume in their service area will increase to 50,000 acre-feet per year when currently planned water reclamation projects are completed in the year 2010.

REGIONAL BOARD WATER QUALITY MANAGEMENT POLICY

The five policy statements in this section form the Regional Board's Water Quality Management Policy for the San Diego Region. Following each principle policy statement are interpretations and examples of applications of the policy. In certain instances the Regional Board may find it necessary to exercise discretion in applying these policies within the interpretations presented.

★ POLICY ONE ★

Water quality objectives, beneficial uses, and water quality control plans and policies adopted by the State Water Resources Control Board and the Regional Water Quality Control Board shall be an integral part of the basis for water quality management.

☞ Whenever the existing water quality exceeds the water quality objectives contained in the Water Quality Control Plan for the San Diego Basin (9), such existing high quality shall be maintained until it has been demonstrated to the Regional Board that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial uses of such water, and will not result in water quality less than that described in the Water Quality Control Plan for the San Diego Basin (9).[5]

☞ Any waste discharged to existing high quality water will be required to meet waste discharge requirements that will result in the best practicable treatment or control of the discharge necessary to assure that pollution will not occur and the highest water quality consistent with maximum benefit to the people of the State will be maintained.[5]

★ POLICY TWO ★

Water shall be reclaimed and reused to the maximum extent feasible.

☞ The Regional Board will encourage and recommend funding for water reclamation projects that meet the following conditions and that do not adversely affect vested water rights, unreasonably impair instream beneficial uses, or place an unreasonable burden on present water supply systems:[6]

- ✓ Beneficial uses will be made of wastewater that would otherwise be discharged to marine or brackish receiving water or evapotranspiration ponds.
- ✓ Reclaimed water will be used to replace or supplement the use of fresh water or better quality water.
- ✓ Reclaimed water will be used to preserve, restore, or enhance instream beneficial uses that include but are not limited to, fish, wildlife, recreation, and aesthetics associated with any surface water body or wetlands.

☞ The Regional Board will encourage and promote water reclamation while taking into consideration the Regional Board's responsibility of protecting and enhancing beneficial uses and recognizing the need to protect the public health and environment.

☞ The Regional Board will require wastewater treatment facilities to provide for appropriate disposal or storage of surplus reclaimed water.

★ POLICY THREE ★

Point sources and nonpoint sources of pollution shall be controlled to protect designated beneficial uses of water.[7]

☞ Treatment levels at least as stringent as those defined in the federal Clean Water Act will be required of municipal and industrial point sources which are subject to regulation under the Clean Water Act.[8]

☞ Sewage collection agencies shall implement a comprehensive pretreatment program including industrial waste ordinances to control the quality and quantity of pollutants which may adversely affect the operation of a municipal wastewater treatment facility, or which may cause the effluent limitations for the facility to be exceeded, or which may pass through the treatment works or will otherwise be incompatible with such works.

☞ Nonpoint sources will be controlled in conformance with the Clean Water Act and the Coastal Zone Act Reauthorization Amendments. Nonpoint source control programs will generally be the responsibility of federal, state, and local agencies, and individuals having land management responsibilities. Such controls will be implemented preferably through best management practices[9], (BMPs). If BMPs fail, controls will be implemented through waste discharge requirements or other regulatory actions.[7]

★ POLICY FOUR ★

Instream beneficial uses shall be maintained, and when practical, restored, and enhanced.

☞ Coordination shall be encouraged among local agencies with regard to all aspects of planning and land use control.

☞ Plans for future development and management of the State's water resource must assure adequate protection of existing instream beneficial uses, and where feasible, include measures to enhance these uses.

☞ Instream uses for recreation, fish, wildlife, and related purposes shall be balanced with other uses.

☞ The need for water to be impounded must be demonstrated, taking full account of instream values.

☞ Reservoir operations shall involve careful consideration of instream uses, even where such uses satisfy altered or enhanced instream values.

★ *POLICY FIVE* ★

A detailed and comprehensive knowledge of the beneficial uses, water quality and activities affecting water quality throughout the Region shall be maintained.

☞ The development of a modern comprehensive information gathering, storing, and retrieval system to effectively aid in evaluating water quality throughout the Region shall be encouraged.

LEGAL BASIS AND AUTHORITY

Federal and state laws have been enacted which establish the requirements for adequate planning, implementation, management and enforcement, for the control of water quality. The principal federal and state laws pertaining to the regulation of water quality are known respectively as, the 1972 Federal Water Pollution Control Act (also known as the Clean Water Act) and Division 7 of the 1969 California Water Code (also known as the Porter-Cologne Water Quality Control Act). The laws are similar in many ways. The fundamental purpose of both laws is to protect the beneficial uses of water. An important distinction between the two is that the Porter-Cologne Water Quality Control Act addresses both ground and surface waters while the Clean Water Act addresses surface water only.

In addition, federal and state regulations and policies have been developed to augment and clarify the laws and to provide detail not included in the law.

FEDERAL LAWS AND REGULATIONS

The basic federal law dealing with surface water quality control is the Federal Water Pollution Control Act of 1972 (Clean Water Act). Certain statutory provisions in two other federal laws, the National Environmental Policy Act of 1969 and the Endangered Species Act, supplement the Clean Water Act. Federal regulations implementing the Clean Water Act provisions for water quality planning and management are contained in 40 CFR 130, *EPA Requirements for Water Quality Planning and Management* and 40 CFR 131, *EPA Procedures for Approving State Water Quality Standards*.

FEDERAL WATER POLLUTION CONTROL ACT (CLEAN WATER ACT)

The Federal Water Pollution Control Act was amended in 1972 and is commonly referred to as the Clean Water Act. The objective of the Clean Water Act is to *"restore and maintain the chemical, physical and biological integrity of the Nation's waters"* to make all surface waters "*fishable*" and "*swimmable*". The seven goals set forth in the law to achieve this objective are to:

(1) Eliminate the discharge of pollutants to navigable waters by 1985;

(2) Provide water quality which protects and fosters propagation of fish, shellfish and wildlife and allows recreation in and on the water by 1983;

(3) Prohibit discharge of toxic pollutants in toxic amounts;

(4) Provide financial assistance to construct publicly owned treatment systems;

(5) Develop and implement areawide waste treatment management plans;

(6) Develop technology necessary to carry out these goals; and

(7) Develop and implement programs for control of nonpoint sources of pollution.

In 1972, five titles were added as amendments to the Clean Water Act. Title 1 provides for research and related programs, Title 2 provides grants for construction of treatment works, Title 3 provides for standards and enforcement, Title 4 provides for permits and licenses, and Title 5 provides for general provisions.

Clean Water Act Sections 106, 205(j), 205(g), 208, 303 and 305 establish requirements for state water quality planning, management, and implementation in regard to surface waters. The Clean Water Act requires that states adopt water quality standards to protect public health or welfare, enhance the quality of water, and serve the purposes of the Clean Water Act. "*Serve the purposes of the Act*" (as defined in §101(a), §101(a)(2), and §303(c) of the Act) means that water quality standards:

- Include provisions for restoring and maintaining the chemical, physical, and biological integrity of state waters;

- Whenever attainable, achieve a level of water quality that provides for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water (*"fishable" and "swimmable"*); and

- Consider the use and value of state waters for public water supplies, propagation of fish and wildlife, recreation, agriculture and industrial purposes, and navigation.

The states are also required to have a continuing planning process called the Triennial Review process, which includes public hearings at least once every three years to review the water quality standards and revise them if necessary.

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (NEPA)

NEPA declares a national environmental policy and its goals. The overall objectives of NEPA are: (1) to ensure that environmental factors are considered in the decision making process of any federal action and (2) to provide full public disclosure of any federal action. Accordingly, NEPA requires that an Environmental Impact Statement (EIS) shall be "*included in every recommendation or report on proposals for legislation and other major federal actions significantly affecting the quality of the human environment*". Federal actions include the operation of programs; the construction of facilities; the provision of funding to others; and a federal agency's decision on whether to grant its required permission for activities of others, such as private businesses or state or local governments.

NEPA establishes a continuing policy for all levels of government and concerned public and private organizations to create and maintain conditions under which man and nature can exist in productive harmony and fulfill the social, economic and other requirements of present and future generations. NEPA directs an interdisciplinary approach to ensure integrated use of all talents in planning and decision making having impact on the environment (§102). Each report or recommendation must be accompanied by a detailed statement prepared by the responsible official on:

- The environmental impact of the proposed action;

- Any adverse environmental effects which cannot be avoided if the action is taken;

- Alternatives to the action;

- Relationship between local short-term uses of the environment, and maintenance and enhancement of long-term productivity; and

- Any irreversible and irretrievable commitments of resources if the proposed action is taken.

Appropriate alternatives to proposed actions must be studied and developed when conflicts in use of available resources are encountered.

NEPA directs the preservation of acceptable environments and the restoration of those that have been degraded. The spirit of the Act is also carried into the State reviews of proposed actions upon the environment. (See discussion on the California Environmental Quality Act later in this chapter).

ENDANGERED SPECIES ACT (ESA)

The federal Endangered Species Act (ESA) establishes federal policy regarding protection of endangered and threatened species. The ESA is directed specifically at projects subject to the *National Environmental Policy Act (NEPA)* which may adversely affect endangered and threatened species. Section 7 of the federal Endangered Species Act requires all federal agencies, in consultation with the Fish and Wildlife Service and the National Marine Fisheries Service, ensure that their actions do not jeopardize the existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat. The definition of a federal action is very broad and covers almost every water program administered by the US EPA. All aspects of the US EPA's surface water quality criteria and standards adoption and implementation process are subject to the consultation process. The overriding goal of the consultation process is to provide for the protection and recovery of threatened and endangered species and the ecosystems on which they depend.

APPLICABLE FEDERAL REGULATIONS

The federal regulations, promulgated by the US EPA to implement the Clean Water Act provisions for water quality planning and management, are contained in 40 CFR 130, *EPA Requirements for Water Quality Planning and Management* and 40 CFR 131, *EPA Procedures for Approving State Water Quality Standards*. The regulations contained in 40 CFR 131 require states to:

- Designate appropriate beneficial uses for surface waters;

- Establish narrative and numeric criteria to protect beneficial uses;

- Establish an antidegradation policy to protect and maintain existing beneficial uses and the water quality necessary to protect those uses; and

- Hold a public hearing to review surface water quality standards at least once every three years and revise them if appropriate.

The regulations contained in 40 CFR 130 require states to also develop and follow a water quality planning and management system consisting of the following elements:

- Monitoring methods and procedures to compile and analyze data on surface waters;

- Identification of surface waters that are "*water quality limited*" or not meeting water quality standards;

- A ranking of surface water bodies based on severity of pollution and beneficial uses of the waters. The surface water body ranking must also include a determination of how best to utilize available resources to solve the water quality problems; and

- Pollutant loading allocations to ensure that water quality standards are not exceeded.

These regulations are discussed in detail in Chapters 2 and 3.

CALIFORNIA LAWS AND REGULATIONS

State of California laws that directly affect water resources planning are contained principally in the California Water Code. Certain statutory provisions in the Water Resources Code, Health and Safety Code, Public Resources Code, Fish and Game Code, Food and Agriculture Code, Government Code, Harbors and Navigation Code, California Environmental Quality Act, and the California Endangered Species Act supplement the water quality provisions of the California Water Code. The chief state regulations in the California Code of Regulations pertaining to water quality are contained in Title 22 and Title 23.

CALIFORNIA WATER CODE

The California Water Code contains provisions which control almost every consideration of water and its use. Division 2 of the Water Code provides that the State Board shall consider and act upon all applications for permits to appropriate waters. The State Board's authority includes water quality considerations in granting a water right. Division 3 deals with dams and reservoirs; Division 5 pertains to flood control; Division 6 controls conservation, development and utilization of the state water resources; Division 7, covers water quality protection and management; and Divisions 11 through 21 provide for the organization, operation, and financing of municipal, county and local, water-oriented agencies.

ADJUDICATIONS TO PROTECT THE QUALITY OF GROUND WATER (DIVISION 2 OF THE CALIFORNIA WATER CODE)

California Water Code Section 2100 provides that the State Board may make a formal determination or judgement in order to protect ground water quality. Thus, the State Board, upon a finding of existing or threatened irreparable damage, may file an action in the Superior Court to restrict pumping or to impose physical solutions, or both, to the extent necessary to prevent destruction of, or irreparable injury to, the quality of ground water. The State Board may take such action only if an affected local agency charged with this responsibility fails to take appropriate action.

PORTER-COLOGNE WATER QUALITY CONTROL ACT (DIVISION 7 OF THE CALIFORNIA WATER CODE)

Division 7 of the California Water Code is the basic water quality control law for California. This law is titled the *Porter-Cologne Water Quality Control Act* (Porter-Cologne Act). The Porter-Cologne Act establishes a regulatory program to protect water quality and to protect beneficial uses of the state waters.

The Porter-Cologne Act Section 13000 provides that:

- The quality of all waters of the state shall be protected for the use and enjoyment by the people of the state; and

- Activities and factors which may affect the quality of the waters of the state shall be regulated to attain the highest water quality that is reasonable, considering all demands being made or to be made and the total values involved, beneficial and detrimental, economic and social, tangible and intangible.

The Porter-Cologne Act establishes the State Board and the regional boards as the principle state agencies responsible for control of water quality. The State Board is responsible for:

- Issuing rights for the appropriation of surface water;
- Preventing waste and unreasonable use of water;
- Adjudicating water rights at the request of water users or the courts;
- Adopting state-wide water quality control policy;
- Reviewing actions of regional boards;
- Implementing the federal Clean Water Act; and
- Operation of a grants and loan program for the construction of sewage treatment plants.

The regional boards are responsible for:

- Issuance of waste discharge requirements to regulate the discharge of waste to surface and ground waters;
- Enforcement of the waste discharge requirements by the issuance of cease and desist orders, cleanup and abatement orders, administrative civil liability orders, and court action;
- Water quality control planning within their region; and
- Surveillance and monitoring to detect new sources of pollution and to ensure that ongoing discharges are in compliance with waste discharge requirements.

The Porter-Cologne Act empowers the regional boards to formulate and adopt, for all areas within the regions, a Water Quality Control Plan (Basin Plan) which designates beneficial uses and establishes such water quality objectives as in its judgement will ensure reasonable protection of beneficial uses. Each regional board establishes water quality objectives that will insure the reasonable protection of beneficial uses and the prevention of nuisance. The California Water Code provides flexibility for some change in water quality provided that beneficial uses are not adversely affected. The factors which are to be considered by the Regional Board in establishing water quality objectives are described in Chapter 3, *Water Quality Objectives*, (page 3-1).

The State Board may adopt water quality control plans for surface waters that overlap Regional Board boundaries, are statewide in scope, or are otherwise considered significant. Statewide plans supersede Regional Water Quality Control Plans where conflict occurs. The Regional Water Quality Control Plans are required to conform with policies of the State Board.

The California Water Code also requires that each regional board include an implementation plan in the Basin Plan. Implementation plans must include as a minimum:

- A description of the nature of the actions necessary to achieve the water quality objectives, including recommendations for appropriate actions by any entity, public or private;
- A time schedule for the actions to be taken; and
- A description of the surveillance to be undertaken to determine compliance with the water quality objectives.

CALIFORNIA ENVIRONMENTAL QUALITY ACT OF 1973 (CEQA)

The California Environmental Quality Act (CEQA) is a very important and expansive environmental protection law in California. It was enacted by the state legislature in 1973 and is contained in the Public Resources Code Sections 21000 through 21177. CEQA is the state-level equivalent of the federal National Environmental Policy Act (NEPA).

The overall objectives of both laws, NEPA and CEQA, are to provide full public disclosure of a project and to ensure that environmental factors are considered in the decision making process. CEQA requires all state agencies, boards and commissions to include in any report on any project having significant effect on the environment an

Environmental Impact Report (EIR). The EIR records the scope of the applicant's proposal and analyzes all its known environmental effects. The EIR must discuss any significant environmental effects which cannot be avoided if the proposal is implemented, proposed mitigative measures to minimize the impact of the project and alternatives to the project. Also the EIR must discuss the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity and the growth-inducing impacts of the proposed project. The EIR is circulated to interested agencies and members of the public who request a copy. The public has a 45 day period for review during which comments on the EIR are accepted.

State agencies cannot approve a project for which alternatives or mitigation measures exist which would significantly reduce the environmental impacts, unless overriding social and/or economic considerations apply.

Activities of the State and Regional Boards subject to CEQA include adoption of Basin Plans and amendments thereto, issuance of NPDES permits, and Waste Discharge Requirements (WDRs). The basin planning process however, has been certified by the Secretary of Resources as being exempt from CEQA's requirement for preparation of an environmental impact report (EIR) or negative declaration and initial study (California Code of Regulations (CCR) Title 14, §15251). Under the basin planning process, a plan amendment, as well as a staff report and backup materials, serve as a functional equivalent to an EIR or negative declaration and initial study. The CEQA Notice of Filing, Environmental Checklist Form, and Notice of Decision must be filed to comply with CEQA.

CALIFORNIA ENDANGERED SPECIES ACT

The California Endangered Species Act (CESA) as amended in 1987 (California Fish and Game Code, §2050 - §2098) establishes state policy regarding protection of endangered and threatened species. CESA is directed specifically at projects subject to the California Environmental Quality Act (CEQA) which may adversely affect endangered and threatened species.

Pursuant to CESA, the Regional Board must consult with the California Department of Fish and Game (DFG) to determine if the Basin Plan would jeopardize the continued existence of any endangered or threatened species or adversely affect the habitat of the species. CESA requires the DFG to issue written findings regarding whether or not Regional Board adoption of the Basin Plan will cause jeopardy to endangered or threatened species.

CESA policy requires that the Regional Board not approve a Basin Plan, which in DFG's opinion, would jeopardize endangered or threatened species. CESA also requires the Regional Board to adopt reasonable and prudent alternatives in the Basin Plan which would minimize any adverse effects identified by DFG to endangered or threatened species. If the alternatives are infeasible, the Regional Board is required to adopt reasonable mitigation and enhancement measures in the Basin Plan.

OTHER STATE STATUTES

Certain statutory provisions contained in the Health and Safety Code, Fish and Game Code, Harbors and Navigation Code, and the Food and Agriculture Code, supplement the water quality provisions of the California Water Code. The Health and Safety Code has statutory provisions providing for the regulation of hazardous waste, hazardous materials, surface impoundments containing hazardous waste, underground and aboveground storage of hazardous substances, and underground injection of toxic substances and the discharge of cancer causing chemicals to sources of drinking water. The Harbors and Navigation Code has statutory provisions to prevent the unauthorized discharges of waste from vessels to surface waters. The Food and Agriculture Code has statutory provisions providing for the prevention of pollution of ground water which may be used for drinking water supplies. The Fish and Game Code has statutory provisions to prevent unauthorized diversions of any surface water body as well as waste discharges deleterious to fish, plant, animal, or bird life. The Government Code requires the Governor to establish a state oil spill and toxic disaster contingency plans.

CALIFORNIA CODE OF REGULATIONS

The administrative procedures of the State Board and regional boards and regulations relating to many facets of water rights and water quality are contained in Title 23, (WATERS) Division 3, (Water Resources Control Board) Chapters 3, 4, 15, and 16 California Code of Regulations (CCR). Requirements for quality of water for domestic uses, wastewater reclamation criteria, and hazardous waste management are contained in Title 22, Division 4 (Environmental Health).

HISTORY OF BASIN PLANNING IN THE SAN DIEGO 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 discharges. During the first few years, the San Diego Regional Water Pollution Control Board only established narrative objectives for discharges. By 1952, the San Diego Regional Water Pollution Control Board began including numerical limits in requirements for discharges and adopting water quality objectives for receiving waters.

In the late 1960's the San Diego Regional Board conducted an extensive investigation to define water quality objectives for the entire San Diego Region. A report was prepared for each major hydrologic unit of the Region. These reports described the following topics for each hydrologic unit:

- Geology and land use;
- Precipitation and runoff;
- Water quality;
- Surface and ground water use;
- Imported water use;
- Waste disposal;
- Beneficial uses;
- Water quality objectives; and
- The water quality implementation program.

These early reports led to the definition and designation of beneficial uses for the surface and ground waters of the Region. The beneficial uses defined in the early reports have remained intact, for the most part, to the present day.

With the enactment of the Porter-Cologne Water Quality Act in 1969, the names of the Regional Water Pollution Control Boards were changed to Regional Water Quality Control Boards, and their authority was broadened. Furthermore, the Act required the Regional Water Quality Control Boards to initiate development of comprehensive regional Water Quality Control Plans.

In 1971, the San Diego Regional Board adopted an *Interim Water Quality Control Plan* (*Interim Plan*) which expanded the number of beneficial uses designated for inland surface waters, and coastal waters subject to tidal action. The *Interim Plan* was prepared to satisfy state and federal requirements for grant programs for sewage treatment plant construction. In addition, the *Interim Plan* satisfied the Porter-Cologne Act requirements that each regional board adopt a *Water Quality Control Plan*. As the term "*interim*" implies, the document was adopted as the first step towards development of a comprehensive fully developed *Water Quality Control Plan*. The *Interim Plan* was amended in 1972 to designate a beneficial use for clamming and shellfish harvesting at various locations in coastal waters.

In 1975, the San Diego Regional Board adopted the *Comprehensive Water Quality Control Plan Report* for the San Diego Region that compiled all of the existing beneficial uses, water quality objectives, and policies into one document and rescinded all individually-adopted objectives and policies. The 1975 Basin Plan was amended by the Regional Board on numerous occasions since 1975. A summary of Basin Plan amendments adopted by the Regional Board between 1979 and 1994 is presented in Chapter 5 (*Plans and Policies*) of this Basin Plan.

Since 1975, progress has been made toward the control of a number of water quality problems identified in the 1975 Basin Plan, including the control of point source discharges and the development of new programs to address nonpoint source pollution issues in the Region. At the same time, many new issues and areas of concern have arisen as health scientists have identified increasingly lower concentrations of toxic substances as health risks. Furthermore, advancing analytical technology enables detection of contaminants at increasingly lower concentrations. The State and Regional Board's Continuing Planning Process, based on the latest scientific information, addresses both "*old*" and "*new*" water quality issues.

CONTINUING PLANNING PROCESS

As part of the State's continuing planning process, components of the Basin Plan are reviewed as new data and information become available or as specific needs arise. Comprehensive updates of the Basin Plan occur in response to state and federal legislative requirements and as funding becomes available. In addition, State Board and other governmental entities' (federal, state, and local) plans, which can affect water quality,[1] are incorporated into the planning process. The Basin Plan provides consistent long-term standards and program guidance for the Region.

BASIN PLAN REVIEW AND AMENDMENT PROCESS

The following discussion applies to the review and amendment process for any Water Quality Control Plan, (i.e., a Statewide Plan or a Regional Board Basin Plan).

TRIENNIAL REVIEW

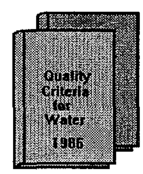
Statewide plans and Regional Board Basin Plans are flexible documents which must be reviewed and revised regularly to adapt to changing conditions. A major review of both types of Plans is performed every three years as part of the update process for the "*Triennial Review*". The Triennial Review is required by the federal Clean Water Act [§303(c)(1)]. In addition, state law requires that water quality control plans be reviewed periodically (California Water Code §13240), and that the State Board review statewide plans at least every three years (California Water Code §13170 and §13170.2). These reviews are comprehensive and include a public scoping hearing to identify the issues and water quality standards to be addressed. The review identifies standards which are appropriate and, therefore, require no revisions. Information on new or existing water quality objectives comes from monitoring data, compliance inspections, discharger reports, and public complaints. Monitoring data provides information on background conditions which are used to set water quality objectives.

The State or Regional Board evaluates all available information and determines whether revisions to water quality standards are needed and the nature of any necessary revisions. A work plan is prepared which identifies appropriate revisions. These revisions, and a time schedule for implementation, are then incorporated into the Statewide Plan or Regional Board Basin Plan by way of the amendment process discussed below.

BASIN PLAN AMENDMENT PROCESS

Whenever a Statewide Plan or Regional Board Basin Plan for surface waters is to be revised, public participation requirements must be met, as called for in 40 CFR Part 25 (Public Participation in Programs Under the Resource Conservation and Recovery Act and the Clean Water Act). When water quality standards are changed, a public hearing must be held. Notice for the public hearing generally must be given 45 days prior to the hearing, and the documents to be considered at the hearing must be available to the public 30 days prior to the hearing. After the hearing, a summary of comments received and responses to those comments must be prepared before action is taken.

For Regional Board adoption of a Basin Plan amendment, a quorum of Board members must be present (five of the nine members). For State Board approval of a proposed Regional Board amendment, a quorum must also be present (three of the five members). In both cases the vote of a majority of the quorum is required to take action. If a State Board hearing is being held regarding a Statewide Plan or to review an amendment proposed by a Regional Board, one or more members of the State Board may conduct the hearing upon authorization of the State Board. In cases where such a hearing is conducted, any final action must be taken by a majority of all members of the State Board (i.e., 3 votes). Usually State Board hearings are of a controversial nature and most, if not all, Board members elect to attend. The State Board may approve a Basin Plan amendment proposed by a Regional Board or return it to the Regional Board for further consideration. Upon resubmission, the State Board may either approve or, after a public hearing in the affected region, revise and approve such plan (California Water Code §13245).



Basin planning is also influenced by several federal administrative guidance documents, such as US EPA's *Technical Support Document for Water Quality-Based Toxics Control*, the *Water Quality Standards Handbook*, and "*Gold Book*" *Quality Criteria for Water*, 1986 and waste load allocation manuals.

Basin Plan amendments are generally initiated by the appropriate Regional Board, and Statewide Plan amendments are initiated by the State Board. Amendments may also be initiated by any other interested parties. In this case, the proposed amendment submitted by the interested party is reviewed by Regional Board staff to determine if the information is adequate to support the requested change to the Basin Plan. Regional Board staff will review the technical information and may either accept it as complete or reject it as incomplete. Whenever new or revised water quality standards are proposed in a Regional Board Basin Plan amendment, the standards must be approved by the State Board before the amendment becomes effective. A proposed standard revision to a statewide plan or Regional Board Basin Plan takes effect upon approval by the Office of Administrative Law (OAL). A standard contained in a Regional Basin Plan amendment which relates to surface waters or a standard in a statewide plan must be submitted to the United States Environmental Protection Agency (US EPA) for approval [40 CFR §131.20 (c)] following State Board review. If the standard revision is disapproved by the US EPA, the original standard remains in effect until revised by the basin planning process, or the US EPA promulgates its own rule which supersedes the standard revision [40 CFR §131.21 (c)].

BASIN PLAN AMENDMENT PROCEDURES

(1) Advance notice of plan amendments is required (California Water Code §13244) and must be advertised for hearings. For amendments that include a prohibition, a public notice must be published for three consecutive days in a newspaper of wide circulation in the area of the prohibition. For other actions, notice must be published for one day in a newspaper of wide circulation. Usually, the hearing notice must be published at least 45 days prior to the hearing (40 CFR §25.5).

A California Environmental Quality Act (CEQA) Notice of Filing must be circulated at least 45 days prior to State and Regional Board action on a proposed amendment. Where the hearing(s) process is completed and adoption is scheduled for a regularly scheduled State or Regional Board Meeting, a ten-day notice requirement for agenda items applies (Government Code §11125).

(2) For controversial and/or complex amendments, comments should be requested from interested persons prior to drafting an amendment. This step would be informal by written correspondence or in a workshop session (the public can attend such workshops, which are not "*public hearings*" and would precede the hearing notice in number 3 below). Comments received would be considered in the initial draft of the amendment and the alternatives.

(3) The hearing notice must be specific enough to allow an effective opportunity for public participation. Although it is preferable to include the draft plan amendment and staff report with the hearing notice, as indicated above, these documents can be made available at a later date that is at least 30 days before the hearing (40 CFR §25.5). The notice should include:

(a) The general area to be regulated;
(b) The specific proposed plan amendment and a statement of the availability of a staff report and backup material;
(c) Either of the following,
  (i) Alternatives to the proposal or
  (ii) A statement that additional rules, consistent with the general purpose of the plan amendment and complementary to the specific proposed rules, are under consideration.
(d) A statement as to whether action on the amendment will be taken immediately at the close of the hearing.

(4) A copy of the hearing notice should be sent to:

(a) Those who normally receive notices of plan review or those who, in the judgement of staff, would be interested in the proposed amendment(s).
(b) Those who have commented on the plan review or amendment.
(c) Those federal, state and local agencies who have jurisdiction by law or who have expertise with respect to the subject(s) of the proposed amendment(s).
(d) Specific interested parties affected by the proposed action.

(5) The State or Regional Board(s) may require that written testimony or other evidence be submitted in advance of the public hearing (Title 23 CCR §649.4). If this option is chosen, the hearing notice should specify the details. Charts, graphs, and other testimony which are presented as evidence must be left with the State or Regional Board(s) in order to be considered as part of the record.

(6) The hearing notice can state that more than one hearing is scheduled and list the dates for each in order to save processing time.

Alternatively, the notice may state that action on the amendment could take place following the close of the hearing. Some delays may also be avoided by having special hearings on dates other than regularly scheduled State or Regional Board meetings.

(7) State or Regional Board Staff must prepare written responses to comments received at least 15 days before the State or Regional Board intends to take action. Copies of responses will be available at the State or Regional Board meeting for any person to review. Late comments should be responded to at the State or Regional Board meeting. If appropriate, the Environmental Checklist Form may be revised based on a review of comments received.

(8) State or Regional Board Staff must prepare a summary report including:
(a) A brief description of the proposed activity;
(b) Reasonable alternatives to the proposed activity; and
(c) Mitigation measures to minimize any potential significant adverse environmental impacts of the proposed activity identified in the Environmental Checklist Form. Conclusions must be made as to what, if any, potential significant adverse impacts, feasible alternatives, and feasible mitigation measures exist. These conclusions must be accompanied by a statement of supporting facts. In adopting proposed amendments, the State or Regional Board must mandate those feasible alternatives or feasible mitigation measures which are within its jurisdiction. The State or Regional Board cannot approve the proposed amendment if there are feasible alternatives or feasible mitigation measures which would substantially lessen the potential significant adverse environmental impacts (Public Resource Code §21080.5).

(9) The hearing must, at a minimum, be recorded electronically (Title 23 CCR §647.4). Controversial matters usually are recorded by a stenographic reporter.

(10) At the hearing, all interested persons are given an opportunity to be heard. Reasonable limitations on public participation are appropriate and may be indicated in an opening statement (i.e., impose time limits on testimony, encourage groups to designate a spokesperson, and require witnesses to summarize written testimony). There is no right to cross-examination at the hearings. Persons wishing clarification of prior evidence or comments may request the same from the State or Regional Board.

Cross-examination must be allowed when an amendment takes on quasi-judicial features; for example, when considering a prohibition against increasing existing discharges from a relatively small number of dischargers. Cross-examination may also be allowed at the discretion of the Chairperson, if it appears that the cross-examination will assist the State or Regional Board in its deliberations.

(11) At the close of the hearing, it may be desirable to leave the record open to provide interested persons an additional opportunity to submit written comments. If the record is left open, all interested persons will be told at the hearing that they may review and respond to written comments received during the time that the record is left open. For example, the record could be left open ten days for written submittals and an additional five days for written comments in response to these submittals. Once the record is closed, no additional evidence will be received at the State or Regional Board meeting to consider adoption of the amendment; however, brief comments on the proposal will be allowed.

(12) After the close of the hearing and any comment period, the amendment may be adopted as proposed. If the draft amendment is to be modified, based on the hearing, and the notice is adequate as outlined in number 3 above, a final plan amendment may be adopted when the product is a logical outgrowth of the draft amendment or a statement in the notice. Where changes in the final draft are not a logical outgrowth of the original proposal, an additional notice, hearing, and opportunity to comment will be provided. When changes

are proposed by State or Regional Board Members or staff, the procedure is:

(a) For each proposed change, consideration is given as to whether the change is a logical outgrowth of the original proposal. If the change was (1) not contemplated in the staff report, notice, or draft amendment and (2) not discussed during the hearing(s) or in written comments received, it is not a logical outgrowth of the original proposal; and an additional notice and comment period will be provided. When the issues are complex, controversial, or confusing, an additional comment period on a new draft amendment is often allowed (even if it can be argued that the changes are a logical outgrowth of the original proposal).

(b) If the change is a logical outgrowth of the original draft amendment, it may be voted upon without an additional notice and comment period. If the vote on the amendment is delayed so that the full amendment can be retyped, etc., normal meeting notice requirements may be followed (Title 23 CCR §647.2).

(c) If the change is not a logical growth, a motion may be made to incorporate it into the draft amendment. If this motion passes, consideration of the amendment should be continued so that the revisions can be circulated for comments as provided in number 4 above.

(13) Revisions to plan amendments are based on the evidence developed at the hearing. This requirement does not preclude the State or Regional Board(s) from adopting an amendment immediately after the hearing if all evidence has been considered.

(14) If a Basin Plan amendment is quasi-judicial (focused on the rights and duties of a limited number of individuals such as in a small isolated prohibition area), the State or Regional Board resolution adopting the plan amendment will contain findings that are adequate to enable another interested person to "*bridge the analytical gap*" between the evidence the amendment itself.

(15) When a Regional Board amendment is adopted, it must then be forwarded to the State Board for approval. State Board staff will review the proposed amendment with extensive evaluation of technical, policy, and legal consistency considerations. The State Board is required to act upon submission of a water quality control plan or revision within 60 days after the Regional Board has submitted the plan, or 90 days after resubmission of the plan (California Water Code §13246). A Basin Plan revision adopted by a Regional Board is not effective until it is approved by State Board (California Water Code §13245) and the Office of Administrative Law. An amendment package to be processed for approval must include all of the following:

(a) A memorandum of transmittal including a list of all material that was part of the Regional Board record, staff contact person, and request date for State Board action. If expeditious treatment is requested, the reason for this request should be stated.

(b) A copy of the certified Regional Board resolution including adopted amendments as it will be incorporated into the appropriate Basin Plan and a copy of all documents which were considered by the Regional Board prior to adoption of the Basin Plan amendment.

(c) The Regional Board staff report with detailed rationale for changes, any technical support documentation or background information, and information regarding any relevant State Board or Regional Board actions.

(d) An environmental document and any related CEQA documents.

(e) Copies of written public comments and written Regional Board responses.

(f) A staff summary of any verbal responses to comments received after written comment deadline.

(g) A tape recording or transcript of the public hearing.

(h) Two sets of interested persons mailing lists, typed on self-adhesive address labels or pre-addressed envelopes, plus a typed interested persons list for State Board files.

(16) State Board review of a proposed plan amendment may result in approval or return to the Regional Board for consideration and resubmission. Upon resubmission, the State Board may approve, or, after a public hearing in the affected region, revise and

approve the proposed plan amendment (California Water Code §13245).

(17) Following State Board approval of the plan amendment, there is a 30-working day review period by the Office of Administrative Law. The Regional Board is responsible for preparing the administrative record (Items 15 b, c, d, e, f, and g above), a clear and concise summary, and a summary of necessity for review by the Office of Administrative Law. The summary of necessity is normally contained in the staff report. The Office of Chief Counsel at the State Board prepares a certification that the action was taken in compliance with all applicable requirements of Porter-Cologne.

(18) When the proposed Regional Board amendment has been approved by the Office of Administrative Law, the Regional Board must post a CEQA Notice of Decision with the Secretary of Resources for at least 30 days following Office of Administrative Law approval. When the State Board adopts a Statewide Plan amendment, the State Board must post the 30-day Notice of Decision.

(19) If water quality standards for surface waters are revised in the plan update, the revised plan must be submitted to the US EPA for approval, pending an US EPA determination that the standards meet the requirements of the Clean Water Act (40 CFR 130.10). The amendments must be forwarded to US EPA within 30 days of adoption by the State Board.

REFERENCES

California Administrative Code. 1985 (and all amendments thereto). Title 22 and Title 23.

California Porter-Cologne Water Quality Act, California Water Code, Division 2 and 7. 1969 (and all amendments thereto).

California Regional Water Quality Control Board, San Diego Region. 1975. Comprehensive Water Quality Control Plan Report for the San Diego Basin (9). James M. Montgomery, Consulting Engineers, Inc.

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Department of Water Resources. 1967. Ground Water Occurrence and Quality San Diego Region. Bulletin No. 106-2. Volume 1: Text. 235pp.

Federal Water Pollution Control Act. 1972 (and all amendments thereto). PL 92-500. (Clean Water Act).

Governor's Office of Planning and Research. 1992. CEQA California Environmental Quality Act Statutes and Guidelines 1992. Sacramento, California. 256pp.

Planning and Conservation League Foundation. June 1985. Citizen's Guide to the California Environmental Quality Act. 14pp.

San Diego County Water Authority. 1993. Forty-Seventh Annual Report of Authority Operations for Fiscal Year Ending June 30, 1993. San Diego, California. 161pp.

San Diego County Water Authority. November, 1993. Water Resources Plan, Urban Water Management Plan. San Diego, California. 83pp.

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ENDNOTES

1. Hydrologic Unit - A classification embracing one of the following features which are defined by surface drainage divides: (1) In general, the total watershed area, including water- bearing and non - water bearing formations, such as the total drainage area of the San Diego River Valley; and (2) in coastal areas, two or more small contiguous watersheds having similar hydrologic characteristics, each watershed being directly tributary to the ocean and all watersheds emanating from one mountain body located immediately adjacent to the ocean.

2. Hydrologic Area - A major logical subdivision of a hydrologic unit which includes both water-bearing and nonwater - bearing formations. It is best typified by a major tributary of a stream, a major valley, or a plain along a stream containing one or more ground water basins and having closely related geologic, hydrologic, and topographic characteristics. Area boundaries are based primarily on surface drainage boundaries. However, where strong subsurface evidence indicates that a division of ground water exists, the area boundary may be based on subsurface characteristics.

3. Hydrologic Subarea - A major logical subdivision of a hydrologic area which includes both water-bearing and nonwater - bearing formations.

4. On February 10, 1994 the Regional Board adopted Resolution No. 94-25, A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region for the Laguna (1.10), Mission Viejo (1.20), and San Clemente (1.30), Hydrologic Areas. These hydrologic subareas are: Oso (1.21), Upper Trabuco (1.22), Middle Trabuco (1.23), Upper San Juan (1.25), Middle San Juan (1.26), Lower San Juan (1.27) and Ortega (1.28). The San Clemente Hydrologic Area (1.30) is broken into two hydrologic subareas: Prima Deshecha (1.31) and Segunda Deshecha (1.32). Figure 1-2 has not yet been updated to show the boundaries for these new hydrologic subareas.

5. State Water Resources Control Board Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California*.

6. State Water Resources Control Board Resolution No. 77-1, *Policy with Respect to Water Reclamation in California*.

7. Point sources of pollution refer to pollutants discharged to water through any discernible, confined, and discrete conveyance. Nonpoint sources of pollution refer to pollutants from diffuse sources that reach water through means other than a discernable, confined, and discrete conveyance.

8. State Board Policy for Regulating Point and Nonpoint Sources of Pollution in Accordance with the Federal Water Pollution Control Act.

9. Best Management Practices are defined as the practice, or combination of practices, that are determined to be the most effective, practicable means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals (including technological, economic, and institutional considerations).

CHAPTER 2
BENEFICIAL USES

2. BENEFICIAL USES

INTRODUCTION

The purpose of this chapter is to designate the beneficial uses for all surface and ground waters in the San Diego Region. 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.

Beneficial uses are defined as the uses of water necessary for the survival or well being of man, plants and wildlife. These uses of water serve to promote the tangible and intangible economic, social and environmental goals of mankind. Examples include drinking, swimming, industrial and agricultural water supply, and the support of fresh and saline aquatic habitats.

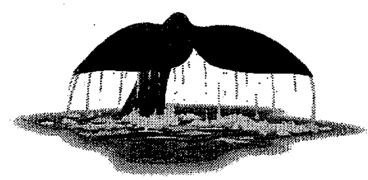
Section 303 of the federal Clean Water Act (33 U.S.C. §1313) defines the term water quality standards as both the uses of the surface (navigable) waters and the water quality criteria which are applied to protect those uses. A water quality standard defines the water quality goals for a water body by designating the use or uses to be made of the water body, by setting criteria to protect the uses, and by protecting water quality through antidegradation provisions. Under the Porter-Cologne Water Quality Control Act (California Water Code, Division 7, Chapter 2 §13050), these concepts are defined separately as beneficial uses and water quality objectives. Beneficial uses and water quality objectives are required to be established for all waters of the State, both surface and ground waters. Beneficial uses of the surface and ground waters of the San Diego Region are discussed in this chapter; water quality objectives and water quality criteria are discussed in Chapter 3. Numerous key terms used throughout this chapter are defined in the Glossary which is included as Appendix A of this Basin Plan.

BENEFICIAL USES

The designation of beneficial uses must satisfy all of the applicable requirements of the California Water Code, Division 7 and the federal Clean Water Act. California Water Code, Division 7 is also known as the Porter-Cologne Water Quality Control Act. These two names are used interchangeably.

The designation of beneficial uses for the waters of the State by the Regional Board is mandated under California Water Code Section 13240. The Clean Water Act, Section 303 requires that the State adopt designated beneficial uses for surface waters. The requirements of both Acts applicable to the designation of beneficial uses are summarized below.

BENEFICIAL USE DESIGNATION UNDER THE PORTER-COLOGNE WATER QUALITY CONTROL ACT



The Porter-Cologne Act establishes a comprehensive program for the protection of beneficial uses of the waters of the state. California Water Code Section 13050(f) describes the beneficial uses of surface and ground waters that may be designated by the State or Regional Board for protection as follows:

"Beneficial uses of the waters of the state that may be protected against quality degradation include, but are not necessarily limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves."

Significant points regarding the designation of beneficial uses are:

(1) Fish, plants, and other wildlife, as well as humans, use water beneficially. Designation of beneficial uses often includes subcategories of the above beneficial uses cited in California Water Code Section 13050(f).

(2) Waste transport or waste assimilation in the state's surface and ground waters may not be designated as beneficial uses under the Porter-Cologne Act. The direction of the Act is to protect surface and ground waters against the adverse effects of waste constituents. (California Water Code §13000, §13241, and §13263). Surface or ground waters may be used for waste disposal or waste assimilation if designated beneficial uses are protected. In

authorizing the discharge of waste, the Regional Board need not authorize utilization of the full waste assimilation capacities of the receiving waters [California Water Code §13263(d)]. All discharges of waste into waters of the state are privileges not rights [California Water Code §13263(g)].

(3) Designated beneficial uses may include potential beneficial uses if existing water quality will support the use or if the necessary level of water quality can reasonably be achieved. [Water Code §13241 (a) & (c)]. Potential and existing uses are defined later in this chapter.

(4) An existing beneficial use ordinarily must be designated for protection unless another beneficial use requiring more stringent objectives is designated. The existing beneficial use designation is necessary to comply with the statutory policy in California Water Code Section 13000, which provides in part that "*...the quality of all waters in the state shall be protected for use and enjoyment by the people of the state.*"

(5) California Water Code Section 13000 provides in part that: "*The Legislature ...finds and declares that activities and factors which may affect the quality of the waters of the state shall be regulated to attain the highest possible water quality that is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible.*" This policy establishes a general principal of nondegradation, with flexibility to allow some change in water quality which is in the best interests of the state. Changes in water quality are allowed only where beneficial uses are not unreasonably affected.

(6) The designation of beneficial uses must take into account the constitutional prohibition of waste and unreasonable waste of water. Designation of a beneficial use for protection should not require a waste of water pursuant to the California Constitution, Article X, Section 2.

(7) The protection and enhancement of beneficial uses require that certain quality and quantity objectives be met for surface and ground waters.

BENEFICIAL USE DESIGNATION UNDER THE CLEAN WATER ACT

Beneficial uses for surface waters are designated under the Clean Water Act Section 303 in accordance with regulations contained in 40 CFR 131. The State is required to specify appropriate water uses to be achieved and protected. The beneficial use designation of surface waters of the state must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation.

Significant points regarding the designation of beneficial uses under the Clean Water Act are:

(1) Existing beneficial uses are those uses actually attained in the water body on or after November 28, 1975 [40 CFR 131.3(e)].

(2) States are prohibited from adopting waste transport or waste assimilation as a designated use for surface waters [40 CFR 131.10(a)].

(3) The water quality standards of downstream waters must be considered and maintained [40 CFR 131.10(b)].

(4) States may adopt sub-categories of a use and set the appropriate criteria to reflect the varying needs of such sub-categories of uses. For example criteria should be set to differentiate between cold water and warm water fisheries [40 CFR 131.10(c)].

(5) At a minimum, uses are deemed attainable if they can be achieved by the imposition of effluent limits required under Clean Water Act, Sections 301(b) and 306 and cost effective and reasonable best management practices for nonpoint source control [40 CFR 131.10(d)].

(5) States may adopt seasonal uses as an alternative to redesignation of the beneficial uses of a water body to uses requiring less stringent water quality criteria [40 CFR 131.10(f)].

(6) States may remove a designated beneficial use or substitute sub-categories of a use only if (a) the use is not an existing use <u>and</u> (b) the state can demonstrate that attaining the designated use is not feasible for one of the following reasons [40 CFR 131.10(g)]:

- naturally occurring pollutant concentrations prevent the attainment of the use; or

- natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use; or

- human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or

- dams, diversions, or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use; or

- physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles,and the like, unrelated to water quality, preclude attainment of aquatic life protection uses; or

- controls more stringent than the controls for effluent limitations in Clean Water Act Sections 301 (b) and 306 would result in substantial and widespread economic and social impact.

(7) States may not remove designated uses if (a) they are existing uses, unless a use requiring more stringent criteria is added, or (b) such uses will be attained by implementing effluent limits under Clean Water Act Sections 301 (b) and 306 and by implementing best management practices for nonpoint source control [40 CFR 131.10(h)].

(8) If existing uses are higher than those specified in water quality standards, a state must revise its standards to reflect the uses actually being attained [40 CFR 131.10(i)].

(9) If the designated uses do not include the uses specified in Section 101(a) (2) of the Clean Water Act, or if the state wants to remove a use specified in Section 101 (a) (2), the state must conduct a "*use attainability analysis*" [40 CFR 131.10(j)]. A use attainability analysis is defined in 40 CFR 131.3(g) as a "*structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors.*" The uses listed in Section 101 (a)(2) are protection and propagation of fish, shellfish, and wildlife, and recreation (i.e., fishable/ swimmable uses).

BENEFICIAL USE DEFINITIONS

In 1972, the State Board adopted a uniform list and description of beneficial uses to be applied throughout all basins of the State. During the 1994 Basin Plan update, beneficial use definitions were revised and some new beneficial uses were added. Overall, the following twenty-three beneficial uses are now defined statewide and are designated within the San Diego Region:

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

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

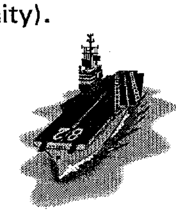
Industrial Process Supply (PROC) - Includes uses of water for industrial activities that depend primarily on water quality.

Industrial Service Supply (IND) - Includes 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) - Includes 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) - Includes uses of water for natural or artificial maintenance of surface water quantity or quality (e.g., salinity).

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



Hydropower Generation (POW) - Includes uses of water for hydropower generation.

Contact Water Recreation (REC-1) - Includes 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.

Non-contact Water Recreation (REC-2) - Includes the 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.

Commercial and Sport Fishing (COMM) - Includes the 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) - Includes the 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) - Includes 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) - Includes 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) - Includes 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) - Includes 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).

Marine Habitat (MAR) - Includes 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) - Includes 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 of Special Significance (BIOL) - Includes uses of water that support designated areas or habitats, such as established refuges, parks, sanctuaries, ecological reserves, or Areas of Special Biological Significance (ASBS), where the preservation or enhancement of natural resources requires special protection.

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

- San Diego - La Jolla Ecological Reserve, San Diego County
- Heisler Park Ecological Reserve, Orange County
- San Diego Marine Life Refuge, San Diego County

The following areas are designated Marine Life Refuges by the California legislature. A legal description of the boundaries of each marine life refuge is contained in the Fish and Game Code of California, Division 7 (Refuges), Chapter 1 (Refuges and Other Protected Areas), Article 6 (Marine Life Refuge):

- San Diego Marine Life Refuge, San Diego County
- Laguna Beach Marine Life Refuge, Orange County
- Newport Beach Marine Life Refuge, Orange County
- South Laguna Beach Marine Life Refuge, Orange County
- Dana Point Marine Life Refuge, Orange County
- Doheny Beach Marine Life Refuge, Orange County
- Niguel Marine Life Refuge, Orange County
- Irvine Coast Marine Life Refuge, Orange County
- City of Encinitas Marine Life Refuge, San Diego County

The following areas are designated Ecological Reserves by the Fish and Game Commission (California Code of Regulations, Title 14, Section

630). A legal description of the boundaries of each ecological reserve is on file at the California Department of Fish and Game headquarters, 1416 Ninth Street, Sacramento:

- Batiquitos Lagoon Ecological Reserve, San Diego County
- Blue Sky Ecological Reserve, San Diego County
- Buena Vista Lagoon Ecological Reserve, San Diego County
- Heisler Park Ecological Reserve, Orange County
- McGinty Mountain Ecological Reserve, San Diego County
- San Diego - La Jolla Ecological Reserve, San Diego County
- San Dieguito Lagoon Ecological Reserve, San Diego County
- San Elijo Lagoon Ecological Reserve, San Diego County

The following are designated Natural Preserves by the State Park and Recreation Commission (Public Resources Code, Division 5, Chapter 1, Article 1). A legal description of each natural preserve is on file at the California Department of Parks and Recreation headquarters, 1416 Ninth Street, Sacramento:

- San Mateo Creek Wetland Natural Preserve, San Diego County
- Los Penasquitos Marsh Natural Preserve, San Diego County

The following area is designated a National Estuarine Research Reserve by the National Oceanic and Atmospheric Administration (NOAA) (Coastal Zone Management Act of 1972 as amended Section 315, 16 USC 1461). A legal description of the boundaries of the national estuarine research reserve is on file at the NOAA headquarters, Office of Ocean and Coastal Resource Management, NOAA, Washington, D.C., 20235:

- Tijuana River National Estuarine Research Reserve, San Diego County

The following area is designated a National Wildlife Refuge by the U.S. Fish and Wildlife Service. A legal description of the boundaries of the national wildlife refuge is on file at the U.S. Fish and Wildlife Service headquarters, Southern California Complex, 2736 Loker Avenue West, Suite A, Carlsbad, California 92008:

- Sweetwater Marsh National Wildlife Refuge, San Diego County

Rare, Threatened, or Endangered Species (RARE) - Includes 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) - Includes 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) - Includes uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish. This use is applicable only for the protection of anadromous fish.

Shellfish Harvesting (SHELL) - Includes 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 sport purposes.

EXISTING AND POTENTIAL BENEFICIAL USES

The water resources of the San Diego Region have been extensively developed over the years and today's existing beneficial uses will probably continue into the future. Since the adoption of the Basin Plan in 1975, changes in land use patterns and resultant changes in water quality have led to some subsequent modifications of beneficial use designations. Minor modifications have also been also made to clarify the definition of some of the beneficial use designations.

The beneficial use designations described in this chapter are categorized as "*existing*" or "*potential*" beneficial uses. An existing beneficial use can be established by demonstrating that:

- Fishing, swimming, or other uses have actually occurred since November 28, 1975; or

- The water quality and quantity is suitable to allow the use to be attained.

Existing beneficial uses were originally determined as part of a use survey of water resources in the Region described in Chapter 1, *History of Basin*

Planning in the San Diego Region. Beneficial use designations have also been determined using additional information gathered since 1975. Beneficial uses are designated as "*potential*" for a variety of reasons, including:

- Plans are proposed to put the water to a future use;
- Potential exists to put the water to a future use;
- The public desires to put the water to future use;
- The water is potentially suitable for municipal or domestic water supply under the terms of the *Sources of Drinking Water Policy* (State Board Resolution No. 88-63); or
- The Regional Board has designated a beneficial use as a regional water quality goal.

BENEFICIAL USES FOR SPECIFIC WATER BODIES

Designated beneficial uses are summarized in the tables at the end of this chapter as follows:

Table 2-2	Inland Surface Waters,
Table 2-3	Coastal Waters,
Table 2-4	Reservoirs and Lakes, and
Table 2-5	Ground Water.

In the tables, a "•" indicates an existing beneficial use that was actually attained in the surface or ground water on or after November 28, 1975. A "o" indicates a potential beneficial use that may develop in future years. A "+" indicates that the water body has been exempted by the Regional Board from the municipal use designation under the terms and conditions of State Board Resolution No. 88-63, *Sources of Drinking Water* Policy.

Designated beneficial uses are generally, but not always, present throughout the entire reach of a particular hydrologic unit, area, subarea, or water body. Designated beneficial uses may not be present throughout the year. Specific beneficial uses near or below discharges will be carefully evaluated by the Regional Board during the development of waste discharge requirements or enforcement orders.

Beneficial uses are designated for (a) native waters and (b) imported waters stored in a reservoir. They do not represent the use of water directly imported into the hydrologic basin, unless storage of the imported water occurs within the basin. The lack of a beneficial use listed for any given area does not rule out the possibility of existing or future beneficial uses. Existing beneficial uses which have not been formally designated in this Basin Plan are protected as well as designated uses.

DESIGNATION OF RARE BENEFICIAL USE

The RARE beneficial use designation was based, in large part, on the information contained within RareFind. RareFind is the personal computer application of the California Department of Fish and Game's Natural Diversity Data Base (NDDB). The NDDB tracks the location and condition of California's rare, threatened, endangered, and sensitive plants, animals and natural communities. The NDDB is the most complete single source of information on California's rare, endangered, threatened and sensitive species, and natural communities. However, the absence of a special animal, plant or natural community from the RareFind report does not necessarily mean that they are absent from the area in question, only that no occurrence data are currently entered in the NDDB inventory.

Under the Fish and Game Code, as well as the California Environmental Quality Act, a state lead agency is required to consult with the Department of Fish and Game to determine whether a project under consideration (e.g., the Basin Plan or a permitting process) will adversely affect any threatened or endangered species. The consultation process is important in identifying bodies of water that support threatened or endangered species. During the Basin Plan consultation process in 1994, the California Department of Fish and Game provided recent sightings of the bald eagle (*Haliaeetus leucocephalus*). The U.S. Fish and Wildlife Service provided recent surveys for the least Bell's vireo (*Vireo belli pusillus*) and southwestern willow flycatcher (*Empidonax trailli extimus*). These and other information sources are listed in the references for this chapter.

To ensure the applicability of the RareFind information, only current sightings (i.e., those sightings since November 28, 1975) were used. In addition, consideration was given to the frequency, abundance, and occurrence history for each sighting(s), and how recent the sighting was. The RARE designation has been added where there is substantial evidence that the water body supports

Table 2 - 1. Water - Dependent Threatened or Endangered Species Which Were Considered in the RARE Beneficial Use Designation

NAME	STATUS *	TYPE	HABITAT REMARKS
Blue Whale *Balaenoptera musculus*	FE	Mammal	Ocean
Western Snowy Plover *Charadrius alexandrinus nivosus* (breeding)	FE, CSC	Shore bird	Beaches, Estuarine Salt Ponds
Pacific Green Sea Turtle *Chelonia mydas*	FE	Reptile	Marine
Salt-Marsh Bird's Beak *Cordylanthus maritimus* ssp. *maritimus*	SE, FE	Plant	Salt Marsh
Southwestern Willow Flycatcher *Empidonax traillii extimus*	SE, Proposed FE	Bird	Riparian Woodland Habitat
Tidewater Goby *Eucyclogobius newberryi* (Girard)	FE	Fish	Shallow Marine Waters, and in the Lower Reaches of Streams
Bald Eagle *Haliaeetus leucocephalus*	SE, FT, CP	Bird	Lake
Humpback Whale *Megaptera novaeangliae*	FE	Mammal	Ocean
Willowy Monardella *Monardella linoides* ssp. *viminea*	SE, C2	Plant	Riparian Scrub Habitat
Belding's Savannah Sparrow *Passerculus sandwichensis beldingi*	SE, C2	Bird	Coastal Wetlands
California Brown Pelican *Pelecanus occidentalis californicus*	SE, FE	Bird	Estuarine, Marine, Subtidal, and Marine Pelagic Waters
Light-Footed Clapper Rail *Rallus longirostris levipes*	FE, CP	Bird	Coastal Marshes, Mudflats
California Least Tern *Sterna antillarum browni*	SE, FE	Bird	Marine, Coastal Area Waters
Least Bell's Vireo *Vireo bellii pusillus*	SE, FE	Bird	Riparian Woodland Habitat

Status *

Federally threatened (FT) or endangered (FE) species are defined under Section 3 of the federal Endangered Species Act of 1973 (50 CFR 17). An endangered species is any species, including subspecies and varieties, "in danger of extinction throughout all or a significant portion of its range." A threatened species is any species "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Threatened and endangered species have been the subject of a proposed and final rule (or regulation) published in the Federal Register. Thus, these species are also referred to as listed species. Proposed species are species proposed for listing as a threatened or endangered species for which a proposed rule, but not a final rule, has been published in the Federal Register.

Proposed species are granted limited protection under the federal Endangered Species Act. These species must be addressed by federal agencies in biological assessments (Section 7), and are given special management consideration by regulatory agencies. Candidate species are species under consideration for listing, but have not been subject to a proposed rule. Categories for candidate species relate solely to the level of biological information available and not to the degree of threat. Candidate species are not protected under the federal Endangered Species Act.

Candidate species however, are afforded special management consideration due to their status and sensistivity. The U.S. Fish and Wildlife Service provides technical assistance to Federal, State and local agencies on the conservation and management of candidate species. Candidate species in Category 1 (C1) are those taxa that seem to conform to the State definition of threatened or endangered species and should be added to the offical list. Candidate species in Category 2 (C2) are those taxa that have populations that are low, scattered, or highly localized. Their populations have declined in abundance in recent years and so require managment to prevent them from becoming threatened species.

The definitions of state threatened (ST) or endangered (SE) species under the California Endangered Species Act are the same as under the federal Endangered Species Act. Under the State Act, all animals previously listed as Rare have been "grandfathered" into the State Act as threatened. All plants previously listed as Rare have been kept as Rare. All plants now listed under the State Act are listed as threatened or endangered.

California Species of Special Concern (CSC) are animal species that have no specific status as a state listed species, but which appear to be vulnerable to extinction because of declining populations, limited ranges, or rarity. Species of Special Concern meet the criteria for state listing and are commonly addressed under the California Environmental Quality Act. The category of California Fully Protected Species (CP) was established by the California legislature and prohibits the possession or taking of sensitive animals, or parts thereof (Sections 3511, 4700, 5050, and 5515, Fish and Game Code).

threatened or endangered species. By definition, water bodies with a RARE designation 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. Those plant or animal species which were used in the designation of specific water bodies with the RARE beneficial use are shown in Table 2-1. The Regional Board can provide specific information about the sighting(s) used to designate the RARE beneficial use. However, it is the responsibility of the lead agency or project sponsor to provide adequate information as to whether a proposed project will affect fish and wildlife (including plants) and their habitats.

The RARE beneficial use is generally, but not always, present throughout the entire reach of a particular waterbody. Also, the RARE beneficial use may not be present throughout the year. The RARE designation is placed on bodies of water where the protection of a threatened or endangered species depends on the water either directly, or to support its habitat. The purpose of the RARE designation for a particular water body is to highlight the existence of the threatened or endangered species. This will ensure that, absent extraordinary circumstances, they are not placed in jeopardy by the quality of the discharges to those water bodies.

Recognition that a water body is used by threatened or endangered species (RARE designation) does not necessarily mean that any particular suite of water quality objectives will be applied to the water body. In the absence of species specific or site specific objectives, the Regional Board would rely on objectives for WARM and COLD to implement the RARE designation. The existing WARM and COLD beneficial use designations are believed to be stringent enough to protect threatened or endangered species. If these issues arise in the future, they will be decided on a case-by-case basis, considering the most recent scientific data, site-specific factors, and other beneficial uses.

DESIGNATION OF COLD FRESHWATER HABITAT BENEFICIAL USE

Water bodies with a *"Cold Freshwater Habitat"* (COLD) beneficial use designation support cold freshwater ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

In the San Diego Region, the cold freshwater fish used for the COLD designation is the rainbow trout. The rainbow trout, *Oncorhynchus mykiss*, is native to the Region. Rainbow trout which migrate from fresh water to the ocean are known as steelhead and those which remain in fresh water are known as a resident population. In addition, hatchery stocked rainbow trout have been planted throughout the Region since the 1880's. Some of these hatchery stocked trout have developed wild populations, and some have hybridized with native trout populations. Other species of trout may have been stocked from time to time, by various mechanisms into the Region's water bodies. (One of these trout is the European brown trout, *Salmo trutta*. At the present time, the brown trout is no longer stocked due to concern for its impacts on fishery resources and the fact that it is picivorous.)

Cold fresh water bodies are usually below 70° F, contain well-oxygenated water, and contain cold freshwater aquatic habitat suitable for cold freshwater fish. Optimum temperatures for growth and for most life stages of rainbow trout are 56 to 70° F (Moyle, 1976). The temperature tolerance for rainbow trout is reported to be from about 32° F to the mid-80's depending on the oxygen content of the water, size of fish, and the degree of acclimation. To survive at the higher water temperatures, trout require a gradual acclimation and water that is saturated with oxygen. Also, smaller trout may withstand the higher temperatures better than the larger fish.

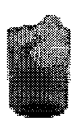
Rainbow trout prefer well-oxygenated water but can survive at very low oxygen levels, the level tending to be less at lower temperatures and longer periods of acclimation. For example, mean lethal oxygen concentrations range from 1.05 ppm at 52° F to 1.51 ppm at 68° F for rainbow trout averaging 3.8 inches in length (McAfee, 1966).

Rainbow trout do well in waters of pH from 7 to 8 and have adapted to waters of varying pH, ranging from at least 5.8 to 9.6 (Sigler, 1987).

In cold fresh water bodies, where the water body Is free-flowing, such as in a river, stream or creek, the habitat usually supports a diversity of aquatic insects, including those aquatic insects which require a high quality of water. Typically, there is overhanging cover and shade, provided by a variety of aquatic plants, terrestrial plants, and trees. Another characteristic is that the bottom substrate usually contains structure, provided by tree root wads, logs, boulders, or gravel.

DESIGNATION OF SPAWNING, REPRODUCTION, AND/ OR EARLY DEVELOPMENT (SPWN) BENEFICIAL USE

In the San Diego Region, the SPWN beneficial use designation is assigned only to water bodies with MAR and/ or COLD beneficial uses. The marine fish used for the SPWN designation includes any marine fish. The cold freshwater fish used for the SPWN designation is the rainbow trout. Rainbow trout usually spawn in the Spring, and require spawning areas with gravel and cool, free-flowing, well-oxygenated water. Rainbow trout prefer to spawn in rivers, streams and creeks with a moderate gradient and containing riffles, however some populations of rainbow trout are also known to successfully spawn in lake inlets and outlets. The fry of rainbow trout need suitable nurseries, which allow protection from predators, such as the slow, shallow areas adjacent to riffles, with shade from bank vegetation. The fry also require an abundance of aquatic insects for forage.



SOURCES OF DRINKING WATER POLICY

In November 1986, the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) was approved by the California voters. Proposition 65 prohibits the discharge of toxic substances into "*sources of drinking water*". The State Board has defined the term "*sources of drinking water*" in Resolution No. 88-63, *Sources of Drinking Water* Policy. This policy specifies that, except under specifically defined conditions, all surface and ground waters of the state are to be protected as existing or potential sources of municipal and domestic water supply. The exceptions include where:

- The total dissolved solids concentration of surface and ground waters exceed 3,000 mg/l;
- The water source has a low sustainable yield of less than 200 gallons per day for a single well;
- There is contamination that cannot reasonably be treated for domestic use with either best management practices or best economically available treatment practices;
- The surface waters are in particular municipal, industrial, and agricultural conveyance and holding facilities; and
- The ground waters are regulated geothermal energy ground waters.

Resolution No. 88-63 provides that any water body designated with an existing or potential municipal and domestic supply (MUN) beneficial use is also defined as a suitable or potentially suitable source of drinking water. The policy also allows a water body to retain beneficial use designations assigned prior to the State Board's adoption of the *Sources of Drinking Water* Policy.

EXCEPTIONS TO THE "SOURCES OF DRINKING WATER" POLICY

In 1989 the Regional Board adopted Resolution No. 89-33, '*Incorporation of "Sources of Drinking Water" Policy into the Water Quality Control Plan (Basin Plan) of the San Diego Region*'. Resolution No. 89-33 incorporates the State Board's *Sources of Drinking Water* Policy into the Basin Plan. Resolution No. 89-33 also provides an initial list of surface and ground water hydrologic units, areas, and subareas which the Regional Board has previously determined do not support the MUN or "*Sources of Drinking Water*" designation. Since 1989, additional areas have also been identified as exceptions to the *Sources of Drinking Water* Policy. These ground and surface water hydrologic units, areas, and subareas are identified in Tables 2-2 and 2-5 with a "+" indicating that the water body has been exempted by the Regional Board from the municipal use designation under the terms and conditions of State Board Resolution No. 88-63, *Sources of Drinking Water* Policy.

INLAND SURFACE WATERS

Inland surface waters consist of all waters in the Region exclusive of the waters of the Pacific Ocean, enclosed bays and estuaries, coastal lagoons, and ground waters. The existing and potential beneficial uses of inland surface waters and their tributaries in the Region are presented in Table 2-2. Hydrologic unit, area, and subarea numbers are noted in Table 2-2 as a cross reference to the classification system developed by the California Department of Water Resources. For those surface water bodies that cross into other hydrologic units, such water bodies appear more than once in a table. In Table 2-2, starting from the north and proceeding towards the south within the Region, watersheds are listed by the direction of flow from the headwaters downstream to the outlet. Within a particular watershed, the mainstream water body is listed first and is placed flush left in the table, the upstream tributaries are listed below the mainstream water body and placed to the right. In most instances, surface waters are subdivided into reaches at hydrologic subarea boundaries. 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.

Although most free flowing streams in the Region are essentially interrupted in character having both perennial and ephemeral components, several beneficial uses, including aesthetic enjoyment and habitats for fish and wildlife, are made of these surface waters. Beneficial uses of inland surface waters generally include REC-1 (swimmable) and WARM or COLD. Additionally, inland waters are usually designated as IND, PRO, REC-2, WILD, and are sometimes designated as BIOL and RARE. Inland surface waters that meet the criteria mandated by the *Sources of Drinking Water* Policy are designated MUN. Unless otherwise designated by the Regional Board, all inland surface waters in the Region are considered suitable or potentially suitable as a municipal and domestic water supply.

COASTAL WATERS

Coastal waters discussed in this section may be defined as waters subject to tidal action and include the water bodies defined below. Beneficial uses of coastal waters in the region generally include REC-1, REC-2, EST, WILD, RARE, and MAR. The Pacific Ocean and San Diego Bay also include NAV.

- ***Ocean Waters***

Ocean Waters are the territorial marine waters of the Region as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons.

- ***Enclosed Bays***

Enclosed bays are indentations along the coast which enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays includes all bays where the narrowest difference between the headlands or outermost harbor works is less than 75% of the greatest dimension of the enclosed portion of the bay. Enclosed bays do not include inland surface waters or ocean waters.

- ***Estuaries***

Estuaries means waters, including coastal lagoons, located at the mouths of streams which serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams which are temporarily separated from the ocean by sandbars are considered estuaries. Estuarine waters are considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and sea water. Estuaries do not include inland surface waters or 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. Coastal waters in the San Diego Region have as many as fourteen designated beneficial uses.

All coastal lagoons of the Region are included in the category "*Coastal Waters*". The mouths of most of the rivers and creeks are continually affected by tidal action and present a relatively stable environment for wildlife and vegetation. Other coastal lagoons may be separated from tidal action by earthen deposits and thus present an environment with major seasonal variations. Such conditions result in the development of a unique biologic community highly specific to that area. Occasionally, the mouths of these coastal lagoons are opened, subjecting the lagoons to tidal flushing to enhance their value for recreational use. This action would not alter the categories of beneficial uses of the coastal lagoons.

A listing of coastal waters in the San Diego Region and the existing and potential beneficial uses of each are summarized in Table 2-3.

RESERVOIRS AND LAKES

The water resources with the greatest diversity of beneficial uses in the Region are the man-made water storage reservoirs and lakes. Located in nearly all of the Region's hydrologic units, these reservoirs and lakes intercept surface runoff and store imported water supplies. As such, the storage reservoirs serve as: (1) sources of supply for municipalities, agricultural areas, and industrial operations; (2) recreational bodies; and (3) habitats for fish and wildlife. 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, reflecting federal Clean Water Act goals.

A listing of existing and potential beneficial uses of major reservoirs and lakes in the San Diego Region is given in Table 2-4.

GROUND WATERS

Ground water is defined as subsurface water that occurs beneath the water table in soils and geologic formations that are fully saturated. Ground water bearing formations sufficiently permeable to transmit and yield significant quantities of water are called aquifers (Bouwer, 1978). A ground water basin is defined as a hydrogeologic unit containing one large aquifer or several connected and interrelated aquifers (Todd, 1980).

The principal ground water basins in the San Diego Region are small and shallow. Only a small portion of the Region is underlain by permeable geologic formations that can accept, transmit and yield appreciable quantities of ground water. In many parts of the Region, usable ground water occurs outside of the principal ground water basins. There are ground water bearing geologic formations in the Region that do not meet the definition of an aquifer. Accordingly, the term "*ground water*" for basin planning and regulatory purposes, includes all subsurface waters that occur in fully saturated zones within soils, and other geologic formations. Subsurface waters are considered ground water even if the waters do not occur in an aquifer or an identified ground water basin.

Ground waters in the San Diego Region can have as many as six designated beneficial uses including: (1) municipal and domestic; (2) agricultural; (3) industrial service supply; (4) industrial process supply; (5) ground water recharge; and (6) freshwater replenishment. Nearly all of the ground water development in the Region has been for the purpose of municipal and agricultural supply. Ground water uses in some hydrologic units have been expanded to include industrial uses, especially gravel and sand washing. The fresh water replenishment designation has been assigned to ground water basins that are utilized for supplying water to a lake or stream. The ground water recharge designation has been applied to ground water hydrologic units which are used to recharge another hydrologic unit.

Most of the ground waters in the Region have been extensively developed; the availability of potential future uses of ground water resources is limited. Further development of ground water resources would probably necessitate ground water recharge programs to maintain adequate ground water table elevations.

Ground waters that meet the criteria mandated by the *Sources of Drinking Water Policy* are designated MUN. Unless otherwise designated by the Regional Board all ground waters in the Region are considered suitable or potentially suitable as sources of drinking water.

The Regional Board has deleted beneficial use designations in portions of certain hydrologic ground water units, areas or subareas. Available information indicated that the beneficial uses in portions of these hydrologic ground water basins did not occur and were not likely to occur in the future. The Regional Board will issue waste discharge requirements and enforcement orders in these basins in conformance with the terms and conditions of State Board Resolution No. 68-16, *Statement of Policy With Respect to Maintaining High Quality of Waters in California*. It is the Regional Board's intent that water quality be maintained in conformance with the terms and conditions of Resolution No. 68-16.

A listing of the beneficial uses of the ground waters in the Region is presented in Table 2-5.

BENEFICIAL USE TABLES

Designated beneficial uses are summarized in the tables at the end of this chapter as follows:

Table 2-2 Inland Surface Waters;
Table 2-3 Coastal Waters;
Table 2-4 Reservoirs and Lakes; and
Table 2-5 Ground Water

In the tables, a "•" indicates an existing beneficial use that was actually attained in the surface or ground water on or after November 28, 1975. A "o" indicates a potential beneficial use that will probably develop in future years through the implementation of various control measures. Potential uses also include uses that have been developed in the past but have been abandoned for reasons other than water quality. A "+" indicates that the water body has been exempted by the Regional Board from the municipal use designation under the terms and conditions of State Board Resolution No. 88-63, *Sources of Drinking Water Policy*.

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Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Orange County Coastal Streams																
Moro Canyon	1.11	+	●						O	●		●		●		
unnamed intermittent coastal streams	1.11	+	●						O	●		●		●		
Emerald Canyon	1.11	+	●						O	●		●		●		
Boat Canyon	1.11	+	●						O	●		●		●		
Laguna Canyon	1.12	+	●						O	●		●		●		
Blue Bird Canyon	1.12	+	●						O	●		●		●		
Rim Rock Canyon	1.12	+	●						O	●		●		●		
unnamed intermittent coastal streams	1.13	+	●						O	●		●		●		
Hobo Canyon	1.13	+	●						O	●		●		●		
Aliso Creek Watershed																
Aliso Creek	1.13	+	●						O	●		●		●		
English Canyon	1.13	+	●						O	●		●		●		
Sulphur Creek	1.13	+	●						O	●		●		●		
Wood Canyon	1.13	+	●						O	●		●		●		
Aliso Creek Mouth	1.13	See Coastal Waters - Table 2-3														

● Existing Beneficial Use

O Potential Beneficial Use

\+ Excepted From MUN (See Text)

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Dana Point Watershed																
unnamed intermittent coastal streams	1.14	+	●						O	●		●		●		
Salt Creek	1.14	+	●						O	●		●		●		
San Juan Canyon	1.14	+	●						O	●		●		●		
Arroyo Salada	1.14	+	●						O	●		●		●		
San Juan Creek Watershed																
San Juan Creek	1.25	+	●	●					●	●		●	●	●		
Morrell Canyon	1.25	+	●	●					●	●		●	●	●		
Decker Canyon	1.25	+	●	●					●	●		●	●	●		
Long Canyon	1.25	+	●	●					●	●		●	●	●		
Lion Canyon	1.25	+	●	●					●	●		●	●	●		●
Hot Spring Canyon	1.25	+	●	●					●	●		●	●	●		●
Cold Spring Canyon	1.25	+	●	●					●	●		●	●	●		
Lucas Canyon	1.25	+	●	●					●	●		●	●	●		
Aliso Canyon	1.25	+	●	●					●	●		●	●	●		
Verdugo Canyon	1.25	+	●	●					●	●		●	●	●		
Bell Canyon	1.25	+	●	●					●	●		●	●	●		
Fox Canyon	1.25	+	●	●					●	●		●	●	●		

● Existing Beneficial Use

O Potential Beneficial Use

\+ Excepted From MUN (See Text)

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Juan Creek Watershed - continued																
Dove Canyon	1.24	+	●	●					●	●		●	●	●		
Crow Canyon	1.25	+	●	●					●	●		●	●	●		
San Juan Creek	1.26	+	●	●					●	●		●	●	●		
Trampas Canyon	1.26	+	●	●					●	●		●	●	●		
Canada Gobernadora	1.24	+	●	●					●	●		●	●	●		
Canada Chiquita	1.24	+	●	●					●	●		●	●	●		
San Juan Creek	1.28	+	●	●					●	●		●	●	●		
San Juan Creek	1.27	+	●	●					●	●		●	●	●		
Horno Creek	1.27	+	●	●					●	●		●	●	●		
Arroyo Trabuco Creek	1.22	+	●	●					●	●		●	●	●		●
Holy Jim Canyon	1.22	+	●	●					●	●		●	●	●		●
Falls Canyon	1.22	+	●	●					●	●		●	●	●		
Rose Canyon	1.22	+	●	●					●	●		●	●	●		
Hickey Canyon	1.22	+	●	●					●	●		●	●	●		
Live Oak Canyon	1.22	+	●	●					●	●		●	●	●		
Arroyo Trabuco Creek	1.23	+	●	●					●	●		●	●	●		
Tijeras Canyon	1.23	+	●	●					●	●		●	●	●		

● Existing Beneficial Use

O Potential Beneficial Use

\+ Excepted From MUN (See Text)

1 Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

2 Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Juan Creek Watershed - continued																
Arroyo Trabuco Creek	1.27	+	●	●					●	●		●	●	●		
Oso Creek	1.21	+	●	●					●	●		●	●	●		
La Paz Creek	1.21	+	●	●					●	●		●	●	●		
San Juan Creek Mouth	1.27	See Coastal Waters - Table 2-3														
Orange County Coastal Streams																
Prima Deshecha Canada	1.31	+	●						O	●		●		●		
unnamed intermittent coastal streams	1.30	+	●						O	●		●		●		
Segunda Deshecha Canada	1.32	+	●						O	●		●		●		
San Mateo Creek Watershed																
San Mateo Creek	1.40	+							O	●		●	●	●	●	●
Devil Canyon	1.40	+							O	●		●	●	●		●
Cold Spring Canyon	1.40	+							O	●		●	●	●		
San Mateo Canyon	1.40	+							O	●		●	●	●	●	●
Los Alamos Canyon	1.40	+							O	●		●	●	●		●
Wildhorse Canyon	1.40	+							O	●		●	●	●		
Tenaja Canyon	1.40	+							O	●		●	●	●		●
Bluewater Canyon	1.40	+							O	●		●	●	●		

● Existing Beneficial Use

O Potential Beneficial Use

+ Excepted From MUN (See Text)

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Mateo Creek Watershed - continued																
Nickel Canyon	1.40	+							O	●		●	●	●		
Christianitos Creek	1.40	+							O	●		●	●	●		
Gabino Canyon	1.40	+							O	●		●	●	●		
La Paz Canyon	1.40	+							O	●		●	●	●		
Blind Canyon	1.40	+							O	●		●	●	●		
Talega Canyon	1.40	+							O	●		●	●	●		
San Mateo Creek Mouth	1.40	See Coastal Waters- Table 2-3														
San Onofre Creek Watershed																
San Onofre Creek	1.51	+	●						●	●		●	●	●		●
San Onofre Canyon North Fork	1.51	+	●						●	●		●	●	●		●
Jardine Canyon	1.51	+	●						●	●		●	●	●		
San Onofre Canyon	1.51	+	●						●	●		●	●	●		●
San Onofre Canyon South Fork	1.51	+	●						●	●		●	●	●	●	
San Onofre Creek Mouth	1.51	See Coastal Waters- Table 2-3														
unnamed intermittent coastal streams	1.51	+	●						●	●		●		●		
Foley Canyon	1.51	+	●						●	●		●		●		
Horno Canyon	1.51	+	●						●	●		●		●		
Las Flores Creek	1.52	+	●						●	●		●	●	●	●	

● Existing Beneficial Use

O Potential Beneficial Use

+ Excepted From MUN (See Text)

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Onofre Creek Watershed - continued																
Piedra de Lumbre Canyon	1.52	+	●						●	●		●	●	●	●	
unnamed intermittent coastal streams	1.52	+	●						●	●		●		●		
Aliso Canyon	1.53	+	●						●	●		●	●	●	●	
French Canyon	1.53	+	●						●	●		●		●	●	
Cocklebur Canyon	1.53	+	●						●	●		●		●		
Santa Margarita River Watershed																
Santa Margarita River	2.22	●	●	●					●	●		●	●	●	●	
Murrieta Creek	2.31	●	●	●	●				O	●		●		●		
Bundy Canyon	2.31	●	●	●	●				O	●		●		●		
Slaughterhouse Canyon	2.31	●	●	●	●				O	●		●		●		
Murrieta Creek	2.32	●	●	●	●				O	●		●		●		
Murrieta Creek	2.52	●	●	●	●	●			O	●		●		●		
Cole Canyon	2.32	●	●	●	●				O	●		●		●		
Miller Canyon	2.32	●	●	●	●				O	●		●		●		
Warm Springs Creek	2.36	●	●	●	●				O	●		●		●		
Diamond Valley	2.36	●	●	●	●				O	●		●		●		
Goodhart Canyon	2.36	●	●	●	●				O	●		●		●		

● Existing Beneficial Use

O Potential Beneficial Use

+ Excepted From MUN (See Text)

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Santa Margarita River Watershed - continued																
Pixley Canyon	2.36	●	●	●	●				O	●		●		●		
Warm Springs Creek	2.35	●	●	●	●				O	●		●		●		
Domenigoni Valley	2.35	●	●	●	●				O	●		●		●		
Warm Springs Creek	2.34	●	●	●	●				O	●		●		●		
Warm Springs Creek	2.33	●	●	●	●				O	●		●		●		
French Valley	2.33	●	●	●	●				O	●		●		●		
Santa Gertrudis Creek	2.42	●	●	●	●	O			●	●		●		●		
Long Valley	2.42	●	●	●	●	O			●	●		●		●		
Glenoak Valley	2.42	●	●	●	●	O			●	●		●	●	●		
Tucalota Creek	2.43	●	●	●	●	O			●	●		●	●	●		
Willow Canyon	2.44	●	●	●	●	O			●	●		●	●	●		
Lake Skinner	2.41	See Reservoirs & Lakes- Table 2-4														
Tucalota Creek	2.41	●	●	●	●	O			●	●		●		●		
Crown Valley	2.41	●	●	●	●	O			●	●		●	●	●		
Rawson Canyon	2.41	●	●	●	●	O			●	●		●	●	●		
Tucalota Creek	2.42	●	●	●	●	O			●	●		●		●		
Santa Gertrudis Creek	2.32	●	●	●	●				O	●		●		●		

● Existing Beneficial Use

O Potential Beneficial Use

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters[1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Santa Margarita River Watershed - continued																
Long Canyon	2.32	●	●	●	●				O	●		●		●		
Temecula Creek	2.93	●	●	●	●	●			O	●		●		●		
Kohler Canyon	2.93	●	●	●	●	●			O	●		●	●	●		
Rattlesnake creek	2.93	●	●	●	●	●			O	●		●	●	●		
Temecula Creek	2.92	●	●	●	●	●			O	●		●		●		
Chihuahua Creek	2.94	●	●	●	●	●			O	●		●		●		
Chihuahua Creek	2.92	●	●	●	●	●			O	●		●		●		
Cooper Canyon	2.92	●	●	●	●	●			O	●		●		●		
Iron Spring Canyon	2.92	●	●	●	●	●			O	●		●		●		
Temecula Creek	2.91	●	●	●	●	●			O	●		●		●		
Culp Valley	2.91	●	●	●	●	●			O	●		●		●		
Temecula Creek	2.84	●	●	●	●	●			●	●		●	●	●		●
Tule Creek	2.84	●	●	●	●	●			●	●		●	●	●		
Million Dollar Canyon	2.84	●	●	●	●	●			●	●		●	●	●		
Cottonwood Creek	2.84	●	●	●	●	●			●	●		●	●	●		●
Temecula Creek	2.83	●	●	●	●	●			●	●		●	●	●		●
Long Canyon	2.83	●	●	●	●	●			●	●		●	●	●		●

● Existing Beneficial Use

O Potential Beneficial Use

1 Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

2 Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Santa Margarita River Watershed - continued																
Vail Lake	2.81	See Reservoirs & Lakes- Table 2-4														
Wilson Creek	2.63	●	●	●	●	●			O	●		●		●		
Wilson Creek	2.61	●	●	●	●	●			O	●		●		●		
Cahuilla Creek	2.73	●	●	●	●	●			O	●		●		●		
Hamilton Creek	2.74	●	●	●	●	●			O	●		●		●		
Hamilton Creek	2.73	●	●	●	●	●			O	●		●		●		
Cahuilla Creek	2.72	●	●	●	●	●			O	●		●		●		
Cahuilla Creek	2.71	●	●	●	●	●			O	●		●		●		
Elder Creek	2.71	●	●	●	●	●			O	●		●		●		
Cahuilla Creek	2.61	●	●	●	●	●			O	●		●		●		
Wilson Creek	2.81	●	●	●	●	●			●	●		●	●	●		
Lewis Valley	2.62	●	●	●	●	●			O	●		●		●		
Arroyo Seco Creek	2.81	●	●	●	●	●			●	●		●	●	●		
Arroyo Seco Creek	2.82	●	●	●	●	●			●	●		●	●	●		●
Kolb Creek	2.81	●	●	●	●	●			●	●		●	●	●		
Temecula Creek	2.81	●	●	●	●	●			●	●		●	●	●		●
Temecula Creek	2.51	●	●	●	●	●			O	●		●		●		

● Existing Beneficial Use

O Potential Beneficial Use

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Santa Margarita River Watershed - continued																
Temecula Creek	2.52	●	●	●	●	●			O	●		●		●		
Pechanga Creek	2.52	●	●	●	●	●			O	●		●		●		
Rainbow Creek	2.23	●	●	●					●	●		●	●	●		●
Rainbow Creek	2.22	●	●	●					●	●		●	●	●		●
Sandia Canyon	2.22	●	●	●					●	●		●	●	●		●
Walker Basin	2.22	●	●	●					●	●		●	●	●		
Santa Margarita River	2.21	●	●	●					●	●		●	●	●	●	
DeLuz Creek	2.21	●	●	●					●	●		●	●	●	●	●
Cottonwood Creek	2.21	●	●	●					●	●		●	●	●		
Camps Creek	2.21	●	●	●					●	●		●	●	●		●
Fern Creek	2.21	●	●	●					●	●		●	●	●		●
Roblar Creek	2.21	●	●	●					●	●		●	●	●		
O'Neill Lake	2.13	See Reservoirs & Lakes- Table 2-4														
Santa Margarita River	2.13	●	●	●	●				●	●		●	●	●	●	
Wood Canyon	2.13	●	●	●	●				●	●		●		●		
Santa Margarita River	2.12	●	●	●	●				●	●		●	●	●	●	
Santa Margarita River	2.11	●	●	●	●				●	●		●	●	●	●	
Pueblitos Canyon	2.11	●	●	●	●				●	●		●		●	●	

● Existing Beneficial Use

O Potential Beneficial Use

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Santa Margarita River Watershed - continued																
Newton Canyon	2.11	●	●	●	●				●	●		●		●		
Santa Margarita Lagoon	2.11	See Coastal Waters- Table 2-3														
San Luis Rey River Watershed																
San Luis Rey River	3.32	●	●	●			●	●	●	●		●	●	●		
Johnson Canyon	3.32	●	●	●			●	●	●	●		●	●	●		
San Luis Rey River	3.31	●	●	●			●	●	●	●		●	●	●		
Canada Aguanga	3.31	●	●	●			●	●	●	●		●	●	●		
Dark Canyon	3.31	●	●	●			●	●	●	●		●	●	●		
Bear Canyon	3.31	●	●	●			●	●	●	●		●	●	●		
Cow Canyon	3.31	●	●	●			●	●	●	●		●	●	●		
Blue Canyon	3.31	●	●	●			●	●	●	●		●	●	●		
Rock Canyon	3.31	●	●	●			●	●	●	●		●	●	●		
Agua Caliente Creek	3.31	●	●	●			●	●	●	●		●	●	●		
unnamed Tributary	3.31	●	●	●			●	●	●	●		●	●	●		●
Canada Agua Caliente	3.31	●	●	●			●	●	●	●		●	●	●		
Canada Verde	3.31	●	●	●			●	●	●	●		●	●	●		
Ward Canyon	3.31	●	●	●			●	●	●	●		●	●	●		
Lake Henshaw	3.31	See Reservoirs & Lakes- Table 2-4														

● Existing Beneficial Use

O Potential Beneficial Use

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Luis Rey River Watershed - continued																
West Fork San Luis Rey River	3.31	●	●	●			●	●	●	●		●	●	●		●
Fry Creek	3.31	●	●	●			●	●	●	●		●	●	●		
Iron Springs Creek	3.31	●	●	●			●	●	●	●		●	●	●		●
Buena Vista Creek	3.31	●	●	●			●	●	●	●		●	●	●		
Cherry Canyon	3.31	●	●	●			●	●	●	●		●		●		
Bertha Canyon	3.31	●	●	●			●	●	●	●		●		●		
Hoover Canyon	3.31	●	●	●			●	●	●	●		●		●		
Buck Canyon	3.31	●	●	●			●	●	●	●		●		●		
Bergstrom Canyon	3.31	●	●	●			●	●	●	●		●		●		
San Ysidro Creek	3.31	●	●	●			●	●	●	●		●		●		
Matagual Creek	3.31	●	●	●			●	●	●	●		●	●	●		
Carrizo Creek	3.31	●	●	●			●	●	●	●		●	●	●		
Carrista Creek	3.31	●	●	●			●	●	●	●		●		●		
Kumpohui Creek	3.31	●	●	●			●	●	●	●		●		●		
San Luis Rey River	3.31	●	●	●			●	●	●	●		●	●	●		
San Luis Rey River	3.23	●	●	●				●	●	●		●	●	●		●
Wigham Creek	3.23	●	●	●				●	●	●		●	●	●		

● Existing Beneficial Use

O Potential Beneficial Use

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters[1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Luis Rey River Watershed - continued																
Prisoner Creek	3.23	●	●	●				●	●	●		●	●	●		
Lusardi Canyon	3.23	●	●	●				●	●	●		●	●	●		
Cedar Creek	3.23	●	●	●				●	●	●		●	●	●		
San Luis Rey River	3.22	●	●	●				●	●	●		●	●	●		
Bee Canyon	3.22	●	●	●				●	●	●		●	●	●		
Paradise Creek	3.22	●	●	●				●	●	●		●	●	●		
Hell Creek	3.22	●	●	●				●	●	●		●	●	●		
Horsethief Canyon	3.22	●	●	●				●	●	●		●	●	●		
Potrero Creek	3.22	●	●	●				●	●	●		●	●	●		
Plaisted Creek	3.22	●	●	●				●	●	●		●	●	●		
Yuima Creek	3.22	●	●	●				●	●	●		●	●	●		
Sycamore Canyon	3.22	●	●	●				●	●	●		●	●	●		
Pauma Creek	3.22	●	●	●				●	●	●		●	●	●		●
Doane Creek	3.22	●	●	●				●	●	●		●	●	●		●
Chimney Creek	3.22	●	●	●				●	●	●		●	●	●		
French Creek	3.22	●	●	●				●	●	●		●	●	●		●
Lion Creek	3.22	●	●	●				●	●	●		●	●	●		●

● Existing Beneficial Use

O Potential Beneficial Use

1 Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

2 Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Luis Rey River Watershed - continued																
Harrison Canyon	3.22	●	●	●				●	●	●		●	●	●		
Jaybird Creek	3.22	●	●	●				●	●	●		●	●	●		
Frey Creek	3.22	●	●	●				●	●	●		●	●	●		
Agua Tibia Creek	3.22	●	●	●				●	●	●		●	●	●		●
San Luis Rey River	3.21	●	●	●					●	●		●	●	●		
Marion Canyon	3.21	●	●	●					●	●		●	●	●		
Magee Creek	3.21	●	●	●					●	●		●	●	●		
Castro Canyon	3.21	●	●	●					●	●		●	●	●		
Trujillo Creek	3.21	●	●	●					●	●		●	●	●		
Pala Creek	3.21	●	●	●					●	●		●	●	●		●
Gomez Creek	3.21	●	●	●					●	●		●	●	●		
Couser Canyon	3.21	●	●	●					●	●		●	●	●		
Double Canyon	3.21	●	●	●					●	●		●	●	●		
Rice Canyon	3.21	●	●	●					●	●		●	●	●		
San Luis Rey River	3.12	+	●	●					●	●		●		●	●	
Keys Creek	3.12	+	●	●					●	●		●		●		
Moosa Canyon	3.15	+	●	●					●	●		●		●		

● Existing Beneficial Use

O Potential Beneficial Use

+ Excepted From MUN (See Text)

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Luis Rey River Watershed - continued																
unnamed intermittent streams	3.16	+	●	●					●	●		●		●		
Moosa Canyon	3.14	+	●	●					●	●		●		●		
Moosa Canyon	3.13	+	●	●					●	●		●		●		
Turner Lake	3.13	See Reservoirs & Lakes- Table 2-4														
South Fork Moosa Canyon	3.13	+	●	●					●	●		●		●		
Moosa Canyon	3.12	+	●	●					●	●		●		●		
Gopher Canyon	3.12	+	●	●					●	●		●		●		
South Fork Gopher Canyon	3.12	+	●	●					●	●		●		●		
San Luis Rey River	3.11	+	●	●					●	●		●		●	●	
Pilgrim Creek	3.11	+	●	●					●	●		●	●	●	●	
Windmill Canyon	3.11	+	●	●					●	●		●	●	●		
Tuley Canyon	3.11	+	●	●					●	●		●		●		
Lawerence Canyon	3.11	+	●	●					●	●		●		●		
Mouth of San Luis Rey River	3.11	See Coastal Waters- Table 2-3														
San Diego County Coastal Streams																
Loma Alta Creek	4.10	+							O	●		●		●		
Loma Alta Slough	4.10	See Coastal Waters- Table 2-3														

● Existing Beneficial Use

O Potential Beneficial Use

+ Excepted From MUN (See Text)

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[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Diego County Coastal Streams - continued																
Buena Vista Lagoon	4.21	See Coastal Waters- Table 2-3														
Buena Vista Creek	4.22	+	●	●					●	●		●		●		
Buena Vista Creek	4.21	+	●	●					●	●		●		●	●	
Agua Hedionda	4.31	See Coastal Waters- Table 2-3														
Agua Hedionda Creek	4.32	●	●	●					●	●		●		●		
Buena Creek	4.32	●	●	●					●	●		●		●		
Agua Hedionda Creek	4.31	●	●	●					●	●		●		●		
Letterbox canyon	4.31	●	●	●					●	●		●		●		
Canyon de las Encinas	4.40	+							O	●		●		●		
San Marcos Creek Watershed																
Batiquitos Lagoon	4.51	See Coastal Waters- Table 2-3														
San Marcos Creek	4.52	+	●						●	●		●		●		
unnamed intermittent streams	4.53	+	●						●	●		●		●		
San Marcos Creek Watershed																
San Marcos Creek	4.51	+	●						●	●		●		●		
Encinitas Creek	4.51	+	●						●	●		●		●		

● Existing Beneficial Use

O Potential Beneficial Use

\+ Excepted From MUN (See Text)

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[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters[1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Escondido Creek Watershed																
San Elijo Lagoon	4.61	See Coastal Waters- Table 2-3														
Escondido Creek	4.63	●	●	O				●	●	●		●	●	●		
Lake Wohlford	4.63	See Reservoirs & Lakes- Table 2-4														
Lake Dixon	4.62	See Reservoirs & Lakes- Table 2-4														
Escondido Creek	4.62	●	●	O					●	●		●	●	●		
Reidy Canyon	4.62	●	●	O					●	●		●	●	●		
Escondido Creek	4.61	●	●	O					●	●		●	●	●		
San Dieguito River Watershed																
Santa Ysabel Creek	5.54	●	●	●	●				●	●		●	●	●		●
Dan Price Creek	5.54	●	●	●	●				●	●		●	●	●		
Santa Ysabel Creek	5.53	●	●	●	●				●	●		●	●	●		
Witch Creek	5.53	●	●	●	●				●	●		●	●	●		●
Sutherland Lake	5.53	See Reservoirs & Lakes- Table 2-4														
Bloomdale Creek	5.53	●	●	●	●				●	●		●	●	●		
Santa Ysabel Creek	5.52	●	●	●	●				●	●		●	●	●	●	
Lake Poway	5.52	See Reservoirs & Lakes- Table 2-4														
Black Canyon	5.52	●	●	●	●				●	●		●	●	●		●

● Existing Beneficial Use

O Potential Beneficial Use

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[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Dieguito River Watershed - continued																
Scholder Creek	5.52	●	●	●	●				●	●		●	●	●		
Temescal Creek	5.52	●	●	●	●				●	●		●	●	●		
Bear Creek	5.52	●	●	●	●				●	●		●	●	●		
Quail Canyon	5.52	●	●	●	●				●	●		●	●	●		
Carney Canyon	5.52	●	●	●	●				●	●		●	●	●		
Santa Ysabel Creek	5.51	●	●	●	●				●	●		●	●	●		
Boden Canyon	5.51	●	●	●	●				●	●		●	●	●		
Clevenger Canyon	5.51	●	●	●	●				●	●		●	●	●		
Santa Ysabel Creek	5.32	●	●	●	●				O	●		●		●	●	
Tims Canyon	5.32	●	●	●	●				O	●		●		●		
Schoolhouse Canyon	5.32	●	●	●	●				O	●		●		●		
Rockwood Canyon	5.35	●	●	●	●				O	●		●		●		
Guejito Creek	5.35	●	●	●	●				O	●		●		●		
unnamed intermittent streams	5.36	●	●	●	●				O	●		●		●		
Rockwood Canyon	5.32	●	●	●	●				O	●		●		●		
Santa Maria Creek	5.41	●	●	●	●				●	●		●		●		
Hatfield Creek	5.45	●	●	●	●				●	●		●		●		

● Existing Beneficial Use

O Potential Beneficial Use

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Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters[1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Dieguito River Watershed - continued																
Hatfield Creek	5.44	●	●	●	●				●	●		●		●		
Wash Hollow Creek	5.43	●	●	●	●				●	●		●		●		
Wash Hollow Creek	5.44	●	●	●	●				●	●		●		●		
Hatfield Creek	5.42	●	●	●	●				●	●		●		●		
Santa Teresa Valley	5.46	●	●	●	●				●	●		●		●		
unnamed intermittent streams	5.47	●	●	●	●				●	●		●		●		
Hatfield Creek	5.41	●	●	●	●				●	●		●		●		
Santa Maria Creek	5.32	●	●	●	●				O	●		●		●		
unnamed intermittent streams	5.33	●	●	●	●				O	●		●		●		
unnamed intermittent streams	5.34	●	●	●	●				O	●		●		●		
San Dieguito River	5.32	●	●	●	●				O	●		●		●	●	
unnamed Tributary	5.32	●	●	●	●				O	●		●		●	●	
San Dieguito River	5.21	●	●	●	●				●	●	●	●	●	●	●	
Highland Valley	5.31	●	●	●	●				O	●		●		●		
Lake Hodges	5.21	See Reservoirs & Lakes- Table 2-4														
San Dieguito Reservoir	5.21	See Reservoirs & Lakes- Table 2-4														
Warren Canyon	5.21	●	●	●	●				●	●		●	●	●		

● Existing Beneficial Use

O Potential Beneficial Use

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Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Dieguito River Watershed - continued																
San Bernardo Valley	5.21	●	●	●	●				●	●		●		●	●	
unnamed intermittent streams	5.24	●	●	●	●				●	●		●		●		
unnamed intermittent streams	5.23	●	●	●	●				●	●		●		●		
unnamed intermittent streams	5.22	●	●	●	●				●	●		●		●		
San Dieguito River	5.11	+	O	O					●	●		●	●	●		●
Lusardi Creek	5.12	+	O	O					●	●		●		●		
Lusardi Creek	5.11	+	O	O					●	●		●		●		
La Zanja Canyon	5.11	+	O	O					●	●		●		●		
Gonzales Canyon	5.11	+	O	O					●	●		●		●		
San Dieguito Lagoon	5.11	See Coastal Waters- Table 2-3														
Los Penasquitos Creek Watershed																
Los Penasquitos Lagoon	6.10	See Coastal Waters- Table 2-3														
Soledad Canyon	6.10	+	●	●					O	●		●	●	●		
Carol Canyon	6.10	+	●	●					O	●		●	●	●	●	
Miramar Reservoir	6.10	See Reservoirs & Lakes- Table 2-4														
Los Penasquitos Creek	6.20	+	●	O					●	●		●	●	●		
Rattlesnake Creek	6.20	+	●	O					●	●		●	●	●		

● Existing Beneficial Use

O Potential Beneficial Use

\+ Excepted From MUN (See Text)

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[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters[1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Los Penasquitos Creek Watershed - continued																
Poway Creek	6.20	+	●	O					●	●		●		●		
Beeler Creek	6.20	+	●	O					●	●		●		●		
Chicarita Creek	6.20	+	●	O					●	●		●		●		
Cypress Canyon	6.20	+	●	O					●	●		●		●		
Los Penasquitos Creek	6.10	+	●	●					O	●		●		●		
unnamed Tributary	6.10	+	●	●					O	●		●		●	●	
Carmel Valley	6.10	+	●	●					O	●		●		●		
Deer Canyon	6.10	+	●	●					O	●		●		●		
McGonigle Canyon	6.10	+	●	●					O	●		●		●		
Bell Valley	6.10	+	●	●					O	●		●		●		
Shaw Valley	6.10	+	●	●					O	●		●		●		
San Diego County Coastal Streams																
unnamed intermittent coastal streams	6.30	+							O	●		●		●		
Rose Canyon Watershed																
Rose Canyon	6.40	+		O					●	●		●		●		
San Clemente Canyon	6.40	+		O					●	●		●	●	●	●	●

● Existing Beneficial Use

O Potential Beneficial Use

+ Excepted From MUN (See Text)

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Tecolote Creek Watershed																
Tecolote Creek	6.50	+							O	●		●		●		
San Diego River Watershed																
San Diego River	7.41	●	●	●	●				●	●		●	●	●		
Coleman Creek	7.42	●	●	●	●				●	●		●	●	●		
Eastwood Creek	7.42	●	●	●	●				●	●		●	●	●		
Jim Green Creek	7.42	●	●	●	●				●	●		●	●	●		
Mariette Creek	7.42	●	●	●	●				●	●		●	●	●		
Boring Creek	7.42	●	●	●	●				●	●		●	●	●		
Bailey Creek	7.42	●	●	●	●				●	●		●	●	●		
Coleman Creek	7.41	●	●	●	●				●	●		●	●	●		
Setenec Creek	7.42	●	●	●	●				●	●		●	●	●		
Setenec Creek	7.41	●	●	●	●				●	●		●	●	●		
Temescal Creek	7.41	●	●	●	●				●	●		●	●	●		
Paine Bottom	7.41	●	●	●	●				●	●		●	●	●		
Orinoco Creek	7.41	●	●	●	●				●	●		●	●	●		
Iron Springs Canyon	7.41	●	●	●	●				●	●		●	●	●		
Dye Canyon	7.41	●	●	●	●				●	●		●	●	●		

● Existing Beneficial Use

O Potential Beneficial Use

\+ Excepted From MUN (See Text)

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Diego River Watershed - continued																
Richie Creek	7.41	●	●	●	●				●	●		●	●	●		
Cedar Creek	7.41	●	●	●	●				●	●		●	●	●		●
Sandy Creek	7.41	●	●	●	●				●	●		●	●	●		
Dehr Creek	7.41	●	●	●	●				●	●		●	●	●		●
Kelly Creek	7.41	●	●	●	●				●	●		●	●	●		
Cuyamaca Reservoir	7.43	See Reservoirs & Lakes- Table 2-4														
Little Stonewall Creek	7.43	●	●	●	●				●	●		●	●	●		●
Boulder Creek	7.41	●	●	●	●				●	●		●	●	●		●
Azalea Creek	7.41	●	●	●	●				●	●		●	●	●		
Johnson Creek	7.41	●	●	●	●				●	●		●	●	●		
Sheep Camp Creek	7.41	●	●	●	●				●	●		●	●	●		
San Diego River	7.31	●	●	●	●				●	●		●	●	●		
El Capitan Reservoir	7.31	See Reservoirs & Lakes- Table 2-4														
Isham Creek	7.31	●	●	●	●				●	●		●	●	●		
Sand Creek	7.31	●	●	●	●				●	●		●	●	●		
Conejos Creek	7.31	●	●	●	●				●	●		●	●	●		●
King Creek	7.31	●	●	●	●				●	●		●	●	●		

● Existing Beneficial Use

O Potential Beneficial Use

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters[1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Diego River Watershed - continued																
West Fork King Creek	7.31	●	●	●	●				●	●		●	●	●		
Echo Valley	7.31	●	●	●	●				●	●		●	●	●		
Peutz Valley	7.31	●	●	●	●				●	●		●	●	●		
Chocolate Canyon	7.32	●	●	●	●				●	●		●	●	●		
Alpine Creek	7.33	●	●	●	●				●	●		●	●	●		
Chocolate Canyon	7.31	●	●	●	●				●	●		●	●	●		
San Diego River	7.15	O		●					●	●		●		●	●	
San Diego River	7.12	O		●					●	●		●		●	●	
Lake Jennings	7.12	See Reservoirs & Lakes- Table 2-4														
Quail Canyon	7.12	O		●					●	●		●		●		
Wildcat Canyon	7.12	O		●					●	●		●		●		
San Vicente Creek	7.23	●	●	●	●				●	●		●		●		
Swartz Canyon	7.23	●	●	●	●				●	●		●		●		
Klondike Creek	7.23	●	●	●	●				●	●		●		●		
San Vicente Creek	7.22	●	●	●	●				●	●		●		●		
Darney Canyon	7.22	●	●	●	●				●	●		●		●		
Longs Gulch	7.22	●	●	●	●				●	●		●		●		

● Existing Beneficial Use

O Potential Beneficial Use

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Diego River Watershed - continued																
San Vicente Reservoir	7.21	See Reservoirs & Lakes- Table 2-4														
West Branch San Vicente Creek	7.21	●	●	●	●				●	●		●		●		
Padre Barona Creek	7.24	●	●	●	●				●	●		●		●		
Wright Canyon	7.24	●	●	●	●				●	●		●		●		
Featherstone Canyon	7.24	●	●	●	●				●	●		●		●		
Padre Barona Creek	7.12	O		●					●	●		●		●		
Foster Canyon	7.21	●	●	●	●				●	●		●		●		
San Vicente Creek	7.12	O		●					●	●		●		●		
Slaughterhouse Canyon	7.12	O		●					●	●		●		●		
Las Coches Creek	7.14	O		●					●	●		●		●		
Rios Canyon	7.14	O		●					●	●		●		●		
Los Coches Creek	7.12	O		●					●	●		●		●		
Forrester Creek	7.13	O		●					●	●		●		●		
Forrester Creek	7.12	O		●					●	●		●		●		
Sycamore Canyon	7.12	+	●	●					●	●		●		●	●	
unnamed tributary	7.12	+	●	●					●	●		●		●	●	
Clark Canyon	7.12	+	●	●					●	●		●		●	●	

● Existing Beneficial Use

O Potential Beneficial Use

+ Excepted From MUN (See Text)

1 Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

2 Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
		BENEFICIAL USE														
San Diego River Watershed - continued																
West Sycamore Canyon	7.12	+	●	●					●	●		●		●		
Quail Canyon	7.12	+	●	●					●	●		●		●		
Little Sycamore Canyon	7.12	+	●	●					●	●		●		●		
Spring Canyon	7.12	+	●	●					●	●		●		●	●	
Oak Canyon	7.12	+	●	●					●	●		●		●		
San Diego River	7.11	+	●	●					●	●		●		●	●	
unnamed Tributary	7.11	+	●	●					●	●		●		●	●	
Alvarado Canyon	7.11	+	●	●					●	●		●		●		
Lake Murray	7.11	See Reservoirs & Lakes- Table 2-4														
Murphy Canyon	7.11	+	●	●					●	●		●		●	●	
Shepherd Canyon	7.11	+	●	●					●	●		●		●		
Murray Canyon	7.11	+	●	●					●	●		●		●		
Mouth of San Diego River	7.11	See Coastal Waters- Table 2-3														
San Diego County Coastal Streams																
unnamed intermittent coastal streams	8.10	+							O	●		●		●		
Powerhouse Canyon	8.21	+							O	●		●		●		
Chollas Creek	8.22	+							O	●		●		●		

● Existing Beneficial Use

O Potential Beneficial Use

\+ Excepted From MUN (See Text)

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Diego County Coastal Streams - continued																
South Chollas Valley	8.22	+							O	●		●		●		
unnamed intermittent streams	8.31	+							O	●		●		●		
Paradise Creek	8.32	+							O	●		●		●		
Paradise Valley	8.32	+							O	●		●		●		
Sweetwater River Watershed																
Sweetwater River	9.35	●	●	●	●				●	●		●	●	●		●
Stonewall Creek	9.35	●	●	●	●				●	●		●	●	●		●
Harper Creek	9.35	●	●	●	●				●	●		●	●	●		●
Cold Stream	9.35	●	●	●	●				●	●		●	●	●		●
Japacha Creek	9.35	●	●	●	●				●	●		●	●	●		●
Juaquapin Creek	9.35	●	●	●	●				●	●		●	●	●		●
Arroyo Seco	9.35	●	●	●	●				●	●		●	●	●		
Sweetwater River	9.34	●	●	●	●				●	●		●	●	●		●
Descanso Creek	9.34	●	●	●	●				●	●		●	●	●		
Samagatuma Creek	9.34	●	●	●	●				●	●		●	●	●		
Sweetwater River	9.31	●	●	●	●				●	●		●	●	●		●

● Existing Beneficial Use

O Potential Beneficial Use

\+ Excepted From MUN (See Text)

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Sweetwater River Watershed - continued																
Viejas Creek	9.33	●	●	●	●				●	●		●	●	●		
Viejas Creek	9.31	●	●	●	●				●	●		●	●	●		
Loveland Reservoir	9.31	See Reservoirs & Lakes- Table 2-4														
Taylor Creek	9.31	●	●	●	●				●	●		●		●		
Japatul Valley	9.32	●	●	●	●				●	●		●		●		
Sweetwater River	9.21	●	●	●	●				●	●	●	●		●	●	
unnamed tributary	9.21	●	●	●	●				●	●	●	●		●	●	
Lawson Creek	9.21	●	●	●	●				●	●		●		●		
Beaver Canyon	9.21	●	●	●	●				●	●		●		●		
Wood Valley	9.21	●	●	●	●				●	●		●		●		
Sycuan Creek	9.25	●	●	●	●				●	●		●		●		
North Fork Sycuan Creek	9.26	●	●	●	●				●	●		●		●		
North Fork Sycuan Creek	9.25	●	●	●	●				●	●		●		●		
Denesa Valley	9.23	●	●	●	●				●	●		●		●		
Harbison Canyon	9.23	●	●	●	●				●	●		●		●		
Galloway Valley	9.24	●	●	●	●				●	●		●		●		
Mexican Canyon	9.21	●	●	●	●				●	●		●		●		

● Existing Beneficial Use

O Potential Beneficial Use

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters[1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Sweetwater River Watershed - continued																
unnamed intermittent streams	9.22	●	●	●	●				●	●		●		●		
Steel Canyon	9.21	●	●	●	●				●	●		●		●		
Sweetwater Reservoir	9.21	See Reservoirs & Lakes- Table 2-4														
Coon Canyon	9.21	●	●	●	●				●	●		●		●		
Sweetwater River	9.12	+		●					O	●		●		●		
Spring Valley	9.12	+		●					O	●		●		●		
Wild Mans Canyon	9.12	+		●					O	●		●		●		
Long Canyon	9.12	+		●					O	●		●		●		
Rice Canyon	9.12	+		●					O	●		●		●		
Telegraph Canyon	9.11	+		●					O	●		●		●		
San Diego County Coastal Streams																
unnamed intermittent coastal streams	10.10	+							O			●				
Otay River Watershed																
Jamul Creek	10.34	●	●	●	●				●	●		●		●		
Jamul Creek	10.33	●	●	●	●				●	●		●		●		
Jamul Creek	10.36	●	●	●	●				●	●		●		●		
Dulzura Creek	10.37	●	●	●	●				●	●		●		●		

● Existing Beneficial Use

O Potential Beneficial Use

\+ Excepted From MUN (See Text)

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[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Otay River Watershed - continued																
Dulzura Creek	10.36	●	●	●	●				●	●		●		●	●	
Dutchman Canyon	10.36	●	●	●	●				●	●		●		●		
Pringle Canyon	10.36	●	●	●	●				●	●		●		●		
Sycamore Canyon	10.36	●	●	●	●				●	●		●		●		
Hollenbeck Canyon	10.36	●	●	●	●				●	●		●		●		
Lyons Valley	10.35	●	●	●	●				●	●		●		●		
Cedar Canyon	10.36	●	●	●	●				●	●		●	●	●		●
Little Cedar Canyon	10.36	●	●	●	●				●	●		●	●	●		
Jamul Creek	10.31	●	●	●	●				●	●		●		●	●	
Lower Otay Reservoir	10.31	See Reservoirs & Lakes- Table 2-4														
unnamed tributary	10.31	●	●	●	●				●	●		●		●	●	
Upper Otay Reservoir	10.32	See Reservoirs & Lakes- Table 2-4														
Proctor Valley	10.32	●	●	●	●				●	●		●		●		
Otay River	10.20	+	●	O					O	●		●		●	●	
O'Neal Canyon	10.20	+	●	O					O	●		●		●		
Salt Creek	10.20	+	●	O					O	●		●		●		
Johnson Canyon	10.20	+	●	O					O	●		●		●		

● Existing Beneficial Use

O Potential Beneficial Use

+ Excepted From MUN (See Text)

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Otay River Watershed - continued																
Wolf Canyon	10.20	+	●	O					O	●		●		●		
Dennery Canyon	10.20	+	●	O					O	●		●		●		
Pogi Canyon	10.20	+	●	O					O	●		●		●		
Tijuana River Watershed																
Tijuana River	11.11	+		O					O	●		●		●	●	
Moody Canyon	11.11	+		O					O	●		●		●		
Smugglers Gulch	11.11	+		O					O	●		●		●		
Goat Canyon	11.11	+		O					O	●		●		●		
Tijuana River Estuary	11.11	See Coastal Waters- Table 2-3														
Spring Canyon	11.12	+	●	O					O	●		●		●		
Dillon Canyon	11.12	+	●	O					O	●		●		●		
Finger Canyon	11.12	+	●	O					O	●		●		●		
Wruck Canyon	11.12	+	●	O					O	●		●		●		
unnamed intermittent streams	11.12	+	●	O					O	●		●		●		
unnamed intermittent streams	11.21	+							●	●		●		●		
Tijuana River	11.21	+							●	●		●		●		
Tecate Creek	11.23	+							●	●		●		●		

● Existing Beneficial Use

O Potential Beneficial Use

\+ Excepted From MUN (See Text)

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[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Tijuana River Watershed - continued																
Cottonwood Creek	11.60	●	●	●	●		●		O	●		●	●	●	●	
Kitchen Creek	11.60	●	●	●	●		●		O	●		●	●	●		●
Long Canyon	11.60	●	●	●	●		●		O	●		●	●	●		●
Troy Canyon	11.60	●	●	●	●		●		O	●		●	●	●		●
Fred Canyon	11.60	●	●	●	●		●		O	●		●	●	●		
Horse Canyon	11.60	●	●	●	●		●		O	●		●	●	●		
La Posta Creek	11.70	●	●	●	●		●		●	●		●	●	●		
Simmons Canyon	11.70	●	●	●	●		●		●	●		●	●	●		
La Posta Creek	11.60	●	●	●	●		●		O	●		●	●	●		
Morena Reservoir	11.50	See Reservoirs & Lakes- Table 2-4														
Morena Creek	11.50	●	●	●	●		●		●	●		●	●	●		●
Long Valley	11.50	●	●	●	●		●		●	●		●	●	●		
Bear Valley	11.50	●	●	●	●		●		●	●		●		●		
Cottonwood Creek	11.30	●	●	●	●		●		●	●		●	●	●	●	●
Hauser Creek	11.30	●	●	●	●		●		●	●		●	●	●		●
Salazar Canyon	11.30	●	●	●	●		●		●	●		●	●	●		
Barrett Lake	11.30	See Reservoirs & Lakes- Table 2-4														

● Existing Beneficial Use

O Potential Beneficial Use

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Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters[1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE														
		MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Tijuana River Watershed - continued																
Boneyard Canyon	11.30	●	●	●	●		●		●	●		●	●	●		
Skye Valley	11.30	●	●	●	●		●		●	●		●	●	●		
Pine Valley Creek	11.41	●	●	●	●		●		●	●		●	●	●		●
Indian Creek	11.41	●	●	●	●		●		●	●		●	●	●		
Lucas Creek	11.41	●	●	●	●		●		●	●		●	●	●		
Noble Canyon	11.41	●	●	●	●		●		●	●		●	●	●		●
Los Rasalies Ravine	11.42	●	●	●	●		●		●	●		●	●	●		
Paloma Ravine	11.42	●	●	●	●		●		●	●		●	●	●		
Bonita Ravine	11.42	●	●	●	●		●		●	●		●	●	●		
Chico Ravine	11.42	●	●	●	●		●		●	●		●	●	●		
Madero Ravine	11.42	●	●	●	●		●		●	●		●	●	●		
Los Gatos Ravine	11.42	●	●	●	●		●		●	●		●	●	●		
Boiling Spring Ravine	11.42	●	●	●	●		●		●	●		●	●	●		
Agua Dulce Creek	11.42	●	●	●	●		●		●	●		●	●	●		
Escondido Ravine	11.42	●	●	●	●		●		●	●		●	●	●		
Scove Canyon	11.41	●	●	●	●		●		●	●		●	●	●		
Pine Valley Creek	11.30	●	●	●	●		●		●	●		●	●	●		●

● Existing Beneficial Use

O Potential Beneficial Use

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[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters[1,2]	Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Tijuana River Watershed - continued																
Oak Valley	11.30	●	●	●	●		●		●	●		●	●	●		●
Nelson Canyon	11.30	●	●	●	●		●		●	●		●	●	●		
Secret Canyon	11.30	●	●	●	●		●		●	●		●	●	●		
Horsethief Canyon	11.30	●	●	●	●		●		●	●		●	●	●		
Espinosa Creek	11.30	●	●	●	●		●		●	●		●	●	●		
Wilson Creek	11.30	●	●	●	●		●		●	●		●	●	●		●
Pats Canyon	11.30	●	●	●	●		●		●	●		●	●	●		
Cottonwood Creek	11.23	+							●	●		●		●		
Dry Valley	11.23	+							●	●		●		●		
BobOwens Canyon	11.23	+							●	●		●		●		
McAlmond Canyon	11.24	+							●	●		●		●		
McAlmond Canyon	11.23	+							●	●		●		●		
Rattlesnake Canyon	11.23	+							●	●		●		●		
Potrero Creek	11.25	+							●	●		●		●		
Little Potrero Creek	11.25	+							●	●		●		●		
Potrero Creek	11.23	+							●	●		●		●		
Grapevine Creek	11.23	+							●	●		●		●		

● Existing Beneficial Use

O Potential Beneficial Use

\+ Excepted From MUN (See Text)

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[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-2. BENEFICIAL USES OF INLAND SURFACE WATERS

Inland Surface Waters [1,2]	Hydrologic Unit Basin Number	BENEFICIAL USE MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Tijuana River Watershed - continued																
Bee Canyon	11.22	+							●	●		●		●		
Bee Creek	11.23	+							●	●		●		●		
Mine Canyon	11.21	+							●	●		●		●		
unnamed intermittent streams	11.81	+							●	●		●		●		
unnamed intermittent streams	11.82	+							●	●		●		●		
Campo Creek	11.84	+							●	●		●	●	●		
Diablo Canyon	11.84	+							●	●		●		●		
Campo Creek	11.83	+							●	●		●		●		
Miller Creek	11.83	+							●	●		●		●		
Campo Creek	11.82	+							●	●		●		●		
Smith Canyon	11.82	+							●	●		●		●		
unnamed intermittent streams	11.85	+							●	●		●		●		

● Existing Beneficial Use

O Potential Beneficial Use

\+ Excepted From MUN (See Text)

[1] Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.

[2] Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.

Table 2-3. BENEFICIAL USES OF COASTAL WATERS

Coastal Waters	Hydrologic Unit Basin Number	BENEFICIAL USE IND	NAV	REC 1	REC 2	COMM	BIOL	EST	WILD	RARE	MAR	AQUA	MIGR	SPWN	WARM	SHELL
Pacific Ocean		●	●	●	●	●	●		●	●	●	●	●	●		●
Dana Point Harbor		●	●	●	●	●			●	●	●		●	●		●
Del Mar Boat Basin		●	●	●	●	●			●	●	●		●	●		●
Mission Bay		●		●	●	●		●	●	●	●		●	●		●
Oceanside Harbor		●	●	●	●	●			●	●	●		●	●		●
San Diego Bay [1]		●	●	●	●	●	●	●	●	●	●		●	●		●
Coastal Lagoons																
Tijuana River Estuary	11.11			●	●	●	●	●	●	●	●		●	●		●
Mouth of San Diego River	7.11			●	●	●		●	●	●	●		●	●		●
Los Penasquitos Lagoon [2]	6.10			●	●		●	●	●	●	●		●	●		●
San Dieguito Lagoon	5.11			●	●		●	●	●	●	●		●	●		
Batiquitos Lagoon	4.51			●	●		●	●	●	●	●		●	●		
San Elijo Lagoon	5.61			●	●		●	●	●	●	●		●	●		
Aqua Hedionda Lagoon	4.31	●		●	●	●		●	●	●	●	●	●	●		●

1 Includes the tidal prisms of the Otay and Sweetwater Rivers.

2 Fishing from shore or boat permitted, but other water contact recreational (REC-1) uses are prohibited.

● Existing Beneficial Use

Table 2-3. BENEFICIAL USES OF COASTAL WATERS

Coastal Waters	Hydrologic Unit Basin Number	BENEFICIAL USE														
		IND	NAV	REC 1	REC 2	COMM	BIOL	EST	WILD	RARE	MAR	AQUA	MIGR	SPWN	WARM	SHELL
Coastal Lagoons - continued																
Buena Vista Lagoon [2]	4.21			●	●		●	O	●	●	●				●	
Loma Alta Slough	4.10			●	●			●	●	●	●					
Mouth of San Luis Rey River	3.11			●	●				●	●	●		●			
Santa Margarita Lagoon	2.11			●	●			●	●	●	●		●	●		
Aliso Creek Mouth	1.13			●	●				●	●	●					
San Juan Creek Mouth	1.27			●	●				●	●	●		●			●
San Mateo Creek Mouth	1.40			●	●		●		●	●	●		●	●		
San Onofre Creek Mouth	1.51			●	●				●	●	●		●	●		

1 Includes the tidal prisms of the Otay and Sweetwater Rivers.
2 Fishing from shore or boat permitted, but other water contact recreational (REC-1) uses are prohibited.

● Existing Beneficial Use
O Potential Beneficial Use

Table 2-4. BENEFICIAL USES OF RESERVOIRS AND LAKES

Reservoirs & Lakes	Hydrologic Unit Basin Number	BENEFICIAL USE												
		MUN	AGR	IND	PROC	GWR	FRSH	REC 1	REC 2	WARM	COLD	WILD	RARE	POW
O'Neill Lake	2.13	●	●	●	●			●	●	●	●	●	●	
Lake Skinner	2.42	●	●	●	●	O		● 1	●	●		●		
Vail Lake	2.81	●	●	●	●	●		● 1	●	●		●		
Turner Lake	3.13	●	●	●				O	●	●				
Lake Henshaw	3.31	●	●	●	●		●	● 1	●	●		●	●	●
San Dieguito Reservoir	5.21	●	●	O				●	●	●	●	●		
Lake Dixon	4.62	●	●	O				● 1	●	●	●	●		
Lake Wohlford	4.63	●	●	O				● 1	●	●	●	●		●
Lake Hodges	5.21	●	●	●	●			● 1	●	●	●	●	●	
Lake Poway	5.52	●	●	●	●			● 1	●	●	●	●		
Sutherland Lake	5.53	●	●	●	●			● 1	●	●	●	●	●	
Miramar Reservoir	6.10	●		●				● 1	●	●		●		●
Lake Murray	7.11	●		●				● 1	●	●	●	●		●
Lake Jennings	7.12	●		●				● 1	●	●	●	●		
San Vicente Reservoir	7.21	●	●	●	●			● 1	●	●	●	●		
El Capitan Reservoir	7.31	●	●	●	●			● 1	●	●	●	●	●	
Cuyamaca Reservoir	7.43	●	●	●	●			● 1	●	●	●	●	●	
Sweetwater Reservoir	9.21	●	●	●	●			●	●	●		●		
Loveland Reservoir	9.31	●	●	●	●			●	●	●	●	●		
Lower Otay Reservoir	10.31	●	●	●	●			● 1	●	●	●	●		
Upper Otay Reservoir	10.32	●	●	●	●			●	●	●	●	●		
Lake Barrett	11.30	●	●	●	●		●	●	●	●	●	●	●	
Morena Reservoir	11.50	●	●	●	●		●	● 1	●	●	●	●	●	

1 Fishing from shore or boat permitted, but other water contact recreational (REC-1) uses are prohibited.

● Existing Beneficial Use

O Potenetial Beneficial Use

Table 2-5. BENEFICIAL USES OF GROUND WATERS

Ground Water		Hydrologic Unit Basin Number	BENEFICIAL USE					
			MUN	AGR	IND	PROC	FRSH	GWR
SAN JUAN HYDROLOGIC UNIT		1.00						
Laguna	HA	1.10						
San Joaquin Hills	HSA [1]	1.11	●	●				
Laguna Beach	HSA [1]	1.12	●	●				
Aliso	HSA [2]	1.13	●	●				
Dana Point	HSA [1]	1.14	+	●				
Mission Viejo	HA	1.20						
Oso	HSA	1.21	●	●	●			
Upper Trabuco	HSA	1.22	●	●	●			
Middle Trabuco	HSA	1.23	●	●	●			
Gobernadora	HSA	1.24	●	●	●			
Upper San Juan	HSA	1.25	●	●	●			
Middle San Juan	HSA	1.26	●	●	●			

1 These beneficial uses do not apply to all lands on the coastal side of the inland boundary of the right-of-way of Pacific Coast Highway 1, and this area is excepted from the sources of drinking water policy. The beneficial uses for the remainder of HA 1.10 are as shown.

2 These beneficial uses do not apply westerly of the easterly boundary of the right-of-way of Interstate Highway 5 and this area is excepted from the sources of drinking water policy. The beneficial uses for the remainder of the hydrologic area are as shown.

● Existing Beneficial Use
O Potential Beneficial Use
+ Excepted From MUN (see text)

Table 2-5. BENEFICIAL USES OF GROUND WATERS

Ground Water		Hydrologic Unit Basin Number	BENEFICIAL USE MUN	AGR	IND	PROC	FRSH	GWR
Lower San Juan	HSA [3]	1.27	●	●	●			
Ortega	HSA	1.28	●	●	●			
San Clemente	HA	1.30						
Prima Deshecha	HSA [2]	1.31	●	●				
Segunda Deshecha	HSA	1.32	+					
San Mateo Canyon	HA [2]	1.40	●	●	●			
San Onofre	HA [2]	1.50	●	●				

2 These beneficial uses do not apply westerly of the easterly boundary of the right-of-way of Interstate Highway 5 and this area is excepted from the sources of drinking water policy. The beneficial uses for the remainder of the hydrologic area are as shown.

3 These beneficial uses do not apply to all lands on the coastal side of the inland boundary of the right-of-way of Pacific Coast Highway 1 west of the San Juan Creek channel and this area is excepted from the sources of drinking water policy. The beneficial uses for the remainder of HA 1.20 are as shown.

● Existing Beneficial Use

O Potential Beneficial Use

+ Excepted From MUN (see text)

Table 2-5. BENEFICIAL USES OF GROUND WATERS

Ground Water		Hydrologic Unit Basin Number	BENEFICIAL USE MUN	AGR	IND	PROC	FRSH	GWR
SANTA MARGARITA HYDROLOGIC UNIT		**2.00**						
Ysidora	HA [2]	2.10	●	●	●	●		
Deluz	HA	2.20	●	●	●			
Murrieta	HA	2.30	●	●	●	●		
Alud	HA	2.40	●	●	●			
Pechanga	HA	2.50	●	●	●			
Wilson	HA	2.60	●	●	O			
Cave Rocks	HA	2.70	●	●				
Aguanga	HA	2.80	●	●	●			
Oakgrove	HA	2.90	●	●				
SAN LUIS REY HYDROLOGIC UNIT		**3.00**						
Lower San Luis	HA [2]	3.10	●	●	●			
Monserate	HA	3.20						
Pala	HSA	3.21	●	●	●			
Pauma	HSA	3.22	●	●	●			
La Jolla Amago	HSA	3.23	●	●	●	●		
Warner Valley	HA	3.30						
Warner	HSA	3.31	●	●	●		●	
Combs	HSA	3.32	●	●	●			

2 These beneficial uses do not apply westerly of the easterly boundary of the right-of-way of Interstate Highway 5 and this area is excepted from the sources of drinking water policy. The beneficial uses for the remainder of the hydrologic area are as shown.

● Existing Beneficial Use

O Potential Beneficial Use

Table 2-5. BENEFICIAL USES OF GROUND WATERS

Ground Water		Hydrologic Unit Basin Number	BENEFICIAL USE MUN	AGR	IND	PROC	FRSH	GWR
CARLSBAD HYDROLOGIC UNIT		**4.00**						
Loma Alta	HA [2]	4.10	+		●			
Buena Vista Creek	HA	4.20						
El Salto	HSA [2]	4.21	●	●	O			
Vista	HSA	4.22	●	●	●			
Aqua Hedionda	HA	4.30						
Los Monos	HSA [2]	4.31	●	●	●			
Los Monos	HSA [5]	4.31	O	O	O			
Los Monos	HSA [6]	4.31	O	●	O			
Buena	HSA	4.32	●	●	●			
Encinas	HA	4.40	+					

2 These beneficial uses do not apply westerly of the easterly boundary of the right-of-way of Interstate Highway 5 and this area is excepted from the sources of drinking water policy. The beneficial uses for the remainder of the hydrologic area are as shown.

5 These beneficial use designations apply to the portion of HSA 4.31 bounded on the west by the easterly boundary of Interstate Highway 5 right-of-way; on the east by the easterly boundary of El Camino Real; and on the north by a line extending along the southerly edge of Agua Hedionda Lagoon to the easterly end of the lagoon, thence in an easterly direction to Evans Point, thence easterly to El Camino Real along the ridge lines separating Letterbox Canyon and the area draining to the Marcario Canyon.

6 These beneficial use designations apply to the portion of HSA 4.31 tributary to Agua Hedionda Creek downstream from the El Camino Real crossing, except lands tributary to Marcario Canyon (located directly southerly of Evans Point), land directly south of Agua Hedionda Lagoon, and areas west of Interstate Highway 5.

● Existing Beneficial Use
O Potential Beneficial Use
+ Excepted From MUN (see text)

Table 2-5. BENEFICIAL USES OF GROUND WATERS

Ground Water			Hydrologic Unit Basin Number	BENEFICIAL USE MUN	AGR	IND	PROC	FRSH	GWR
CARLSBAD HYDROLOGIC UNIT - Continued			4.00						
San Marcos	HA		4.50						
Batiquitos	HSA	[2,7]	4.51	●	●	●			
Batiquitos	HSA	[8]	4.51	O	O	O			
Richland	HSA	[2,7]	4.52	●	●	●			
Twin Oaks	HSA	[2,7]	4.53	●	●	●			
Escondido	HA		4.60						
San Elijo	HSA	[2]	4.61	O	●	●			
Escondido	HSA		4.62	●	●	●			
Lake Wohlford	HSA		4.63	●	●	●			

2 These beneficial uses do not apply westerly of the easterly boundary of the right-of-way of Interstate Highway 5 and this area is excepted from the sources of drinking water policy. The beneficial uses for the remainder of the hydrologic area are as shown.

7 These beneficial used do not apply to HSA 4.51 and HSA 4.52 between Highway 78 and El Camino Real and to all lands which drain to Moonlight Creek and to Encinitas Creek and this area is excepted from the sources of drinking water policy. The beneficial uses for the remainder of the subarea are as shown.

8 These beneficial use designations apply to the portion of HSA 4.51 bounded on the south by the north shore of Batiquitos Lagoon, on the west by the easterly boundary of the Interstate Highway 5 right-of-way, on the north by the subarea boundary and on the east by the easterly boundary of El Camino Real.

● Existing Beneficial Use

O Potential Beneficial Use

Table 2-5. BENEFICIAL USES OF GROUND WATERS

Ground Water		Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	FRSH	GWR
SAN DIEGUITO HYDROLOGIC UNIT		**5.00**						
Solana Beach	HA [2]	5.10	●	●	●			
Hodges	HA	5.20	●	●	●			
San Pasqual	HA	5.30	●	●	●			
Santa Maria Valley	HA	5.40						
Ramona	HSA	5.41	●	●	●	●		
Lower Hatfield	HSA	5.42	●	●	●			
Wash Hallow	HSA	5.43	●	●	●			
Upper Hatfield	HSA	5.44	●	●	●			
Ballena	HSA	5.45	●	●	●			
East Santa Teresa	HSA	5.46	●	●	●			
West Santa Teresa	HSA	5.47	●	●	●			
Santa Ysabel	HA	5.50	●	●				

2 These beneficial uses do not apply westerly of the easterly boundary of the right-of-way of Interstate Highway 5 and this area is excepted from the sources of drinking water policy. The beneficial uses for the remainder of the hydrologic area are as shown.

● Existing Beneficial Use

O Potential Beneficial Use

Table 2-5. BENEFICIAL USES OF GROUND WATERS

Ground Water		Hydrologic Unit Basin Number	BENEFICIAL USE					
			MUN	AGR	IND	PROC	FRSH	GWR
PENASQUITOS HYDROLOGIC UNIT		**6.00**						
Miramar Reservoir	HA [2,9]	6.10	●	●	●			
Poway	HA	6.20	●	●	O			
Scripps	HA	6.30	+					
Miramar	HA [10]	6.40	+		O			
Tecolote	HA	6.50	+					
SAN DIEGO HYDROLOGIC UNIT		**7.00**						
Lower San Diego	HA	7.10						
Mission San Diego	HSA [2]	7.11	O	●	●	●		
Santee	HSA	7.12	●	●	●	●		
El Cajon	HSA	7.13	●	●	O	O		
Coches	HSA	7.14	●	●	●	O		
El Monte	HSA	7.15	●	●	●	O		
San Vicente	HA	7.20	●	●				
El Capitan	HA	7.30	●	●				
Boulder Creek	HA	7.40	●	●				

2 These beneficial uses do not apply westerly of the easterly boundary of the right-of-way of Interstate Highway 5 and this area is excepted from the sources of drinking water policy. The beneficial uses for the remainder of the hydrologic area are as shown.

9 These beneficial uses do not apply to all lands which drain to Los Penasquitos Canyon from 1.5 miles west of Interstate Highway 15 and this area is excepted from the sources of drinking water policy. The beneficial uses for the remainder of the hydrologic area are as shown.

10 These beneficial uses do not apply west of Interstate Highway 15. The beneficial uses for the remainder of the hydrologic area are as shown.

● Existing Beneficial Use

O Potential Beneficial Use

+ Excepted From MUN (see text)

Table 2-5. BENEFICIAL USES OF GROUND WATERS

Ground Water		Hydrologic Unit Basin Number	BENEFICIAL USE					
			MUN	AGR	IND	PROC	FRSH	GWR
PUEBLO SAN DIEGO HYDROLOGIC UNIT		**8.00**						
Point Loma	HA	8.10	+					
San Diego Mesa	HA	8.20	+					
National City	HA [2]	8.30	●					
SWEETWATER HYDROLOGIC UNIT		**9.00**						
Lower Sweetwater	HA	9.10						
Telegraph	HSA	9.11	O	●	O			
La Nacion	HSA	9.12	●	●	●			
Middle Sweetwater	HA	9.20	●	●	●			
Upper Sweetwater	HA	9.30	●	●				
OTAY HYDROLOGIC UNIT		**10.00**						
Coronado	HA	10.10	+					
Otay Valley	HA	10.20	●	●	●			
Otay Valley	HA [11]	10.20	+		●			
Dulzura	HA	10.30	●	●	●			

2 These beneficial uses do not apply westerly of the easterly boundary of the right-of-way of Interstate Highway 5 and this area is excepted from the sources of drinking water policy. The beneficial uses for the remainder of the hydrologic area as shown.

11 This beneficial use designation applies to the portion of Otay HA (10.20), limited to lands within and tributary to Salt Creek on the east and Poggi Canyon on the west and including the several smaller drainage courses between these tributaries of the Otay River.

● Existing Beneficial Use
O Potential Beneficial Use
+ Excepted From MUN (see text)

Table 2-5. BENEFICIAL USES OF GROUND WATERS

Ground Water		Hydrologic Unit Basin Number	BENEFICIAL USE					
			MUN	AGR	IND	PROC	FRSH	GWR
TIJUANA HYDROLOGIC UNIT		**11.00**						
Tijuana Valley	HA	11.10						
San Ysidro	HSA [12]	11.11	●	●	●			
Water Tanks	HSA	11.12	O	O	O			
Potrero	HA	11.20	●	●	●			
Barrett Lake	HA	11.30	●	●				
Monument	HA	11.40	●	●				
Morena	HA	11.50	●	●				
Cottonwood	HA	11.60	●	●				
Cameron	HA	11.70	●	●				
Campo	HA	11.80	●	●	●			

[12] These beneficial uses do not apply west of Hollister Street and this area is excepted from the sources of drinking water policy. The beneficial uses for the remainder of the hydrologic area are as shown.

● Existing Beneficial Use

O Potential Beneficial Use

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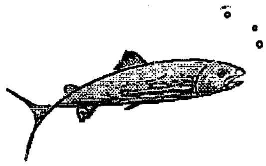
CHAPTER 3
WATER QUALITY OBJECTIVES

3. WATER QUALITY OBJECTIVES

INTRODUCTION



The purpose of this chapter is to designate the water quality objectives for all surface and ground waters in the Region. These water quality objectives are necessary to protect the beneficial uses designated in Chapter 2.

California Water Code Section 13050(h) defines "*water quality objectives*" as follows:

"The 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."

By definition, water quality objectives must protect the most sensitive of the beneficial uses which have been designated for a water body. Water quality objectives may be numerical values for water quality constituents or narrative descriptions. Water quality objectives must be based upon sound scientific water quality criteria needed to protect the most sensitive of the beneficial uses which have been designated for a water body. Water quality objectives must be as stringent or more stringent than water quality criteria. Numerous key terms used throughout this chapter are defined in the Glossary which is included as Appendix A of this Basin Plan.

WATER QUALITY OBJECTIVES

Like the designation of beneficial uses, the designation of water quality objectives must satisfy all of the applicable requirements of the California Water Code, Division 7 (Porter-Cologne Act) and the Clean Water Act. California Water Code, Section 13241 provides that each Regional Water Quality Control Board shall establish water quality objectives for the waters of the state i.e. (ground and surface waters) which, in the Regional Board's judgement, are necessary for the reasonable protection of beneficial uses and for the prevention of nuisance. The Clean Water Act Section 303 requires that the State adopt water quality objectives (called water quality criteria) for surface waters. The requirements of both Acts applicable to the designation of water quality objectives are summarized below.

WATER QUALITY OBJECTIVE DESIGNATION UNDER THE PORTER-COLOGNE WATER QUALITY CONTROL ACT

Significant points regarding the designation of water quality objectives for waters of the state under the Porter-Cologne Act are:

- Water quality objectives must ensure the reasonable protection of beneficial uses and the prevention of nuisance, recognizing that it may be possible for the quality of the water to be changed to some degree without unreasonably affecting beneficial uses. (California Water Code §13241)

- Protection of beneficial uses may not require that water quality objectives protect the existing quality of water. However, water quality objectives cannot be set at a level that would permit water quality to change to such a degree that the beneficial uses designated for protection are unreasonably affected. (California Water Code §13241)

- Water quality objectives must ensure that the water will be suitable for the beneficial uses which have been designated for protection. (California Water Code §13241)

- In establishing water quality objectives, the Regional Board must provide for the reasonable protection of all beneficial uses which are designated for protection, taking into account existing water quality, environmental and economic considerations. California Water Code Section 13241 provides that the Regional Board shall consider, but is not limited to, the following factors in establishing water quality objectives:

  ☞ Past, present, and probable future beneficial uses of water;

  ☞ Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto;

☞ Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area;

☞ Economic considerations;

☞ The need for developing housing within the region; and

☞ The need to develop and use recycled water.

WATER QUALITY OBJECTIVE DESIGNATION UNDER THE CLEAN WATER ACT

Section 303 of the Clean Water Act requires the State to submit to the U.S. Environmental Protection Agency (US EPA) for approval, all new or revised water quality standards which are established for surface and ocean waters. Under federal terminology, water quality standards consist of the beneficial uses enumerated in Chapter 2 and the water quality objectives contained in this chapter. Significant points regarding the designation of water quality objectives for surface waters pursuant to the Clean Water Act are:

- Water quality objectives are called water quality criteria in the Clean Water Act.

- Water quality criteria (i.e., water quality objectives) are defined as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular surface water use. Water quality criteria are qualitative or quantitative estimates of the concentration of a water constituent which, when not exceeded, will ensure water quality sufficient to protect a designated beneficial use. Water quality criteria should reflect the latest scientific knowledge on the identifiable effects of pollutants on public health and welfare, aquatic life, and recreation [40 CFR 131.3(b)].

- States must adopt water quality criteria (i.e., water quality objectives) that protect designated surface water beneficial uses. For surface waters with multiple beneficial use designations, the water quality criteria shall support the most sensitive beneficial use [40 CFR 131.11(a)(1)].

- States must adopt water quality criteria (i.e., water quality objectives) for surface waters which are based upon US EPA guidance documents or other scientifically defensible methods. Economics are not considered in the development of water quality criteria for surface waters under the Clean Water Act [40 CFR 131.11(b)].

- Water quality criteria (i.e., water quality objectives) for surface waters can be either numeric or narrative specifications for water quality based on physical, chemical and toxicological data, and scientific judgement. Where numerical specifications cannot be established, narrative criteria must be established based upon biomonitoring methods [40 CFR 131.11(b)].

- The term "*water quality criteria*" has two meanings under the federal Clean Water Act. In one context, water quality criteria is equivalent to water quality objectives. In other words, water quality criteria is the standard that a state must impose to protect a surface water beneficial use. In another context, the term "*water quality criteria*" refers to scientific information US EPA has developed on the relationship that the effect of a constituent concentration has on human health, aquatic life, or other uses of water. US EPA has published information in documents such as the "*Gold Book*" (US EPA, 1986) and in various individual criteria documents.

STATE AND FEDERAL ANTIDEGRADATION POLICIES

Water quality objectives must also conform to US EPA regulations covering antidegradation (40 CFR Section 131.12) and State Board Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California*. Application of the antidegradation provisions to the standard setting process requires supporting documentation and appropriate findings whenever a standard (water quality objective or beneficial use) is made less restrictive to accommodate the discharge of pollutants or other activities of man.

FEDERAL ANTIDEGRADATION POLICY

US EPA water quality standards regulations mandated under the Clean Water Act require that each state have an "*antidegradation*" policy for surface waters [40 CFR 131.6(d)]. Each state's policy must, at a minimum, be consistent with the following three principles (hereinafter referred to as the "*federal antidegradation policy*") set forth in 40 CFR 131.12(a):

(1) The first principle requires that all existing instream water uses shall be maintained and protected.

(2) The second principle protects waters whose quality exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water. For these waters, limited water quality degradation may be allowed if necessary to accommodate important economic or social development in the area in which the waters are located and if the water quality is adequate to protect existing uses fully.

(3) The third principle requires maintenance and protection of all high quality waters which constitute an outstanding national resource.

The federal antidegradation policy serves as a "*catchall*" water quality standard, to be applied where other water quality standards are not specific enough for a particular water body or where other water quality standards do not address a particular pollutant. The policy also serves to provide guidance for standard setting and for other regulatory decisions, to determine when additional control measures should be required to maintain instream beneficial uses or to maintain high quality surface waters. The federal antidegradation policy is not an absolute bar to reductions in surface water quality. Rather, the policy requires that reductions in water quality be justified as necessary to accommodate important social and economic development.

STATE ANTIDEGRADATION POLICY

Water quality objectives for waters of the state must conform to State Board Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California*. Under State Board Resolution No. 68-16, which applies to all waters of the State, the Regional Board and the State Board must have sufficient grounds to adopt findings which demonstrate that any water quality degradation will:

(1) Be consistent with the maximum benefit to the people of the State;

(2) Not unreasonably affect existing and potential beneficial uses of such water; and

(3) Not result in water quality less than described in the Basin Plan.

Resolution No. 68-16 establishes a general principle of nondegradation, with flexibility to allow some changes in water quality which is in the best interests of the State. Changes in water quality are allowed only where it is in the public interest and beneficial uses are not unreasonably affected. The State Board has interpreted Resolution No. 68-16 as incorporating the three part principles set forth in the federal antidegradation policy. The terms and conditions of Resolution No. 68-16 serve as a general narrative water quality objective in all state water quality control plans. A reprint of Resolution No. 68-16 is provided in the back of this Chapter on page 3-19.

DESIGNATED WATER QUALITY OBJECTIVES

The water quality objectives designated for the waters of the San Diego Region are listed below. These water quality objectives are necessary to protect existing and potential beneficial uses described in Chapter 2 and to protect existing high quality waters of the State.

The water quality objectives will be achieved primarily through the establishment of waste discharge requirements, and through the implementation of this water quality control plan. The Regional Board, in establishing waste discharge requirements, will consider potential effects on beneficial uses within the area of influence of the discharge, the existing quality of receiving waters, and the appropriate water quality objectives. The Regional Board will make a finding as to the beneficial uses to be protected within the area of influence of the discharge and establish waste discharge requirements to protect those uses and to meet water quality objectives.

The water quality objectives are stated in italics and arranged first by the water body type to which they apply (e.g., all waters; all ocean waters; and all inland surface, enclosed bay and estuaries, coastal lagoons, and ground waters). Within each water body type, the water quality objectives are alphabetized by constituent.

In most cases the water quality objective is preceded by a general description of the constituent limited by the objective. The objectives vary in applicability and scope, reflecting the variety of beneficial uses of water which have been identified. Where numerical limits are specified, they represent the maximum levels of constituents that will allow the beneficial use to continue unimpaired. In other cases, an objective may tolerate natural or "*background*" levels of certain substances or characteristics but no increases over those values, or may express a limit in terms of not adversely affecting beneficial uses. An adverse effect or impact on a beneficial use occurs where there is an actual or threatened loss or impairment of that beneficial use.

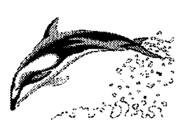
GENERAL ANTIDEGRADATION OBJECTIVE

The following objective shall apply to all waters of the State within the Region.

General Antidegradation Water Quality Objective:

Wherever the existing quality of water is better than the quality of water established herein as objectives, such existing quality shall be maintained unless otherwise provided by the provisions of the State Water Resources Control Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California", including any revisions thereto, or the federal Antidegradation Policy, 40 CFR 131.12 (for surface waters only).

OCEAN WATERS



The following objectives shall apply to all ocean waters of the State within the Region:

OCEAN PLAN AND THERMAL PLAN

Ocean Plan and Thermal Plan Water Quality Objective:

The terms and conditions of the State Board's "Water Quality Control Plan for Ocean Waters of California" (Ocean Plan), "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 revisions thereto are incorporated into this Basin Plan by reference. The terms and conditions of the Ocean Plan and Thermal Plan apply to the ocean waters within this Region.

DISSOLVED OXYGEN

Adequate dissolved oxygen is vital for aquatic life. Depression of dissolved oxygen levels can lead to fish kills and odors resulting from anaerobic decomposition. Dissolved oxygen content in water is a function of water temperature and salinity.

Water Quality Objective for Dissolved Oxygen:

The dissolved oxygen concentration in ocean waters shall not at any time be depressed more than 10 percent from that which occurs naturally, as the result of the discharge of oxygen demanding waste materials.

HYDROGEN ION CONCENTRATION (pH)

The hydrogen ion concentration of water is called "*pH*". The acidity or alkalinity of water is measured by the pH factor. The pH scale ranges from 1 to 14, with 1 to 6.9 being acid, 7.1 to 14 being alkaline, and 7.0 being neutral. Ranges (pH) of 6.5 to 9.0 are considered harmless. A change of one point on this scale represents a ten-fold increase in acidity or alkalinity. Many pollutants can alter the pH, raising or lowering it excessively. In some cases even small changes in pH can harm aquatic biota. The pH changes can alter the chemical form of certain constituents, thereby increasing their bioavailability and toxicity. For example a decrease in pH can result in an increase in dissolved metal concentrations. Ammonia, which is a major component of sewage discharges, can be completely safe at pH 7.0 and extremely toxic to fish at pH 8.5 for the same total ammonia concentration.

Water Quality Objective for pH:

The pH value shall not be changed at any time more than 0.2 pH units from that which occurs naturally.

INLAND SURFACE WATERS, ENCLOSED BAYS AND ESTUARIES, COASTAL LAGOONS AND GROUND WATERS

The following objectives apply to all inland surface waters, enclosed bays and estuaries, coastal lagoons, and ground waters of the Region as specified below.

THERMAL PLAN

Thermal Plan Water Quality Objective:

The terms and conditions of the State Board's "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 revisions thereto are incorporated into this Basin Plan by reference. The terms and conditions of the Thermal Plan apply to the Inland Surface Waters, Enclosed Bays and Estuaries, and Coastal Lagoons within this Region.

AGRICULTURAL SUPPLY BENEFICIAL USE

Water Quality Objective for Agricultural Supply:

Waters designated for use as agricultural supply (AGR) shall not contain concentrations of chemical constituents in amounts that adversely affect such beneficial use.

AMMONIA, UN-IONIZED

Ammonia is a pungent, colorless, gaseous alkaline compound of nitrogen and hydrogen that is highly soluble in water. Un-ionized ammonia (NH_3) is toxic to fish and other aquatic organisms. In water, NH_3 exists in equilibrium with ammonium (NH_4^+) and hydroxide (OH^-) ions. The proportions of each change as the temperature, pH, and salinity of the water change.

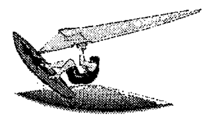
Water Quality Objective for Un-ionized Ammonia:

The discharge of wastes shall not cause concentrations of un-ionized ammonia (NH_3) to exceed 0.025 mg/l (as N) in inland surface waters, enclosed bays and estuaries and coastal lagoons.

BACTERIA - TOTAL AND FECAL COLIFORM

Fecal bacteria are part of the intestinal flora of warm-blooded animals. Their presence in surface waters is an indicator of pollution. Total coliform numbers can include non-fecal bacteria, so additional testing is often done to confirm the presence and numbers of fecal coliform bacteria. Water quality objectives for numbers of total and fecal coliform vary with the uses of the water, as shown below.

(1) Waters Designated for Contact Recreation (REC-1) Beneficial Use



Water Quality Objective for Contact Recreation:

In waters designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period, shall not exceed a log mean of 200/100 ml, nor shall more than 10 percent of total samples during any 30-day period exceed 400/100 ml.

(2) Waters Designated for Non-Contact Recreation (REC-2) Beneficial Use

Water Quality Objective for Non-contact Recreation:

In waters designated for non-contact recreation (REC-2) and not designated for contact recreation (REC-1), the average fecal coliform concentrations for any 30-day period, shall not exceed 2,000/100 ml nor shall more than 10 percent of samples collected during any 30-day period exceed 4,000/100 ml.

(3) Waters Where Shellfish May Be Harvested for Human Consumption (SHELL) Beneficial Use

Water Quality Objective for Shellfish Harvesting:

In waters where shellfish harvesting for human consumption, commercial or sports purposes is designated (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 10 percent of the samples collected during any 30-day period exceed 230/100 ml for a five-tube decimal dilution test or 330/100 ml when a three-tube decimal dilution test is used.

(4) Bays and Estuaries

Water Quality Objective for Bays and Estuaries:

In bays and estuaries, the most probable number of coliform organisms in the upper 60 feet of the water column shall be less than 1,000 per 100 ml (10 per ml); provided that not more than 20 percent of the samples at any sampling station, in any 30-day period, may exceed 1,000 per 100 ml (10 per ml), and provided further that no single sample when verified by a repeat sample taken within 48 hours shall exceed 10,000 per 100 (100 per ml).

BACTERIA - E. COLI AND ENTEROCOCCI

(1) San Diego Bay

Water Quality Objective for E. Coli:

In San Diego Bay where bay waters are used for whole fish handling, the density of E. coli shall not exceed 7 per ml in more than 20 percent of any 20 daily consecutive samples of bay water.

(2) Waters Designated for Contact Recreation (REC-1) Beneficial Use

The US EPA published E. coli and enterococci bacteriological criteria applicable to waters designated for contact recreation (REC-1) in the Federal Register, Vol. 51, No. 45, Friday, March 7, 1986, 8012-8016.

Water Quality Objective for Enterococci and E. Coli:

US EPA BACTERIOLOGICAL CRITERIA FOR WATER CONTACT RECREATION[1,2] (in colonies per 100 ml)

	Freshwater enterococci	Freshwater E. Coli	Saltwater enterococci
Steady State (all areas)	33	126	35
Maximum (designated beach)	61	235	104
(moderately or lightly used area)	108	406	276
(infrequently used area)	151	576	500

[1]The criteria were published in the Federal Register, Vol. 51, No. 45/Friday, March 7, 1986/8012-8016. The criteria are based on:

Cabelli, V. J. 1983. Health Effects Criteria for Marine Recreational Waters. U. S. Environmental Protection Agency, EPA 600/1-80-031, Cincinnati, Ohio.

Dufour, A. P. 1984. Health Effects Criteria for Fresh Recreational Waters. U. S. Environmental Protection Agency, EPA 600/1-84-004, Cincinnati, Ohio.

[2]The EPA criteria apply to water contact recreation only. The criteria provide for a level of protection based on the frequency of usage of a given water contact recreation area. The criteria may be employed in special studies within this Region to differentiate between pollution sources or to supplement the current coliform objectives for water contact recreation.

BIOSTIMULATORY SUBSTANCES

Excessive growth of algae and/or other aquatic plants can degrade water quality. Algal blooms sometimes occur naturally; however, they are often the result of waste discharges or nonpoint source pollutants. Algal blooms depress the dissolved oxygen content of water and can result in fish kills. Algal blooms can also lead to problems with taste, odors, color, and increased turbidity. Floating algal scum and algal mats are also an aesthetically unpleasant nuisance. This general condition is known as eutrophication.

Water Quality Objectives for Biostimulatory Substances:

Inland surface waters, bays and estuaries and coastal lagoon waters shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growths cause nuisance or adversely affect beneficial uses.

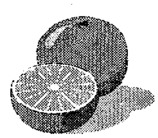
Concentrations of nitrogen and phosphorus, by themselves or in combination with other nutrients, shall be maintained at levels below those which stimulate algae and emergent plant growth. Threshold total phosphorus (P) concentrations shall not exceed 0.05 mg/l in any stream at the point where it enters any standing body of water, nor 0.025 mg/l in any standing body of water. A desired goal in order to prevent plant nuisance in streams and other flowing waters appears to be 0.1 mg/l total P. These values are not to be exceeded more than 10% of the time unless studies of the *specific water body in question clearly show that water quality objective changes are permissible and changes are approved by the Regional Board. Analogous threshold values have not been set for nitrogen compounds; however, natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N:P = 10:1 , on a weight to weight basis shall be used.*

Inland surface waters shall not contain biostimulatory substances in concentrations in excess of the numerical objectives described in Table 3-2.

Note - Certain exceptions to the above water quality objectives are described in Chapter 4 in the sections titled Discharges to Coastal Lagoons from Pilot Water Reclamation Projects and Discharges to Inland Surface Waters.

BORON

Boron occurs as sodium borate (borax) or as calcium borate (colemanite) in mineral deposits and natural waters of southern California. Boron is not considered harmful in drinking waters in concentrations up to 30 mg/l. Boron is an essential element for the growth of plants but there is no evidence that it is required by animals. Naturally occurring concentrations of boron should have no effect on aquatic life. Concentrations of boron in irrigation waters in excess of 0.75 mg/l may be deleterious to sensitive plants such as citrus. The maximum safe concentration of boron for even the most tolerant plants is about 4.0 mg/l. The United States Environmental Protection Agency (US EPA) has established a water quality criterion for boron of 0.75 mg/l for long term-term irrigation on sensitive crops. This criterion is found in *Quality Criteria for Water, 1986* - the "*Gold Book*". Additional information regarding boron concentrations in irrigation waters is presented in Table 3-1.



Water Quality Objectives for Boron:

Inland surface waters shall not contain boron in concentrations in excess of the numerical objectives described in Table 3-2.

Ground waters shall not contain boron in concentrations in excess of the numerical objectives described in Table 3-3.

CHLORIDES

Most waters contain chlorides because they are present in many rock types and are very soluble in water. Chlorides may be of natural mineral origin or derived from (a) seawater intrusion of ground water supplies, (b) salts spread on fields for agricultural purposes, (c) human or animal sewage or (d) industrial wastes. Chlorides may impart a salty taste to drinking water in concentrations between 100 - 700 mg/l. The secondary drinking water standard for chlorides is 500 mg/l. Elevated chloride concentrations in waters used for industrial process and supply can significantly increase the corrosion rate of steel and aluminum. High chloride concentrations can be toxic to plant life. A safe concentration of chloride for irrigation water is considered to be in the range of 100 - 140 mg/l. Irrigation with water containing 140 - 350 mg/l of chloride may cause slight to moderate plant injury. Additional information regarding chloride concentrations in irrigation waters is presented in Table 3-1.

Water Quality Objectives for Chlorides:

Inland surface waters shall not contain chlorides in concentrations in excess of the numerical objectives described in Table 3-2.

Ground waters shall not contain chlorides in concentrations in excess of the numerical objectives described in Table 3-3.

COLOR

Color in water may arise naturally, such as from minerals, plant matter, or algae, or may be caused by industrial pollutants. Color is primarily an aesthetic consideration, although it can discolor clothes and food. The secondary drinking water standard for color is 15 color units.

Water Quality Objectives for Color:

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

The natural color of fish, shellfish or other resources in inland surface waters, coastal lagoon or bay and estuary shall not be impaired.

Inland surface waters shall not contain color in concentrations in excess of the numerical objectives described in Table 3-2.

Ground waters shall not contain color in concentrations in excess of the numerical objectives described in Table 3-3.

DISSOLVED OXYGEN

Adequate dissolved oxygen levels are vital for aquatic life. Depression of dissolved oxygen levels can lead to fish kills and odors resulting from anaerobic decomposition. Dissolved oxygen content in water is a function of water temperature and salinity.

Water Quality Objective for Dissolved Oxygen:

Dissolved oxygen levels shall not be less than 5.0 mg/l in inland surface waters with designated MAR or WARM beneficial uses or less than 6.0 mg/l in waters with designated COLD beneficial uses. The annual mean dissolved oxygen concentration shall not be less than 7 mg/l more than 10% of the time.

FLOATING MATERIAL

Floating material is an aesthetic nuisance as well as a substrate for algae and insect vectors.

Water Quality Objective for Floating Material:

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

FLUORIDE

Fluoride does not naturally occur in high concentrations in surface waters, but may occur in detrimental concentrations in ground waters. Fluoride, in sufficient quantities, can adversely affect waters used as industrial process or supply in food, beverages, and pharmaceutical industries. The presence of optimal concentrations of fluoride in drinking water supplies can reduce dental decay, especially among children. However, fluoride concentrations in excess of approximately 1.0 mg/l can increase the risk of mottled enamel in children and dental fluorosis in adults.

Water Quality Objectives for Fluoride:

Inland surface waters shall not contain fluoride in concentrations in excess of the numerical objectives described in Table 3-2.

Ground waters shall not contain fluoride in concentrations in excess of the numerical objectives described in Table 3-3.

HYDROGEN ION CONCENTRATION (pH)

The hydrogen ion concentration of water is called "*pH*". The acidity or alkalinity of water is measured by the pH factor. The pH scale ranges from 1 to 14, with 1 to 6.9 being acid, 7.1 to 14 being alkaline, and 7.0 being neutral. Ranges (pH) of 6.5 to 9.0 are considered harmless. A change of one point on this scale represents a ten-fold increase in acidity or alkalinity. Many pollutants can alter the pH, raising or lowering it excessively. In some cases even small changes in pH can harm aquatic biota. The pH changes can alter the chemical form of certain constituents, thereby increasing their bioavailability and toxicity. For example, a decrease in pH can result in an increase in dissolved metal concentrations. Ammonia, which is a major component of sewage discharges, can be completely safe at pH 7.0 and extremely toxic to fish at pH 8.5 for the same total ammonia concentration.

Water Quality Objectives for pH:

Changes in normal ambient pH levels shall not exceed 0.2 units in waters with designated marine (MAR), or estuarine (EST), or saline (SAL) beneficial uses. Changes in normal ambient pH levels shall not exceed 0.5 units in fresh waters with designated cold freshwater habitat (COLD) or warm freshwater habitat (WARM) beneficial uses.

In bays and estuaries the pH shall not be depressed below 7.0 nor raised above 9.0.

In inland surface waters the pH shall not be depressed below 6.5 nor raised above 8.5.

INORGANIC CHEMICALS - PRIMARY STANDARDS

Water Quality Objective for Domestic or Municipal supply:

Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of inorganic chemicals in excess of the maximum contaminant levels set forth in California Code of Regulations, Title 22, Table 64431-A of Section 64431 (Inorganic Chemicals) and Table 64431-B of Section 64431 (Fluoride) which are incorporated by reference into this plan. These incorporations by reference are prospective including future changes to *the incorporated provisions as the changes take effect. (See Tables 3-4 and 3-5.)*

Table 3-4. Maximum Contaminant Levels for Inorganic Chemicals specified in Table 64431-A of Section 64431 of Title 22 of the California Code of Regulations as amended January 3, 1995.

Chemical	Maximum Contaminant Level, mg/l
Aluminum	1.
Antimony	0.006
Arsenic	0.05
Asbestos	7 MFL*
Barium	1.
Beryllium	0.004
Cadmium	0.005
Chromium	0.05
Cyanide	0.2
Mercury	0.002
Nickel	0.1
Nitrate (as NO_3)	45.
Nitrate + Nitrite(sum as nitrogen)	10.
Nitrite (as nitrogen)	1.
Selenium	0.05
Thallium	0.002

* MFL = million fibers per liter, MCL for fibers exceeding 10 um in length.

IRON

Iron may be present in water due to natural origin, corrosion of metallic iron and its alloys by water in the presence of oxygen, and industrial waste discharges containing iron. Iron is undesirable in domestic water supplies because it causes unpleasant tastes, deposits on food during cooking, stains and discolors laundry and plumbing fixtures. The secondary drinking water standard for iron is 0.3 mg/l.

Water Quality Objectives for Iron:

Inland surface waters shall not contain iron in concentrations in excess of the numerical objectives described in Table 3-2.

Ground waters shall not contain iron in concentrations in excess of the numerical objectives described in Table 3-3.

MANGANESE

Manganese is undesirable in domestic water supplies because it causes unpleasant tastes, deposits on food during cooking, stains and discolors laundry and plumbing fixtures, and fosters the growth of some microorganisms in reservoirs, filters, and distribution systems. The secondary drinking water standard for manganese is 0.05 mg/l.

Water Quality Objectives for Manganese:

Inland surface waters shall not contain manganese in concentrations in excess of the numerical objectives described in Table 3-2.

Ground waters shall not contain manganese in concentrations in excess of the numerical objectives described in Table 3-3.

METHYLENE BLUE - ACTIVATED SUBSTANCES (MBAS)

The MBAS test measures the presence of anionic surfactant (commercial detergent) in water. Positive test results can be used to indicate the presence of domestic wastewater. The secondary drinking water standard for MBAS is 0.5 mg/l.

Water Quality Objectives for MBAS:

Inland surface waters shall not contain MBAS in concentrations in excess of the numerical objectives described in Table 3-2.

Ground waters shall not contain MBAS in concentrations in excess of the numerical objectives described in Table 3-3.

Table 3-5. Limiting and Optimum Concentrations for Fluoride specified in Table 64431-B of Section 64431 of Title 22 of the California Code of Regulations as amended January 3, 1995.

Annual Average of Maximum Daily Air Temperature		Fluoride Concentration, mg/l			
Degrees Fahrenheit	**Degrees Celsius**	**lower**	**optimum**	**upper**	**MCL**
53.7 and below	12.0 and below	0.9	1.2	1.7	2.4
53.8 to 58.3	12.1 to 14.6	0.8	1.1	1.5	2.2
58.4 to 63.8	14.7 to 17.6	0.8	1.0	1.3	2.0
63.9 to 70.6	17.7 to 21.4	0.7	0.9	1.2	1.8
70.7 to 79.2	21.5 to 26.2	0.7	0.8	1.0	1.6
79.3 to 90.5	26.3 to 32.5	0.6	0.7	0.8	1.4

NITRATE

High nitrate concentrations in domestic water supplies can be toxic to human life. Infants are particularly susceptible and may develop methemoglobinemia (blue baby syndrome). The primary drinking water standard for nitrate as NO_3 is 45 mg/l.

Water Quality Objectives for Nitrate:

Inland surface waters shall not contain nitrate (as NO_3) in concentrations in excess of the numerical objectives described in Table 3-2.

Ground waters shall not contain nitrate (as NO_3) in concentrations in excess of the numerical objectives described in Table 3-3.

OIL AND GREASE

Oil and grease can be present in water as a result of the discharge of treated wastes and the accidental or intentional dumping of wastes into sinks and storm drains. Oils and related materials have a high surface tension and are not soluble in water, therefore forming a film on the water's surface. This film can result in nuisance conditions because of offensive odors and visual impacts. Oil and grease can coat birds and aquatic organisms, adversely affecting respiration and/or thermoregulation.

Water Quality Objective for Oils, Grease, Waxes or other Materials:

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

ORGANIC CHEMICALS - PRIMARY STANDARDS

Water Quality Objectives:

Water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels specified in California Code of Regulations, Title 22, Table 64444-A of Section 64444 (Organic Chemicals) 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 3-6.)

Water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of toluene in excess of 1 mg/l.

The United States Environmental Protection Agency established a maximum contaminant level for toluene of 1 mg/l in drinking water in *Title 40, Code of Federal Regulations, Part 141.61, (40 CFR 141.61), EPA National Primary Drinking Water Regulations (40 CFR 141.61 as revised 40 FR 59570, July 1, 1991).*

Table 3-6. Maximum Contaminant Levels for Organic Chemicals specified in Table 64444-A of Section 64444 of Title 22 of the California Code of Regulations as amended January 3, 1995.

Chemical	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-Dichloroethylne	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	0.7
Monochlorobenzene	0.07
Styrene	0.1
1,1,2,2-Tetrachloroethane	0.001
Tetrachloroethylene	0.005
Toluene	0.15
1,2,4-Trichlorobenzene	0.07
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	1.75*
(b) Non-Volatile Synthetic Organic Chemicals (SOCs)	
Alachlor	0.002
Atrazine	0.003
Bentazon	0.018

Chemical	Maximum Contaminant Level, mg/l
Benzo(a)pyrene	0.0002
Carbofuran	0.018
Chlordane	0.0001
2,4-D	0.07
Dalapon	0.2
1,2-Dibromon-3-chloropropane	0.0002
Di(2-ethylhexyl)adipate	0.4
Di(2-ethylhexl)phthalate	0.004
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Ethylene Dibromide	0.00005
Glyphosate	0.7
Heptachlor	0.00001
Heptachlor Epoxide	0.00001
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.04
Molinate	0.02
Oxamyl	0.2
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)	$3x10^{-8}$
2,4,5-TP Silvex	0.05

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

PERCENT SODIUM AND ADJUSTED SODIUM ADSORPTION RATIO

Excess concentrations of sodium in irrigation water reduce soil permeability to water and air. The deterioration of sodium in irrigation water is cumulative and is accelerated by poor drainage.

Table 3-1 shows concentration guidelines for sodium, boron, chloride and other chemical constituents present in irrigation waters.

The specific water quality objective for sodium in the Basin Plan is expressed as percent sodium. Percent sodium is calculated as follows:

$$\% \text{ Na} = \frac{\text{Na}}{\text{Na} + \text{Ca} + \text{Mg} + \text{K}} \times 100\%$$

where sodium (Na), Calcium (Ca), Magnesium (Mg) and Potassium (K) are expressed in milliequivalent per liter (me/l).

The percent sodium objective was developed for the protection of agricultural uses from the potential hazard due to sodium in irrigation waters. The value of 60% sodium is based upon *Water Quality Criteria*, by McKee and Wolf, 1963.

McKee and Wolf note that because of all the variables involved, the classification of waters for irrigation use must be somewhat arbitrary and the limits set cannot be too rigid. The three general classifications of irrigation waters are:

CLASS	%SODIUM	DESCRIPTION
I	<30 - 60 %	Excellent to good, or suitable for most plants under most conditions.
II	30 - 75 %	Good to injurious, harmful to some plants under conditions of soil, climate and practices.
III	>70 - 75 %	Injurious to unsatisfactory, unsuitable under most conditions.

Since the publication of the percent sodium criteria, technical research has resulted in the development of more applicable criteria for addressing the potential sodium hazard in irrigation water.

The sodium adsorption ratio (SAR) and adjusted sodium adsorption ratios (Adj. SAR) are measures of the potential hazard in soils due to sodium. SAR and Adj. SAR are similar to percent sodium in that their calculated values provide an indication of a soil's potential for permeability and potential aeration problems. However, by taking into consideration the soil's sodicity and the exchange phases between Ca, Na and Mg, the SAR and Adj. SAR predict potential sodium build up in soils. The Adj. SAR calculation further takes into account the effects of carbonate and bicarbonate ion concentrations of a soil. Adj. SAR is the most common method for determining sodium hazard in irrigation water at the present time.

The calculation for SAR is as follows:

$$\text{SAR} = \frac{\text{Na}}{\sqrt{\frac{(\text{Ca} + \text{Mg})}{2}}}$$

where Na, Ca and Mg are in me/l.

The calculation for Adj. SAR is as follows:

$$\text{Adj. SAR} = \frac{\text{Na}}{\sqrt{\frac{(\text{Ca}_x + \text{Mg})}{2}}}$$

where Na and Mg are in me/l.

Ca_x is a modified Ca value, calculated using the Suarez table (Table 3-3, contained in *Irrigation with Reclaimed Municipal Wastewater, A Guidance Manual*, California State Water Resources Control Board, Report Number 84-1, July 1984). Ca_x takes into account salinity (EC_w), the HCO_3/CO_3 ratio (me/l) and the estimated partial pressure of CO_2 in the top few millimeters of the soil (P_{CO2} = 0.0007 atmospheres).

Water Quality Objectives for Sodium:

Inland surface waters shall not contain percent sodium in excess of the numerical objectives described in Table 3-2.

Ground waters shall not contain percent sodium in excess of the numerical objectives described in Table 3-3.

In some cases, adjusted sodium adsorption ratio may be a better indicator of the potential sodium hazard in irrigation water than percent sodium. The Regional Board Executive Officer may authorize the use of adjusted sodium absorption ratio instead of *percent sodium to indicate the potential sodium hazard. In such cases, the adjusted sodium adsorption ratio shall not exceed the slight to moderate range of values referenced in Table 3-1 "Guidelines for Interpretation of Water Quality for Irrigation".*

PESTICIDES

Pesticides can enter surface and ground waters directly through industrial process discharges, agricultural discharge, spillage and illegal dumping. Pesticides can also enter surface and ground waters indirectly by drifting away from areas where pesticides are being sprayed, through surface runoff from treated fields, and by leaching or return flows from irrigation. Pesticides can concentrate in plant or animal tissues and many are considered to be carcinogenic to humans. Although many pesticides are designed to deteriorate rapidly when exposed to sunlight and air, they may persist for months or years in water.

California Code of Regulations, Title 22, Table 64444-A of Section 64444 (Organic Chemicals) establishes maximum contaminant levels for pesticides in drinking water. (See water quality objective for Organic Chemicals).

Water Quality Objectives for Pesticides:

No individual pesticide or combination of pesticides shall be present in the water column, sediments or biota at concentration(s) that adversely affect beneficial uses. Pesticides shall not be present at levels which will bioaccumulate in aquatic organisms to levels which are harmful to human health, wildlife or aquatic organisms.

Water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of pesticides in excess of the maximum contaminant levels specified in California Code of Regulations, Title 22, Table 64444-A of Section 64444 (Organic Chemicals) 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 3-6)

PHENOLIC COMPOUNDS

Phenolic compounds are in widespread use as industrial and agricultural chemical intermediates for the preparation of other chemicals. These organic compounds are byproducts of petroleum refining, tanning, and textile, dye, and resin manufacturing. Low concentrations cause taste and odor problems in water, higher concentrations can kill aquatic life and humans. Phenol is occasionally referred to as "*carbolic acid*".

Water Quality Objectives for Phenolic Compounds:

Water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of phenolics in excess of 1.0 ug/l.

Should there be any conflict between this limit and those described under the Organic Chemicals objective the more stringent standards shall apply at all times.

RADIOACTIVITY

Water Quality Objective for Radioactivity:

Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life nor 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.

Water Quality Objective for Radionuclides:

Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the levels specified in Section 64441 of Title 22 of the California Code of Regulations (Natural Radioactivity) and the maximum contaminant levels specified in Table 4 of Section 64443 of Title 22 of the California Code of Regulations (Man-Made Radioactivity), which are both incorporated by reference into this plan. These incorporations by reference are prospective including future changes to the incorporated provisions as the changes take effect. (See Table 3-7.)

Table 3-7. Maximum Contaminant Levels for Radioactivity specified in Table 4 of Section 64443 of Title 22 of the California Code of Regulations as amended January 3, 1995.

Constituent	Maximum Contaminant Level, pCi/l
Combined Radium-226 and Radium-228	5
Gross Alpha Particle Activity (including Radium-226 but excluding Radon and Uranium)	15
Tritium	20,000
Strontium-90	8
Gross Beta Particle Activity	50
Uranium	20

(pCi/l = picocuries per liter = curies x 10^{-12} per liter)

SECONDARY DRINKING WATER STANDARDS

Water Quality Objective for Domestic or Municipal Supply Water:

Water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels specified in Table 64449-A of Section 64449 of Title 22 of the California Code of Regulations (Secondary Maximum Contaminant Levels, Consumer Acceptance Limits) 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 3-8.)

SEDIMENT

Suspended sediment in surface waters can cause harm to aquatic organisms by abrasion of surface membranes, interference with respiration, and sensory perception in aquatic fauna. Suspended sediment can reduce photosynthesis in and survival of aquatic flora by limiting the transmittance of light.

Table 3-8. Secondary Maximum Contaminant Levels for Consumer Acceptance Limits specified in Table 64449-A of Section 64449 of Title 22 of the California Code of Regulations as amended January 3, 1995.

Constituents	Maximum Contaminant Levels
Aluminum	0.2 mg/l
Color	15 units
Copper	1.0 mg/l
Corrosivity	Non-corrosive
Foaming Agents (MBAS)	0.5 mg/l
Iron	0.3 mg/l
Manganese	0.05 mg/l
Odor Threshold	3 units
Silver	0.1 mg/l
Thiobencarb	0.001 mg/l
Turbidity	5 units
Zinc	5.0 mg/l

Water Quality Objective for Sediment:

The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

SUSPENDED AND SETTLEABLE SOLIDS

Suspended and settleable solids are deleterious to benthic organisms and may cause the formation of anaerobic conditions. They can clog fish gills and interfere with respiration in aquatic fauna. They also screen out light, hindering photosynthesis and normal aquatic plant growth and development.

Water Quality Objective for Suspended and Settleable Solids:

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

SULFATE

The most important sources of sulfate in native waters of the San Diego Region are the gypsiferous deposits and sulfide minerals associated with crystalline rocks. Excessive sulfate concentrations in drinking water can cause laxative effects to new users of the water supply. The recommended secondary drinking water standard for sulfate is 250 mg/l with a upper limit of 500 mg/l.

Water Quality Objectives for Sulphate:

Inland surface waters shall not contain sulphate in concentrations in excess of the numerical objectives described in Table 3-2.

Ground waters shall not contain sulphate in concentrations in excess of the numerical objectives described in Table 3-3.

TASTES AND ODORS

Undesirable tastes and odors in water may be a nuisance and may indicate the presence of pollutants. The secondary drinking water standard for odor (threshold) is 3 odor units.

Water Quality Objectives for Taste and Odor:

Waters shall not contain taste or odor producing substances at concentrations which cause a nuisance or adversely affect beneficial uses.

The natural taste and odor of fish, shellfish or other Regional water resources used for human consumption shall not be impaired in inland surface waters and bays and estuaries.

Inland surface waters shall not contain odors in concentrations in excess of the numerical objectives described in Table 3-2.

Ground waters shall not contain odors in concentrations in excess of the numerical objectives described in Table 3-3.

TEMPERATURE

Waste discharges can cause temperature changes in the receiving waters which adversely affect the aquatic biota. Discharges most likely to cause these temperature effects are cooling water discharges from power plants.

Water Quality Objectives for Temperature:

The natural receiving water temperature of intrastate 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.

At no time or place shall the temperature of any COLD water be increased more than 5°F above the natural receiving water temperature.

TOTAL DISSOLVED SOLIDS

Dissolved solids in natural waters may consist of carbonates, bicarbonates, chlorides, sulfates, phosphates, nitrates, magnesium, sodium, iron, manganese and other substances. The recommended secondary drinking water standard for total dissolved solids is 500 mg/l with a upper limit of 1000 mg/l due to taste considerations. High total dissolved solids concentrations in irrigation waters can be deleterious to plants directly, or indirectly through adverse effects on soil permeability. A classification of irrigation waters with respect to total dissolved solids concentration is described in Table 3-1.

Water Quality Objectives for Total Dissolved Solids:

Inland surface waters shall not contain total dissolved solids in concentrations in excess of the numerical objectives described in Table 3-2.

Ground waters shall not contain total dissolved solids in concentrations in excess of the numerical objectives described in Table 3-3.

TOXICITY

Toxicity is the adverse response of organisms to chemicals or physical agents.

Water Quality Objectives for Toxicity:

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 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 water body in areas unaffected by the waste discharge or, when necessary, for other control water that is consistent with requirements specified in US EPA, State Water Resources Control Board or other protocol authorized by the Regional Board. As a minimum, compliance with this objective as stated in the previous sentence shall be evaluated with a 96-hour acute bioassay.

In addition, effluent limits based upon acute bioassays of effluents will be prescribed where appropriate, additional numerical receiving water objectives for specific toxicants will be established as sufficient data become available, and source control of toxic substances will be encouraged.

TOXIC POLLUTANTS

Federal Register, Volume 57, Number 246 amended Title 40, Code of Federal Regulations, Part 131.36 (40 CFR 131.36) and established numeric criteria for a limited number of priority toxic pollutants for inland surface waters and estuaries in California. US EPA promulgated these criteria on December 22, 1992, to bring California into full compliance with Section 303(c)(2)(B) of the Clean Water Act. California is not currently in full compliance with Section 303(c)(2)(B) of the Clean Water Act due to the invalidation of the Water Quality Control Plan for Inland Surface Waters of California and the Water Quality Control Plan for Enclosed Bays and Estuaries of California. However, the criteria established in 57 FR 60848 (December 22, 1992) (specifically pages 60920 - 60921) are still applicable to surface waters in the Region.

Water Quality Objectives for Toxic Pollutants:

Inland surface waters, enclosed bays, and estuaries shall not contain toxic pollutants in excess of the numerical objectives applicable to California specified in 40 CFR 131.36 (§131.36 revised at 57 FR 60848, December 22, 1992).

TRIHALOMETHANES

Chlorine is the dominant chemical agent used to disinfect treated water and wastewater. Trihalomethanes are formed when chlorine reacts with aquatic organic material found in water and wastewater. Trihalomethanes are a group of light weight chlorinated hydrocarbons which are suspected carcinogens. The US EPA has established a maximum contaminant level for total trihalomethanes of 0.1 mg/l in *Title 40, Code of Federal Regulations, Part 141.12, (40 CFR 141.12), EPA National Primary Drinking Water Regulations (§141.12 revised at 57 FR 31838, July 17, 1992).* Total trihalomethanes are the sum of the concentrations of bromodichloromethane, dibromochloromethane, tribromomethane (bromoform) and trichloromethane (chloroform). The federal regulations on trihalomethanes are incorporated by reference into California Code of Regulations, Title 22, Chapter 15, Articles 4.5, Sections 64439.

Water Quality Objective for Trihalomethanes:

Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of trihalomethanes in excess of the criteria set forth in California Code of Regulations, Title 22, Section 64439 which is incorporated by reference into this plan. This incorporation by reference is prospective including future changes to Section 64439 as the changes take effect.

TURBIDITY

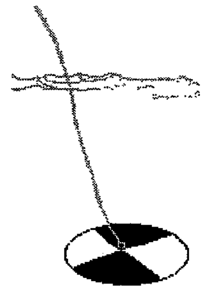
The turbidity of water is attributable to suspended and colloidal matter, the effect of which is to disturb clearness and diminish the penetration of light. High turbidity levels can adversely affect the use of water for drinking. By interfering with the penetration of light, turbidity can adversely affect photosynthesis which aquatic organisms depend upon for survival. High concentrations of particulate matter that produce turbidity can be directly lethal to aquatic life.

Water Quality Objectives for Turbidity:

Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses.

Inland surface waters shall not contain turbidity in excess of the numerical objectives described in Table 3-2.

Ground waters shall not contain turbidity in excess of the numerical objectives described in Table 3-3.



The transparency of waters in lagoons and estuaries shall not be less than 50% of the depth at locations where measurement is made by means of a standard Secchi disk, except where lesser transparency is caused by rainfall runoff from undisturbed natural areas and dredging projects conducted in conformance with waste discharge requirements of the Regional Board. With these two exceptions, increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:

Natural Turbidity	*Maximum Increase*
0-50 NTU	*20% over natural turbidity level*
50-100 NTU	*10 NTU*
Greater than 100 NTU	*10% over natural turbidity level*

In addition, within San Diego Bay, the transparency of bay waters, insofar as it may be influenced by any controllable factor, either directly or through induced conditions, shall not be less than 8 feet in more than 20 percent of the readings in any zone, as measured by a standard Secchi disk. Wherever the water is less than 10 feet deep, the Secchi disk reading shall not be less than 80 percent of the depth in more than 20 percent of the readings in any zone.

WATER QUALITY OBJECTIVES OF INLAND SURFACE WATERS

Specific numerical water quality objectives for inland surface waters are presented by hydrologic area and subarea and watershed in Table 3-2.

The water quality objectives for inland surface water designations described in this table correspond with the beneficial use designations previously described in Chapter 2. Water Quality Objective variations occur in some of the hydrologic areas, subareas and stream reaches. Water quality variations from the objectives may also occur within a given hydrologic area subarea or stream reach. Such local variations will be evaluated when waste discharge requirements, NPDES permits, Cleanup and Abatement Orders, and Cease and Desist Orders are being developed for a given discharger.

The omission of mineral objectives for some areas corresponds to the lack of beneficial uses (AGR, MUN, IND) requiring such objectives.

WATER QUALITY OBJECTIVES OF GROUND WATERS

Specific numerical water quality objectives for ground waters are presented by hydrologic area and subarea in Table 3-3.

A footnote for some ground water basins is listed to show that some water quality objectives are considered tentative until detailed salt balance studies are conducted.

In 1978 the Regional Board, in Resolution No. 78-6, deleted water quality objectives and beneficial uses for certain portions of basins 1.10, 1.20, 1.30, 1.40, 1.50, 2.10, 3.10, 4.10, 4.20, 4.30, 4.40, 4.50, 4.60, 5.10, 6.10, 7.10, and 11.10. Table footnotes are included to identify these basins. The Regional Board elected to delete beneficial uses in portions of these basins, where the uses of ground water were marginal or nonexistent, to promote wastewater reclamation by sewage treatment plants. The deletion of beneficial uses in these areas was based upon a determination that the loss of ground water supplies was outweighed by the long-term increase in wastewater reclamation made possible by allowing reclaimed water discharges which are high in total dissolved solids. It is the Regional Board's intent to protect the water quality in these basins under the terms of State Board Resolution No. 68-16.

For purposes of intrusion barrier formation or ground water recharge, the water quality objective qualifications footnoted in Table 3-3 allow, with approval of the Regional Board, discharge of reclaimed water in areas of equal or poorer ground water quality. Relatively poor quality water could also be used for intrusion barrier formation along the coast.

WATER QUALITY CRITERIA

The literature contains many different water quality criteria designed to protect specific beneficial uses of water. A summary of the specific numerical water quality criteria considered by the Regional Board for designation as water quality objectives is described in Appendix C. The water quality criteria described in Appendix C are not enforceable water quality objectives. The purpose of presenting the information summarized in these tables is to allow interested persons to compare available water quality criteria to the specific water quality objectives designated by the Regional Board described earlier in this Chapter.

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INDEX - CHAPTER 3

REPRINT OF RESOLUTION NO. 68-16

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

Table 3-1. GUIDELINES FOR INTERPRETATION OF WATER QUALITY FOR IRRIGATION[a]

Potential Irrigation Problem	Units	Degree or Restriction on use		
		None	Slight to Moderate	Severe
Salinity (affects crop water availability)				
Electrical Conductivity (EC_W[b])	ds/m or mmho/cm	< 0.7	0.7 - 3.0	> 3.0
TDS	mg/l	< 450	450 - 2000	> 2000
Permeability (affects infiltration rate of water into soil. Evaluate using EC_W and Sodium Adsorption Ratio (SAR) together)[c,d]				
SAR =		**and EC_W =**		
0 - 3		> 0.7	0.7 - 0.2	< 0.2
3 - 6		> 1.2	1.2 - 0.3	< 0.3
6 - 12		> 1.9	1.9 - 0.5	< 0.5
12 - 20		> 2.9	2.9 - 1.3	< 1.3
20 - 40		> 5.0	5.0 - 2.9	< 2.9
Specified ion toxicity (affects sensitive crops)				
Sodium (Na)[e,f]				
surface irrigation	SAR	< 3	3 - 9	> 9
sprinkler irrigation	mg/l	< 70	> 70	-----
Chloride (Cl)[e,f]				
surface irrigation	mg/l	< 140	140 - 350	> 350
sprinkler irrigation	mg/l	< 100	> 100	-----
Boron (B)	mg/l	< 0.7	0.7 - 3.0	> 3.0
Miscellaneous effects (affects susceptible crops)				
Nitrogen (Total-N)[g]	mg/l	< 5	5 - 30	> 30
Bicarbonate (HCO_3) (overhead sprinkler only)	mg/l	< 90	90 - 500	> 500
pH	normal range	6.5 - 8.4		
Residual chlorine (overhead sprinkler only)	mg/l	< 1.0	1.0 - 5.0	> 5.0

ENDNOTES FOR TABLE 3-1

a Interpretations are based on possible effects of constituents on crops and/or soils. Guidelines are flexible and should be modified when warranted by local experience or special conditions of crop, soil, and method of irrigation. Table 3-1 is based on Table 3-4 contained in "*Irrigation with Reclaimed Municipal Wastewater, A Guidance Manual*", California State Water Resources Control Board, Report Number 84-1, July 1984.

b EC_w means electrical conductivity of the irrigation water, reported in mmho/cm or ds/m. TDS means total dissolved solids, reported in mg/l.

c SAR means sodium adsorbtion ratio. SAR is sometimes reported as R_{Na}. At a given SAR, infiltration rate increases as salinity (EC_w) increases. Evaluate the potential permeability problem by SAR and EC_w in combination.

Where Na, Ca, and Mg are in milliequivalents per liter.

$$SAR=\frac{Na}{\sqrt{\left(\frac{Ca+Mg}{2}\right)}}$$

d For wastewaters, it is recommended that the SAR be adjusted to include a more correct estimate of calcium in the soil water following an irrigation. The adjusted sodium adsorbtion ratio (adj R_{Na}) calculated by this product is to be substituted for the SAR value.

Where Na, Ca, and Mg are in milliequivalents per liter.

$$SAR=\frac{Na}{\sqrt{\left(\frac{Ca_x+Mg}{2}\right)}}$$

Ca_x is a modified Ca value calculated using Table 3-2, contained in "*Irrigation with Reclaimed Municipal Wastewater, A Guidance Manual*".

e Most tree crops and woody ornamentals are sensitive to sodium and chloride; use the values shown. Most annual crops are not sensitive; use the salinity tolerance tables. For boron sensitivity, refer to boron tolerance tables.

f With overhead sprinkler irrigation and low humidity ($<30\%$), sodium or chloride greater than 70 or 100 mg/l, respectively, have resulted in excessive leaf absorption and crop damage to sensitive crops.

g Total nitrogen should include nitrate-nitrogen, ammonia-nitrogen, and organic-nitrogen. Although forms of nitrogen in wastewater vary, the plant responds to the total nitrogen.

Table 3-2. WATER QUALITY OBJECTIVES

Concentrations not to be exceeded more than 10% of the time during any one one year period.

Inland Surface Waters			Hydrologic Unit Basin Number	Constitiuent (mg/L or as noted)												
				TDS	Cl	SO_4	%Na	N&P	Fe	Mn	MBAS	B	ODOR	Turb NTU	Color Units	F
SAN JUAN HYDROLOGIC UNIT			**901.00**													
Laguna	HA		1.10	1000	400	500	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Mission Viejo	HA		1.20	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
San Clemente	HA		1.30	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
San Mateo Canyon	HA		1.40	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
San Onofre	HA		1.50	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
SANTA MARGARITA HYDROLOGIC UNIT			**902.00**													
Ysidora	HA		2.10	750	300	300	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Deluz	HA		2.20	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Deluz Creek	HSA	b	2.21	750	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Gavilan	HSA	b	2.22	750	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Murrieta	HA		2.30	750	300	300	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Auld	HA		2.40	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Pechanga	HA		2.50	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Wolf	HSA	b	2.52	750	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Wilson	HA		2.60	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Cave Rocks	HA		2.70	750	300	300	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Aguanga	HA		2.80	750	300	300	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Oakgrove	HA		2.90	750	300	300	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0

HA - Hydrologic Area
HSA - Hydrologic Sub Area (Lower case letters indicate endnotes following the table.)

Table 3-2. WATER QUALITY OBJECTIVES

Concentrations not to be exceeded more than 10% of the time during any one one year period.

Inland Surface Waters		Hydrologic Unit Basin Number	Constitiuent (mg/L or as noted)												
			TDS	Cl	SO_4	%Na	N&P	Fe	Mn	MBAS	B	ODOR	Turb NTU	Color Units	F
SAN LUIS REY HYDROLOGIC UNIT		**903.00**													
Lower San Luis	HA	3.10	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Monserat	HA	3.20	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Warner Valley	HA	3.30	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
CARLSBAD HYDROLOGIC UNIT		**904.00**													
Loma Alta	HA	4.10	-	-	-	-	-	-	-	-	-	none	20	20	1.0
Buena Vista Creek	HA	4.20	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Agua Hedionda	HA	4.30	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Encinas	HA	4.40	-	-	-	-	-	-	-	-	-	none	20	20	1.0
San Marcos	HA	4.50	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Escondido Creek	HA	4.60	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
SAN DIEGUITO HYDROLOGIC UNIT		**905.00**													
Solana Beach	HA	5.10	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Hodges	HA	5.20	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
San Pasqual	HA	5.30	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Santa Maria Valley	HA	5.40	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Santa Ysabel	HA	5.50	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
PENASQUITOS HYDROLOGIC UNIT		**906.00**													
Miramar Reservoir	HA	6.10	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Poway	HA	6.20	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0

HA - Hydrologic Area

HSA - Hydrologic Sub Area (Lower case letters indicate endnotes following the table.)

Table 3-2. WATER QUALITY OBJECTIVES

Concentrations not to be exceeded more than 10% of the time during any one one year period.

Inland Surface Waters			Hydrologic Unit Basin Number	Constitiuent (mg/L or as noted)												
				TDS	Cl	SO_4	%Na	N&P	Fe	Mn	MBAS	B	ODOR	Turb NTU	Color Units	F
Scripps	HA		6.30	-	-	-	-	a	-	-	-	-	none	20	20	-
Miramar	HA		6.40	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Tecolote	HA		6.50	-	-	-	-	a	-	-	-	-	none	20	20	-
SAN DIEGO HYDROLOGIC UNIT			**907.00**													
Lower San Diego	HA		7.10	1000	400	500	60	a	0.3	0.05	0.5	1.0	none	20	20	-
Mission San Diego	HSA		7.11	1500	400	500	60	a	1.0	1.00	0.5	1.0	none	20	20	-
Santee	HSA	c	7.12	1000	400	500	60	a	1.0	1.00	0.5	1.0	none	20	20	-
Santee	HSA	d	7.12	1500	400	500	60	a	1.0	1.00	0.5	1.0	none	20	20	-
San Vicente	HA		7.20	300	50	65	60	a	0.3	0.05	0.5	1.0	none	20	20	1.0
El Capitan	HA		7.30	300	50	65	60	a	0.3	0.05	0.5	1.0	none	20	20	1.0
Boulder Creek	HA		7.40	300	50	65	60	a	0.3	0.05	0.5	1.0	none	20	20	1.0
PUEBLO SAN DIEGO HYDROLOGIC UNIT			**908.00**													
Point Loma	HA		8.10	-	-	-	-	-	-	-	-	-	none	20	20	-
San Diego Mesa	HA		8.20	-	-	-	-	-	-	-	-	-	none	20	20	-
National City	HA		8.30	-	-	-	-	-	-	-	-	-	none	20	20	-
SWEETWATER HYDROLOGIC UNIT			**909.00**													
Lower Sweetwater	HA		9.10	1500	500	500	60	a	0.3	0.05	0.5	0.75	none	20	20	-
Middle Sweetwater	HA		9.20	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Upper Sweetwater	HA		9.30	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0

HA - Hydrologic Area
HSA - Hydrologic Sub Area (Lower case letters indicate endnotes following the table.)

Table 3-2. WATER QUALITY OBJECTIVES

Concentrations not to be exceeded more than 10% of the time during any one one year period.

Inland Surface Waters		Hydrologic Unit Basin Number	Constitiuent (mg/L or as noted)												
			TDS	Cl	SO_4	%Na	N&P	Fe	Mn	MBAS	B	ODOR	Turb NTU	Color Units	F
OTAY HYDROLOGIC UNIT		**910.00**													
Coronado	HA	10.10	-	-	-	-	-	-	-	-	-	-	-	-	-
Otay Valley	HA	10.20	1000	400	500	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
Dulzura	HA	10.30	500	250	250	60	a	0.3	0.05	0.5	0.75	none	20	20	1.0
TIJUANA HYDROLOGIC UNIT		**911.00**													
Tijuana Valley	HA	11.10	-	-	-	-	-	-	-	-	-	-	-	-	-
San Ysidro	HSA	11.11	2100	-	-	-	a	-	-	-	-	none	20	20	-
Potrero	HA	11.20	500	250	250	60	a	0.3	0.05	0.5	1.0	none	20	20	1.0
Barrett Lake	HA	11.30	500	250	250	60	a	0.3	0.05	0.5	1.0	none	20	20	1.0
Monument	HA	11.40	500	250	250	60	a	0.3	0.05	0.5	1.0	none	20	20	1.0
Morena	HA	11.50	500	250	250	60	a	0.3	0.05	0.5	1.0	none	20	20	1.0
Cottonwood	HA	11.60	500	250	250	60	a	0.3	0.05	0.5	1.0	none	20	20	1.0
Cameron	HA	11.70	500	250	250	60	a	0.3	0.05	0.5	1.0	none	20	20	1.0
Campo	HA	11.80	500	250	250	60	a	0.3	0.05	0.5	1.0	none	20	20	1.0

HA - Hydrologic Area
HSA - Hydrologic Sub Area (Lower case letters indicate endnotes following the table.)

ENDNOTES FOR TABLE 3-2

a Concentrations of nitrogen and phosphorus, by themselves or in combination with other nutrients, shall be maintained at levels below those which stimulate algae and emergent plant growth. Threshold total Phosphorus (P) concentrations shall not exceed 0.05 mg/l in any stream at the point where it enters any standing body of water, nor 0.025 mg/l in any standing body of water. A desired goal in order to prevent plant nuisances in streams and other flowing waters appears to be 0.1 mg/l total P. These values are not to be exceeded more than 10% of the time unless studies of the specific body in question clearly show that water quality objective changes are permissible and changes are approved by the Regional Board. Analogous threshold values have not been set for nitrogen compounds; however, natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N:P =10:1 shall be used. Note - Certain exceptions to the above water quality objectives are described in Chapter 4 in the sections titled Discharges to Coastal Lagoons from Pilot Water Reclamation Projects and Dicharges to Surface Waters.

b These objectives apply to the lower portion of Murrieta Creek in the Wolf HSA (2.52) and the Santa Margarita River from it's beginning at the confluence of Murrieta and Temecula Creeks, through the Gavilan HSA (2.22) and DeLuz HSA (2.21), to where it enters the Upper Ysidora HSA (2.13).

c Sycamore Canyon Subarea, a portion of the Santee Hydrologic Subarea, includes the watersheds of the following north-south trending canyons: Oak Creek, Spring Canyon, Little Sycamore Canyon, Quail Canyon, and Sycamore Canyon. The Sycamore Canyon subarea extends eastward from the Mission San Diego HSA to the confluence of the San Diego River and Forester Creek, immediately south of the Santee Lakes.

d These objectives apply to the Lower Sycamore Canyon portion of the Santee Hydrologic Subarea described as all of the Sycamore Canyon watershed except that part which drains north of the boundary between sections 28 and 33, Township South, Range 1 West.

Table 3-3. WATER QUALITY OBJECTIVES

Concentrations not to be exceeded more than 10% of the time during any one year period.

Ground Water			Hydrologic Basin Unit Number	Constituent (mg/L or as noted)												
				TDS	Cl	SO_4	%Na	NO_3	Fe	Mn	MBAS	B	ODOR	Turb NTU	Color Units	F
SAN JUAN HYDROLOGIC UNIT			**901.00**													
Laguna	HA		1.10													
San Joaquin Hills	HSA		1.11	1200	400	500	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Laguna Beach	HSA		1.12	1200	400	500	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Aliso	HSA		1.13	1200	400	500	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Dana Point	HSA		1.14	1200	400	500	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Mission Viejo	HA		1.20													
Oso	HSA		1.21	1200	400	500	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Upper Trabuco	HSA		1.22	500	250	250	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Middle Trabuco	HSA		1.23	750	375	375	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Gobernadora	HSA		1.24	1200	400	500	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Upper San Juan	HSA		1.25	500	250	250	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Middle San Juan	HSA		1.26	750	375	375	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Lower San Juan	HSA		1.27	1200	400	500	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Ortega	HSA		1.28	1100	375	450	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
San Clemente	HA		1.30													
Prima Deshecha	HSA		1.31	1200	400	500	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Segunda Deshecha	HSA		1.32	1200	400	500	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
San Mateo Canyon	HA	a	1.40	500 [b]	250	250 [b]	60	45 [b]	0.3 [b]	0.05 [b]	0.5	0.75 [b]	none	5	15	1.0
San Onofre	HA	a	1.50	500 [b]	250	250 [b]	60	45 [b]	0.3 [b]	0.05 [b]	0.5	0.75 [b]	none	5	15	1.0
SANTA MARGARITA HYDROLOGIC UNIT			**902.00**													
Ysidora	HA	a	2.10	750 [c]	300 [c]	300 [c]	60	10 [c]	0.3 [c]	0.05 [c]	0.5	0.75 [c]	none	5	15	1.0
Deluz	HA		2.20	500	250	250	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0

HA - Hydrologic Area

HSA - Hydrologic Sub Area (Lower case letters indicate endnotes following the table.)

Table 3-3. WATER QUALITY OBJECTIVES

Concentrations not to be exceeded more than 10% of the time during any one year period.

Ground Water		Hydrologic Basin Unit Number	Constituent (mg/L or as noted)												
			TDS	Cl	SO_4	%Na	NO_3	Fe	Mn	MBAS	B	ODOR	Turb NTU	Color Units	F
Deluz Creek	HSA [m]	2.21	750	250	250	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Gavilan	HSA [m]	2.22	750	250	250	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Murrieta	HA	2.30	750 [c]	300 [c]	300 [c]	60	10 [c]	0.3 [c]	0.05 [c]	0.5	0.75 [c]	none	5	15	1.0
Domenigoni	HSA	2.35	2000	-	-	-	-	-	-	-	-	-	-	-	-
Auld	HA	2.40	500	250	250	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Pechanga	HA	2.50	500	250	250	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Pauba	HSA [o]	2.51	750	250	250	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Wolf	HSA [p]	2.52	750	250	250	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Wilson	HA	2.60	500	250	250	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Cave Rocks	HA	2.70	500	250	250	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Aguanga	HA	2.80	500	250	250	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Oakgrove	HA	2.90	500	250	250	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
SAN LUIS REY HYDROLOGIC UNIT		**903.00**													
Lower San Luis	HA	3.10	800 [r]	300	400	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Mission	HSA [a]	3.11	1500 [cd]	500 [cd]	500 [cd]	60	45 [cd]	0.85 [cd]	0.15 [cd]	0.5 [d]	0.75 [cd]	none	5	15 [d]	1.0 [d]
Bonsall	HSA	3.12	1500 [cd]	500 [cd]	500 [cd]	60	45 [cd]	0.85 [cd]	0.15 [cd]	0.5 [d]	0.75 [cd]	none	5	15 [d]	1.0 [d]
Monserate	HA	3.20													
Pala	HSA	3.21	900 [c]	300 [c]	500 [c]	60	15 [c]	0.3 [c]	0.05 [c]	0.5	0.75	none	5	15	1.0
Pauma	HSA	3.22	800 [c]	300 [c]	400 [c]	60	10 [c]	0.3 [c]	0.05 [c]	0.5	0.75	none	5	15	1.0
La Jolla Amago	HSA	3.23	500	250	250	60	5	0.3	0.05	0.5	0.75	none	5	15	1.0
Warner Valley	HA	3.30	500	250	250	60	5	0.3	0.05	0.5	0.75	none	5	15	1.0
CARLSBAD HYDROLOGIC UNIT		**904.00**													
Loma Alta	HA	4.10	-	-	-	-	-	-	-	-	-	-	-	-	-

HA - Hydrologic Area

HSA - Hydrologic Sub Area (Lower case letters indicate endnotes following the table.)

Table 3-3. WATER QUALITY OBJECTIVES

Concentrations not to be exceeded more than 10% of the time during any one year period.

Ground Water			Hydrologic Basin Unit Number	Constituent (mg/L or as noted)												
				TDS	Cl	SO_4	%Na	NO_3	Fe	Mn	MBAS	B	ODOR	Turb NTU	Color Units	F
Buena Vista Creek	HA		4.20													
El Salto	HSA	a	4.21	3500	800	500	60	45	0.3	0.05	0.5	2.0	none	5	15	1.0
Vista	HSA	a	4.22	1000 b	400 b	500 b	60	10 b	0.3 b	0.05 b	0.5	0.75 b	none	5	15	1.0
Agua Hedionda	HA	a	4.30	1200	500	500	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Los Monos	HSA	aj	4.31	3500	800	500	60	45	0.3	0.05	0.5	2.0	none	5	15	1.0
Encinas	HA	a	4.40	3500 b	800 b	500 b	60	45 b	0.3 b	0.05 b	0.5	2.0 b	none	5	15	1.0
San Marcos	HA	ae	4.50	1000	400	500	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Batiquitos	HSA	aek	4.51	3500	800	500	60	45	0.3	0.05	0.5	2.0	none	5	15	1.0
Escondido Creek	HA	a	4.60	750	300	300	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
San Elijo	HSA	a	4.61	2800	700	600	60	45	0.3	0.05	0.5	1.0	none	5	15	1.0
Escondido	HSA		4.62	1000	300	400	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
SAN DIEGUITO HYDROLOGIC UNIT			**905.00**													
Solana Beach	HA	a	5.10	1500 b	500 b	500 b	60	45 b	0.85 b	0.15 b	0.5	0.75 b	none	5	15	1.0
Hodges	HA		5.20	1000 b	400 b	500 b	60	10 b	0.3 b	0.05 b	0.5	0.75 b	none	5	15	1.0
San Pasqual	HA		5.30	1000 b	400 b	500 b	60	10 b	0.3 b	0.05 b	0.5	0.75 b	none	5	15	1.0
Santa Maria Valley	HA		5.40	1000	400	500	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Santa Ysabel	HA		5.50	500	250	250	60	5	0.3	0.05	0.5	0.75	none	5	15	1.0
PENASQUITOS HYDROLOGIC UNIT			**906.00**													
Miramar Reservoir	HA	af	6.10	1200	500	500	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Poway	HA		6.20	750 q	300	300	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Scripps	HA		6.30	-	-	-	-	-	-	-	-	-	-	-	-	-
Miramar	HA	g	6.40	750	300	300	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Tecolote	HA		6.50	-	-	-	-	-	-	-	-	-	-	-	-	-

HA - Hydrologic Area

HSA - Hydrologic Sub Area (Lower case letters indicate endnotes following the table.)

Table 3-3. WATER QUALITY OBJECTIVES

Concentrations not to be exceeded more than 10% of the time during any one year period.

Ground Water			Hydrologic Basin Unit Number	Constituent (mg/L or as noted)												
				TDS	Cl	SO_4	%Na	NO_3	Fe	Mn	MBAS	B	ODOR	Turb NTU	Color Units	F
SAN DIEGO HYDROLOGIC UNIT			**907.00**													
Lower San Diego	HA		7.10													
Mission San Diego	HSA	a	7.11	3000 [b]	800 [b]	600 [b]	60	45 [b]	0.3 [b]	0.05 [b]	0.5	2.0 [b]	none	5	15	1.0
Santee	HSA		7.12	1000 [b]	400 [b]	500 [b]	60	45 [b]	0.3 [b]	0.05 [b]	0.5	0.75 [b]	none	5	15	1.0
Santee (alluvial aquifer for lower Sycamore Canyon)	HSA	n	7.12	2000 b	800 b	600 b	60	45 b	0.3 b	0.05 b	0.5	2.0 b	none	5	15	1.0
El Cajon	HSA		7.13	1200 [b]	250 [b]	500 [b]	60	45 [b]	0.3 [b]	0.05 [b]	0.5	0.75 [b]	none	5	15	1.0
Coches	HSA		7.14	600 [b]	250 [b]	250 [b]	60	5 [b]	0.3 [b]	0.05 [b]	0.5	0.75 [b]	none	5	15	1.0
El Monte	HSA		7.15	600 [b]	250 [b]	250 [b]	60	5 [b]	0.3 [b]	0.05 [b]	0.5	0.75 [b]	none	5	15	1.0
San Vicente	HA		7.20	600	250	250	60	5	0.3	0.05	0.5	0.75	none	5	15	1.0
El Capitan	HA		7.30	1000	400	500	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Conejos Creek	HSA		7.31	350	60	60	60	5	0.3	0.05	0.5	0.75	none	5	15	1.0
Boulder Creek	HA		7.40	350	60	60	60	5	0.3	0.05	0.5	0.75	none	5	15	1.0
PUEBLO SAN DIEGO HYDROLOGIC UNIT			**908.00**													
Point Loma	HA	i	8.10	-	-	-	-	-	-	-	-	-	-	-	-	-
San Diego Mesa	HA	i	8.20	-	-	-	-	-	-	-	-	-	-	-	-	-
National City	HA	i	8.30	750	250	250	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
SWEETWATER HYDROLOGIC UNIT			**909.00**													
Lower Sweetwater	HA		9.10													
Telegraph	HSA		9.11	3000 [b]	750 [b]	500 [b]	60	45 [b]	0.3 [b]	0.05 [b]	0.5	2.0 [b]	none	5	15	1.0
La Nacion	HSA		9.12	1500 [b]	500 [b]	500 [b]	60	45 [b]	0.3 [b]	0.15 [b]	0.5	0.75 [b]	none	5	15	1.0
Middle Sweetwater	HA		9.20	1000	400	500	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
Upper Sweetwater	HA		9.30	500	250	250	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0

HA - Hydrologic Area

HSA - Hydrologic Sub Area (Lower case letters indicate endnotes following the table.)

Table 3-3. WATER QUALITY OBJECTIVES

Concentrations not to be exceeded more than 10% of the time during any one year period.

Ground Water			Hydrologic Basin Unit Number	Constituent (mg/L or as noted)												
				TDS	Cl	SO_4	%Na	NO_3	Fe	Mn	MBAS	B	ODOR	Turb NTU	Color Units	F
OTAY HYDROLOGIC UNIT			**910.00**													
Coronado	HA		10.10	-	-	-	-	-	-	-	-	-	-	-	-	-
Otay Valley	HA		10.20	1500 [b]	500 [b]	500 [b]	60	10 [b]	0.3 [b]	0.05 [b]	0.5	0.75 [b]	none	5	15	1.0
Otay Valley	HA	l	10.20	-	-	-	-	-	-	-	-	-	none	-	-	-
Dulzura	HA		10.30	1000	400	500	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0
TIJUANA HYDROLOGIC UNIT			**911.00**													
Tijuana Valley	HA	h	11.10	2500 [b]	550 [b]	900 [b]	70	-	-	-	-	2.0 [b]	none	-	-	-
Potrero	HA		11.20	500	250	250	60	45	0.3	0.05	0.5	1.0	none	5	15	1.0
Barrett Lake	HA		11.30	500	250	250	60	45	0.3	0.05	0.5	1.0	none	5	15	1.0
Monument	HA		11.40	500	250	250	60	45	0.3	0.05	0.5	1.0	none	5	15	1.0
Morena	HA		11.50	500	250	250	60	45	0.3	0.05	0.5	1.0	none	5	15	1.0
Cottonwood	HA		11.60	500	250	250	60	45	0.3	0.05	0.5	1.0	none	5	15	1.0
Cameron	HA		11.70	500	250	250	60	45	0.3	0.05	0.5	1.0	none	5	15	1.0
Campo	HA		11.80	500	250	250	60	45	0.3	0.05	0.5	1.0	none	5	15	1.0

HA - Hydrologic Area

HSA - Hydrologic Sub Area (Lower case letters indicate endnotes following the table.)

ENDNOTES FOR TABLE 3-3

a The water quality objectives do not apply westerly of the easterly boundary of Interstate Highway 5. The objectives for the remainder of the Hydrologic Area (Subarea) are as shown.

b Detailed salt balance studies are recommended for this area to determine limiting mineral concentration levels for discharge. On the basis on existing data, the tabulated objectives would probably be maintained in most areas. Upon completion of the salt balance studies, significant water quality objective revisions may be necessary. In the interim period of time, projects of ground water recharge with water quality inferior to the tabulated numerical values may be permitted following individual review and approval by the Regional Board if such projects do not degrade existing ground water quality to the aquifers affected by the recharge.

c The recommended plan would allow for measurable degradation of ground water in this basin to permit continued agricultural land use. Point sources, however, would be controlled to achieve effluent quality corresponding to the tabulated numerical values. In future years demineralization may be used to treat ground water to the desired quality prior to use.

d A portion of the Upper Mission Basin is being considered as an underground potable water storage reservoir for treated imported water. The area is located north of Highway 76 an the boundary of hydrologic subareas 3.11 and 3.12. If this program is adopted, local objectives approaching the quality of the imported water would be set and rigorously pursued.

e The water quality objectives do not apply to hydrologic subareas 4.51 and 4.52 between Highway 78 and El Camino Real and to all lands which drain to Moonlight Creek and Encinitas Creek. The objectives for the remainder of the Hydrologic Area are as shown.

f The water quality objectives do not apply to all lands which drain to Los Penasquitos Canyon from 1.5 miles west of Interstate Highway 15. The objectives for the remainder of the Hydrologic Area are as shown.

g The water quality objectives do not apply west of Interstate Highway 15. The objectives for the remainder of the Hydrologic Area are as shown.

h The water quality objectives do not apply west of Hollister Street. The objectives for the remainder of the Hydrologic Area are as shown.

i No significant amount of ground water in this unit.

ENDNOTES FOR TABLE 3-3 (continued)

j The water quality objectives apply to the portion of Subarea 4.31 bounded on the west by the easterly boundary of the Interstate 5 right-of-way and on the east by the easterly boundary of El Camino Real.

k The water quality objectives apply to the portion of Subarea 4.51 bounded on the south by the north shore of Batiquitos Lagoon, on the west by the easterly boundary of the Interstate 5 right-of-way and on the east by the easterly boundary of El Camino Real.

l The water quality objectives apply to the portion of the Otay HA 10.20 limited to lands within and tributary to Salt Creek on the east and Poggi Canyon on the west and including the several smaller drainage courses between these tributaries of the Otay River.

m These objectives apply to the alluvial ground water beneath the Santa Margarita River from the confluence of Murrieta and Temecula Creeks through the Gavilan and DeLuz HSAs to a depth of 100 feet and a lateral distance equal to the area of the floodplain covered by a 10 year flood event. These objectives do not apply to ground water in any of the basins beneath DeLuz, Sandia, and Rainbow Creeks and other unnamed creeks, which are tributaries of the Santa Margarita River.

n These objectives apply for only the alluvial aquifer in the Lower Sycamore Canyon portion of the Santee Hydrologic Subarea described as all of the Sycamore Canyon watershed except that part which drains north of the boundary between sections 28 and 33, Township 14 South, Range 1 West.

o These objectives apply to ground waters within 250 feet of the surface for the most downstream 4,200 acres of the Pauba HSA (2.51) which drain directly to the most downstream 2.7 mile segment of Temecula Creek. Excluded from this area are all lands upgradient from a point 0.5 miles east of the intersection of Butterfield Stage Road and Highway 79.

p These objectives apply to ground waters within 250 feet of the surface for the most downstream 2,800 acres of the Wolf HSA (2.52) including those portions of the HSA which drain directly to the most downstream 1.5 mile segment of Pechanga Creek. Excluded from this area are all lands of HSA 2.52 which are upgradient of the intersection of Pala Road and Via Eduardo.

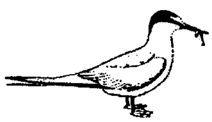
q These objectives apply to ground waters of the Poway HSA (6.2) that lie east of the San Diego County Water Authority's (SDCWA) First Aqueduct. Ground water quality objectives west of the SDCWA First Aqueduct are 1000 mg/l.

r These objectives apply to the Lower San Luis Rey Hydrologic Area (903.10). The objective for the alluvial aquifer in the Moosa Hydrologic Subarea (903.13) is 1200 mg/l. The objective for the alluvial aquifer in the Valley Center Hydrologic Subarea (903.14) is 1100 mg/l.

CHAPTER 4
IMPLEMENTATION

4. IMPLEMENTATION

INTRODUCTION



The purpose of this chapter is to describe actions that are necessary to protect the beneficial uses described in Chapter 2 and achieve the water quality objectives specified in Chapter 3. One of the elements in a Water Quality Control Plan as defined in California Water Code Section 13050(j) is the implementation program for achieving water quality objectives. This chapter describes the Regional Board's implementation program.

California Water Code Section 13242 requires that the implementation program have the following elements:

- A description of the actions which are necessary to achieve water quality objectives. (This may include recommendations for appropriate action directed to any entity, public or private);

- A time schedule for the actions to be taken; and

- A description of surveillance to be undertaken to determine compliance with the water quality objectives.

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.

This Chapter is divided into four sections, Control of Point Source Pollutants, Control of Nonpoint Source Pollutants, Remediation of Pollution, and Other Programs as shown below. Areas of overlap between the point and nonpoint source categories are described later in this Chapter.

★ ***Control of Point Source Pollutants:*** Pollutants from point sources are discharged to waterbodies from discrete conveyance systems (e.g., pipes and channels) in controlled flows at well-defined locations. Examples of point sources include waste discharges from municipal and industrial wastewater treatment facilities. Programs that protect water quality from point source pollutants are primarily regulatory in nature. Waste discharge permitting programs such as California's Waste Discharge Requirements (WDR) and the federal National Pollutant Discharge Elimination System (NPDES) are examples of key regulatory point source control 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, nonpoint source pollutants often enter waters in sudden episodic surges and large quantities. This occurs as rain, irrigation, and other types of runoff mobilizes and transports 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 transported by storm water or water from irrigation sprinklers; household and automotive care products dumped or drained on streets and into storm drains; fertilizers and pesticides 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 require different control strategies. For example, traditional permitting programs are neither a practical nor effective means of water quality protection from lawn and garden chemicals. Accordingly, the Regional Board integrates non-regulatory programs with regulatory programs in order to control pollutants from nonpoint sources. 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 eliminate or reduce nonpoint sources of pollution. Emphasis is placed on pollution prevention though careful management of resources, as opposed to cleaning up the waterbody after the fact. Local governments play a key role in the control of nonpoint sources by adopting and enforcing ordinances and by supplementing the Regional Board's public outreach efforts. This flexible 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 waters and enforcement of corrective actions needed to restore water quality. These activities are managed through the following programs, namely: Underground Storage Tanks; Spills, Leaks, Investigations and Cleanups (SLIC); Aboveground Petroleum Storage Tanks; National Pollutant Discharge Elimination System Program (NPDES), Chapter 15 and Non Chapter 15 Regulatory Programs; US Department of Defense (DoD) and Department of Energy (DOE) Sites; 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.

★ ***Other Programs:*** The Regional Board is involved with the investigation, assessment and protection of water quality through other programs which are discussed in this Basin Plan. These include California's Clean Water Act Section 303(d) process and California's water quality assessment program.

CONTROL OF POINT SOURCE POLLUTANTS

DEFINITION OF POINT SOURCE

Waste loads from point sources are those that are generally associated with pollutant discharges from an identifiable location to waters of the state. A point source is any discernable, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. Point source wastes can be generated by residential, commercial, industrial, agricultural, certain recreational and solid waste disposal activities and/or practices. Other wastes are considered under the category of nonpoint source waste loads and are discussed in appropriate sections of this chapter. Many of the water quality problems in the San Diego region have been attributable to point source discharges.

The Regional Board regulates most point source discharges of waste through the issuance of waste discharge requirements and National Pollutant Discharge Elimination System permits. Certain surface water discharges of waste described in 40 CFR 122.3 do not require NPDES permits. The need to obtain waste discharge requirements for certain categories of waste discharges to land may be waived by the Regional Board where such waiver is not against the public interest. The waste discharge requirements and the NPDES permits establish terms and conditions such as effluent limitations to ensure that point source waste discharges comply with applicable water quality objectives and ensure protection of beneficial uses.

EFFLUENT LIMITATIONS

Effluent limitations for discharge of treated point source wastes are developed for individual point sources and are included in the waste discharge requirements or NPDES permits. The effluent limitations are placed on the quality and quantity of the waste discharge or effluent and can be either numeric and/or narrative limitations. Effluent limitations are based on applicable water quality objectives, US EPA effluent guidelines and standards, beneficial uses for the area of effluent disposal, and applicable state and federal regulations and policies.

POINT SOURCE CONTROL CATEGORIES

Waste discharge requirements for waste discharges to land are issued for reclaimed water discharges, sanitary landfills, subsurface waste disposal by septic tank systems, dredge spoil disposal projects, sewage treatment plants and a variety of other activities which can affect ground water quality. NPDES permits are issued for waste discharges to surface waters from facilities such as power plants, sewage treatment plants, shipyards, boatyards, dewatering operations, ground water cleanups and a variety of other activities which can affect surface water quality.

Table 4-1 contains a summary listing of facility types regulated under waste discharge requirements and NPDES permits as of July, 1994. Table 4-2 contains examples of pollutants found in industrial

Table 4-1. NPDES Permitted Facilities in the San Diego Region (as of July 28, 1994) [1]

Facility Type	Number Regulated
Above Ground Tanks	2
Boatyards	7
Ground Water Cleanup	7
Ground Water Dewatering	9
Industrial	8
Military	13
Power Plants	7
Sewage Treatment Plants	24
Shipyards	4
Storm Water (Construction)	542
Storm Water (Industrial)	619
Storm Water (Municipal)	34
Water Softener / Brine Treatment	6
Total	**1283**

[1] The list of regulated facilities under NPDES permits is updated periodically and is available at the Regional Board office.

Table 4-1. WDR Permitted Facilities in the San Diego Region (as of July 28, 1994)[2]

Facility Type	Number Regulated
Campgrounds	59
Dairy	25
Dredging	5
Ground Water Cleanup	3
Industrial	4
Landfills	29
Miscellaneous	5
Nursery	1
Private Sewage Treatment Plants	7
Sand and Gravel	33
Sewage Treatment Plants	42
Sludge Treatment	1
Water Reclamation Requirements	16
Water Softener / Brine Treatment	1
Winery	3
Total	**234**

[2] The list of regulated facilities under WDR permits is updated periodically and is available at the Regional Board office.

Table 4-2. Examples of Industrial and Municipal Point Source Discharges to Surface and Ground Waters.

Discrete Discharge	Examples of Pollutants	Examples of Affected Waterbodies
Municipal waste water treatment plants (See table 4-4 for more information.	BOD, COD, TDS, chlorides, sulfates, nutrients, NH_3, residual chlorine, metals, organic chemicals	Most inland waters, Pacific Ocean, various ground water basins
Power generation plants	Temperature, chemical additives, minerals	San Diego Bay, Pacific Ocean
Waste water discharge from remediation or construction de-watering projects	TDS; chlorides; sulfates; VOC's; BTEX (e.g., benzene, toulene, ethylbenzene, xylene) and other petroleum hydrocarbons	Surface waters region-wide
Underground Storage Tanks	TDS; chlorides; sulfates; VOC's; BTEX (e.g., benzene, toulene, ethylbenzene, xylene) and other petroleum hydrocarbons	Ground waters region-wide
Shipyard, boatyard wastes	Oil and grease, metals (Pb, Cr, Cu and Zn), suspended solids, settleable solids, TBT, temperature, chemical additives	San Diego Bay, Mission Bay, Dana Point, Oceanside Harbor
Sand and gravel	Total dissolved solids, turbidity, sedimentation	San Diego River, Otay, River, San Luis Rey River, Temecula Creek, San Dieguito River, Aliso Creek, San Clemente Canyon Creek, San Vicente Creek, Trabuco Canyon Creek, El Toro Creek, Carroll Canyon Creek or their tributaries.
Dairies	BOD, TDS, bacteria, nutrients	Various groundwater basins
Dredging	Suspended solids, turbidity	San Diego Bay, Mission Bay, Oceanside Harbor, Dana Point
Landfills	Metals; TDS; chlorides; sulfates; VOC's; BTEX (e.g., benzene, toulene, ethylbenzene, xylene) and other petroleum hydrocarbons	Various groundwater basins
Recreational Vehicle (RV) Campgrounds	Formaldehyde, phenols, zinc, chlorides, aluminum sulfates	Various groundwater basins

and municipal point source discharges to surface and ground waters.

REGIONAL BOARD PERMITTING PROGRAMS

The Regional Board's primary means of protecting the Region's water resources is through the issuance of Waste Discharge Requirements (WDRs), Water Reclamation Requirements (WRRs), and Master Reclamation Permits (MRP) for each individual discharger. The waste discharge requirements impose conditions which protect water quality, implement the Water Quality Control Plan, and when the discharge is to waters of the United States, meet the requirements of the Clean Water Act. The waste discharge requirements impose limits on the quality and quantity of waste discharges and specify conditions to be maintained in the receiving waters. Water reclamation requirements impose conditions for all reuses of treated wastewater. In addition, because the US EPA has delegated responsibility to the State and regional boards for implementation of the federal 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 wastewater without obtaining appropriate WDRs, WRRs, or NPDES permits.

Any person who discharges or proposes to discharge wastes to waters in the Region (other than into a community sanitary sewage system) must describe the quantity and nature of the proposed discharge in a report of waste discharge (ROWD) or an NPDES permit application. The report of waste discharge must contain information required by the Regional Board. The filing of the report of waste discharge with the Regional Board is mandatory unless waived by the Board on the grounds that the waiver is not against the public interest. Such waivers are conditional and can be revoked by the Regional Board at any time. Upon review of the ROWD or NPDES permit application and all other pertinent information (including comments received at a public hearing), the Regional Board will hold a public hearing to consider issuance of waste discharge requirements containing appropriate measures and limitations to protect public health and water quality. The basic elements of waste discharge requirements or NPDES permits include:

- Effluent limitations on the quality and quantity of the waste discharge. The effluent standards or limitations are designed to implement water quality control plans, protect beneficial uses, and prevent nuisance;

- Standard terms and conditions and discharge prohibitions to ensure compliance with applicable provisions of state and federal law; and

- A monitoring and reporting program requiring the discharger to collect and analyze samples and submit monitoring reports to the Regional Board on a prescribed schedule.

California Water Code Section 13263 provides that in prescribing waste discharge requirements the Regional Board need not authorize the utilization of the waste assimilation capacities of the receiving waters. No discharge of waste into waters of the state creates a vested right to continue the discharge. All discharges of waste into waters of the state are privileges, not rights.

Waste discharges are categorized according to their threat to water quality and operational complexity (Table 4-3). Additionally, discharges to surface waters are categorized as major or minor discharges. Filing and annual fees are based on these categories. WDRs or WRRs 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 waste discharge requirements and NPDES permits establish conditions tailored to specific discharges. In some cases, discharges can be regulated under general WDRs or NPDES permits (General Permits) which simplify the permit process for certain types of discharges. These General Permits are issued administratively to the discharger after a completed Notice of Intent (NOI) or appropriate application has been filed and, if necessary, the Regional Board Executive Officer has determined that the discharger meets the conditions specified in the General Permit. The Regional Board plans to increase the use of General Permits for regulating similar categories of waste discharges in the future. The use of General Permits is a step towards permit streamlining and the reduction of permitting delays. The Regional Board will use the following principles in issuing or reviewing General Permits:

- The General Permit will have a streamlined process for obtaining coverage with adequate protective measures to assure compliance.

Table 4-3. "Threat to Water Quality" and "Complexity" Definition.

CATEGORY & THREAT TO WATER QUALITY	DEFINITION	EXAMPLE
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 to 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 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 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 discharges.
COMPLEXITY		
Category "a"	Any major NPDES discharger, and 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 include above which has a physical, chemical, or biological treatment system (except for septic systems with subsurface disposal), or any Class II or Class III waste management unit.	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 discharges having waste storage system with land disposal such as dairy waste ponds.
NPDES		
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.	

- The General Permit will focus on constituents of environmental concern for which there is a reasonable likelihood the constituent is, or may be, present in the discharge.

- The General Permits should be flexible to the extent practicable, and should allow for different testing, monitoring, and reporting requirements recognizing various significance levels of discharges.

- Duration, volume, and dilution of discharge should be considered in determining the significance of a discharge.

WASTE DISCHARGE REQUIREMENTS

Waste discharge requirements are permits for waste discharges to land which could primarily affect ground water quality and beneficial uses. All waste discharges, whether to land or water, are subject to California Water Code Section 13263. Furthermore unless exempt, discharges to land (e.g., landfills) are also subject to Title 23, California Code of Regulations, Chapter 15. Examples of such waste discharges include:

- Sewage treatment plants with discharges to land;

- On-site disposal systems (septic tank systems);

- Sanitary landfills;

- Industrial discharges;

- Land treatment units (bioremediation);

- Dairies; and

- A variety of other activities which can affect ground water quality.

Some types of dredging operations in surface waters are also regulated under waste discharge requirements. Waste discharge requirements may also protect surface waters in those instances where surfacing ground water may adversely affect surface water quality or beneficial uses.

A standard WDR permit typically includes the following elements:

- ***Findings:*** Official description of the facility, processes, type and quantity of wastes, existing WDRs, enforcement actions, public notice and applicable Water Quality Control Plans, beneficial uses and water quality objectives;

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

- ***Receiving water limitations:*** Narrative and numerical objectives for the receiving waters;

- ***Provisions:*** Standard provisions required by the Regional Board and by state and federal law;

- ***Compliance schedules:*** Time schedules for completion of activities to achieve compliance with permit conditions;

- ***Sludge requirements:*** Sludge monitoring and control requirements, if necessary; and a

- ***Monitoring and reporting program:*** Specific locations of monitoring stations and sampling frequency for all constituents limited in the permit, including flow, and other constituents that may be required by the Board.

Any person proposing to discharge waste, other than to a community sanitary sewage system, must file a report of waste discharge (application) to obtain waste discharge requirements at least 120 days prior to commencing the discharge.

The California Water Code, Division 7, Chapter 4, Article 4 authorizes the Regional Board to issue waste discharge requirements, review self-monitoring reports submitted by the discharger, and perform independent compliance checking. The Regional Board is authorized to take a variety of enforcement actions to obtain compliance with waste discharge requirements. Enforcement of waste discharge requirements is done through the issuance of cleanup and abatement orders, cease and desist orders, administrative civil liability orders and court action. The Regional Board is also authorized to update and review waste discharge requirements periodically.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

National Pollutant Discharge Elimination System (NPDES) permits are issued to regulate discharges of "*pollutants*" from point sources to "*waters of the United States*" to ensure that the quality and quantity of such discharges does not adversely affect surface water quality or beneficial uses. The phrase "*waters of the United States*" is defined in Title 40, Code of Federal Regulations, Parts 122.2, 230.3 and 232.3. The definition of "*waters of the United States*" emphasizes protection of a broad range of surface waters, including interstate and intrastate lakes, creeks, streams, wetlands, rivers, bays, and ocean waters. Ephemeral creeks, and streams are considered to be "waters of the United States" for the purpose of issuing NPDES permits. In this Basin Plan the term "*waters of the United States*" is used interchangeably with the term "*surface waters*".

NPDES permits are authorized by Section 402 of the Clean Water Act and Section 13370 of the California Water Code. Permit conditions and the issuance process are described in Title 40, Code of Federal Regulations, Part 122 (40 CFR 122) and California Code of Regulations, Title 23, Chapters 3 and 4. The responsibility for issuing NPDES permits in California has been delegated to the regional boards, subject to review and approval by the Regional Administrator (US EPA Region IX, San Francisco). NPDES permits issued by the Regional Board are also "*waste discharge requirements*" issued under the authority of the California Water Code, Chapter 5.5.

A standard NPDES permit typically includes the following elements:

- ***Findings:*** Official description of the facility, processes, type and quantity of wastes, existing NPDES permits, enforcement actions, public notice and applicable US EPA effluent guidelines and standards, Water Quality Control Plans, beneficial uses and water quality objectives;
- ***Effluent limitations:*** Narrative and numerical limits for effluent and discharge prohibitions;
- ***Receiving water limitations:*** Narrative and numerical objectives for the receiving waters;
- ***Provisions:*** Standard provisions required by the Regional Board and by state and federal law, expiration date of permit;
- ***Compliance schedules:*** Time schedules for completion of activities to achieve compliance with permit conditions;
- ***Pretreatment requirements:*** Standard pretreatment requirements for municipal facilities (see below);
- ***Sludge requirements:*** Sludge monitoring and control requirements, if necessary; and a
- ***Monitoring and reporting program:*** Specific locations of monitoring stations and sampling frequency for all constituents limited in the permit, including flow, and other constituents that may be required by the Regional Board.

The NPDES permit regulates discharges of wastes for the purpose of limiting the quantity of pollutants and volume of waste discharged to surface waters. NPDES permits contain prerequisite conditions which must be met by dischargers to ensure protection of beneficial uses of the receiving water as described in the Regional Board's Water Quality Control Plan, Statewide Water Quality Control Plans, and other water quality control policies.

Any person proposing to discharge pollutants into surface waters must submit a report of waste discharge in application for an NPDES permit at least 180 days in advance of the date on which it is desired to commence the proposed discharge. Certain discharges do not require an NPDES permit. The following discharges are exempt from the requirements for NPDES coverage pursuant to 40 CFR 122.3:

- Any discharge of sewage from vessels, effluent from properly functioning marine engines, laundry, shower, and galley sink wastes, or any other discharge incidental to the normal operation of a vessel;
- Discharges of dredged or fill material into waters of the United States which are regulated under the Clean Water Act, Section 404;
- The introduction of sewage, industrial wastes, or other pollutants into publicly owned treatment works by indirect dischargers;
- Any discharge in compliance with the instructions of an On-Scene Coordinator pursuant to 40 CFR 300 (The National Oil and Hazardous Substances Pollution Contingency Plan) or 33 CFR 153.10(e) (Pollution by Oil and Hazardous Substances);
- Any introduction of pollutants from nonpoint source agricultural and silvicultural activities, including storm water runoff from orchards, cultivated crops, pastures, range lands, and forest lands;
- Return flows from irrigated agriculture; and

• Discharges into a privately owned treatment works.

NPDES permits are issued for a term of five years or less. The terms and conditions of the permit are regularly updated as necessary. NPDES permits can be revoked for cause by the Regional Board.

The California Water Code, Division 7, Chapter 5.5, Article 6 authorizes the Regional Board to issue NPDES permits, review self-monitoring reports submitted by the discharger, and perform independent compliance checking. The Regional Board is authorized to take a variety of enforcement actions to obtain compliance with an NPDES permit. Enforcement of NPDES permits is done through the issuance of cleanup and abatement orders, cease and desist orders, administrative civil liability orders and court action.

The Regional Board will consider the establishment of mixing zones for inland surface waters and enclosed bays and estuaries on a case-by-case basis. Criteria to be established for mixing zones will be specified in the waste discharge requirements established for the discharge.

In addition to regulating discharges of wastewater to surface waters, NPDES permits also require municipal sewage treatment plants having a design capacity greater than 5 million gallons per day (MGD) to conduct pretreatment programs. Smaller municipal treatment systems may be required to conduct pretreatment programs if there are significant industrial users of their systems. Pretreatment is discussed in more detail later in this chapter.

WASTE DISCHARGE REQUIREMENT WAIVER POLICY

The Regional Board may waive issuance of waste discharge requirements for a specific discharge or types of discharge pursuant to California Water Code Section 13269 if such waiver is determined not to be against the public interest.

The waiver of adoption of waste discharge requirements is not applicable to discharges subject to NPDES permit regulation. The Clean Water Act does not provide for a waiver of the need to obtain an NPDES permit for point source discharges of pollutants to surface waters.

The waiver of waste discharge requirements is conditional and may be terminated at any time by the Regional Board. The Regional Board may delegate their power to waive waste discharge requirements to the Regional Board Executive Officer in accordance with policies adopted by the Regional Board and approved by the State Board.

The Regional Board may determine that a waiver of adoption of waste discharge requirements for a specific type of discharge would not be against the public interest under one or more of the following circumstances:

- The type of discharge is effectively regulated by other public agencies; or
- The type of discharge does not adversely affect the quality or the beneficial uses of the waters of the state; or
- The type of discharge is not readily amenable to regulation through adoption of waste discharge requirements.

On July 18, 1983, the Regional Board adopted Resolution No. 83-21, "*A Resolution Conditionally Waiving Adoption of Waste Discharge Requirements for Certain Specific Types of Discharges*" (Waste Discharge Requirement Waiver Policy). The terms and conditions of Resolution No. 83-21 are incorporated in this Basin Plan; accordingly Resolution No. 83-21 is superseded. The Regional Board conditionally waives adoption of waste discharge requirements for certain specific types of discharges described in Table 4-4. The discharges must satisfy the conditions described in Table 4-4. The waiver of adoption of waste discharge requirements is conditional and may be terminated at any time for any specific discharge or any specific type of discharge.

Table 4 - 4. Types of Discharges Identified for Conditional Waiver of Waste Discharge Requirements.

TYPE OF WASTE DISCHARGE	CONDITION(S)	REFERENCES, REMARKS, ETC.
1. Conventional septic tank/ subsurface disposal systems for residential units	Subject to the conditions set forth in the *Basin Plan, Chapter 4, (Implementation), section entitled, Guidelines for New Community and Individual Sewerage Facilities*.	*Basin Plan, Chapter 4, (Implementation)*, section entitled, *Guidelines for New Community and Individual Sewerage Facilities*
2. Conventional septic tank/ subsurface disposal systems for commercial/ industrial establishments	Subject to the conditions set forth in the *Basin Plan, Chapter 4, (Implementation)*, section entitled, *Guidelines for New Community and Individual Sewerage Facilities*.	*Basin Plan, Chapter 4, (Implementation)*, section entitled, *Guidelines for New Community and Individual Sewerage Facilities*
3. Alternative individual sewerage systems	Subject to the conditions set forth in the *Basin Plan, Chapter 4, (Implementation)*, section entitled, *Guidelines for New Community and Individual Sewerage Facilities*.	*Basin Plan, Chapter 4, (Implementation)*, section entitled, *Guidelines for New Community and Individual Sewerage Facilities*
4. Conventional septic tank/ subsurface disposal systems for campgrounds	Where no facilities are provided which would enable recreational vehicles to connect with the campground sewerage system.	-
5. Construction and test pumping of water wells	Where the well water pumped is uncontaminated; and where the well was not constructed for and is not to be used in ground water cleanup operations.	-
6. Air conditioner condensate	-	-
7. Animal feeding operations for the following: goats, swine, sheep, horses, buffalo, and poultry.	Where the animal feeding operation is not a "concentrated animal feeding operation" under United States Environmental Protection Agency regulations pertaining to the National Pollutant Discharge Elimination System.	United States Environmental Protection Agency Consolidated Permit Regulations, 40 CFR 122.54
8. Plant crop residues	Where such residues are plowed into fields (as opposed to being disposed of en masse, e.g. in a pit).	For the purposes of this document, "plant crop residues" shall be defined as waste plant crops and nonmarketable portions of plants.
9. Storm water runoff	Where no NPDES permit is required.	-
10. Sand and gravel mining operations	Where operations are not conducted in flowing streams; and where Department of Fish and Game requirements established pursuant to Fish and Game Code Sections 1600-1603 are satisfied.	This waiver does not apply to wash water or other discharges from sand and gravel processing operations.
11. Intermittent swimming pool discharges	Where pool filter backwash is not discharged.	-
12. Dredging project wastes	Where the dredging project does not involve more than 5,000 yd^3 of material.	-
13. Short-term construction dewatering operations	Where there is no discharge to surface waters.	-
14. Telephone, natural gas and electric utility vault and conduit flushing and draining	-	-
15. Discharges from flushing and draining potable water lines and tanks	-	-
16. Manure composting and soil amendment operations	Where State Water Resources Control Board *Minimal Guidelines for Protection of Water Quality from Animal Wastes* are followed.	Adopted by the State Water Resources Control Board on March 1,1973.

TYPE OF WASTE DISCHARGE	CONDITION(S)	REFERENCES, REMARKS, ETC.
17. Solid waste disposal facilities accepting only inert wastes	Where State Water Resources Control Board regulations, requirements, and guidelines for disposal of such wastes are satisfied; and Where Fish and Game Code Section 5650 is not violated	The applicable document as of the date of adoption of the Resolution is Discharges of Waste to Land (CCR Title 23, Division 3, Chapter 15)
18. Stream channel alterations	Where Department of Fish and Game requirements established pursuant to Fish and Game Code Section 1600-1603 are satisfied.	-
19. Agricultural irrigation return water	Where discharge originates from an agricultural operation in which best management practices for control of salts, nutrients, pesticides and other pollutants in irrigation return water have been implemented.	For the purposes of this document, "agriculture" shall be defined as the production of fiber and/or food (including food for animal consumption, e.g., alfalfa).
20. Nursery irrigation return water	Where there is no surface discharge from nursery property.	For the purposes of this document, a "nursery" shall be defined as a facility engaged in growing plants (shrubs, trees, vines, etc.) for sale.
21. Short-term use of reclaimed wastewater	See Appendix D.	-
22. On-site drilling mud discharge	Where discharge is to a sump with a minimum freeboard of two feet; and Where sump is not to be used for ultimate disposal of drilling mud (unless discharger demonstrates that material is nontoxic and does not contain dissolved or soluble salts in quantities which could adversely affect basin ground water quality); and Where sump site is restored to predrilling state within 60 days of completion or abandonment of well.	-
23. Timber harvesting	Where harvesting occurs on National Forest System lands managed by the United States Forest Service in accordance with the practices and procedures set forth in the document entitled Water Quality Management for National Forest System Lands in California.	Management Agency Agreement between State Water Resources Control Board and the United States Forest Service (United States Department of Agriculture.)
24. Temporary Discharge of Specified Contaminated Soils	See Appendix D.	-
25. Disposal/Reuse of Dredge Spoils in Industrial or Commercial Applications	See Appendix D.	-
26. Green Waste Composting Facilities	See Appendix D.	-
27. Incidental Discharges within a Response Area during a Spill Response	The discharge must meet the definition of "incidental discharge" as this, and related, terms are defined in the "Memorandum of Understanding Between the Department of Fish and Game's Office of Oil Spill Prevention and Response and the State Water Resources Control Board Relating to Discharges Associated with Response Activities Conducted Pursuant to Ch. 7.4, Division 1 of the Government Code."	-
28. Permanent Reclaimed Water Projects	See Appendix D.	-

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WATER RECLAMATION REQUIREMENTS

Reclaimed water is water that, as a result of treatment, is suitable for a direct beneficial use or a controlled use that would otherwise not occur. Reclaimed water uses in the Region include, but are not limited to, landscape irrigation, crop irrigation, freeway landscape irrigation, groundwater recharge, soil compaction at construction sites, and for recreational lakes.

The Regional Board may prescribe water reclamation requirements to reclaimed water producers and those governing the use of reclaimed water, which the Regional Board has determined are necessary to protect public health, safety, and welfare pursuant to California Water Code, Division 7, Chapter 7, Sections 13500-13556 "*Water Reclamation Law*". Water Reclamation Law provides that no person shall reclaim water or use reclaimed water for any purpose subject to Title 22 criteria until water reclamation requirements have been established or the Regional Board determines no requirements are necessary. The Regional Board may not deny issuance of water reclamation requirements to a project which violates only a salinity standard in the Basin Plan.

In lieu of issuing water reclamation requirements pursuant to California Water Code, Section 13523, for each user of reclaimed water, the Regional Board establishes master reclamation requirements as part of the waste discharge requirements which are issued to a supplier or distributor, or both, of reclaimed water. Reclamation requirements must include the following components:

- A requirement that the permittee comply with the uniform statewide reclamation criteria established pursuant to Section 13521. Permit conditions for a use of reclaimed water not addressed by the uniform statewide reclamation criteria shall be considered on a case-by-case basis;

- A requirement that the permittee establish and enforce rules or regulations for reclaimed water users, governing the design and construction of reclaimed water use facilities and the use of reclaimed water, in accordance with the uniform statewide reclamation criteria established pursuant to Section 13521;
- A requirement that the permittee submit a quarterly report summarizing reclaimed water use, including the total amount of reclaimed water supplied, the total number of reclaimed water use sites, and the locations of those sites, including the names of the hydrologic areas underlying the reclaimed water use sites;

- A requirement that the permittee conduct periodic inspections of the facilities of the reclaimed water users to monitor compliance by users with the uniform statewide reclamation criteria and the requirements of the master reclamation permit; and

- Any other requirements determined to be appropriate by the Regional Board.

The "*Rules and Regulations for Reclaimed Water Users*" that must be issued and enforced by the permittee govern the design and construction of reclaimed water use facilities and the use of reclaimed water. The rules and regulations must have the following elements:

- Provisions implementing Title 22, Division 4, Chapter 3, Wastewater Reclamation Criteria; and Title 17, Division 1, Chapter 5, Group 4, Articles 1 & 2, of the California Code of Regulations;

- Provisions implementing the State Department of Health Services (DOHS) "*Guidelines For Use of Reclaimed Water and Guidelines for Use of Reclaimed Water for Construction Purposes*" and measures that are deemed necessary for protection of public health, such as the "*American Water Works Association (AWWA) California/Nevada Section, Guidelines for the Distribution of Non-Potable Water*" or alternate measures, acceptable to DOHS, providing equivalent protection of public health;

- Provisions authorizing the Regional Board, the discharger/producer, or an authorized representative of these parties, upon presentation of proper credentials, to inspect the facilities of any reclaimed water user to ascertain whether the user is complying with the discharger/producer's rules and regulations;

- Provision for written notification, in a timely manner, to the discharger/producer by the reclaimed water user of any material change or proposed change in the character of the use of reclaimed water;

- Provision for submission of a preconstruction report to the discharger/producer by the reclaimed water user in order to enable the discharger/producer to determine whether the user will be in compliance with the discharger/producer's rules and regulations;

- Provision requiring reclaimed water users to designate a reclaimed water supervisor responsible for the reclaimed water system at each use area under the user's control. Reclaimed water supervisors should be responsible for the installation, operation, and maintenance of the irrigation system, enforcement of the discharger/producer's reclaimed water user rules and regulations, prevention of potential hazards, and maintenance of the reclaimed water distribution system plans in "*as built*" form;

- Provision authorizing the discharger/producer to cease supplying reclaimed water to any person who uses, transports, or stores such water in violation of the discharger/producer's rules and regulations;

- Provision requiring notification and concurrence of the State Department of Health Services and the local county health department for new reclaimed water users. The notification of the county health department shall include a site distribution plan for new and retrofit facilities and a cross-connection control inspection plan for sites containing both potable and reclaimed water distribution lines;

- Provision requiring all windblown spray and surface runoff of reclaimed water applied for irrigation onto property not owned or controlled by the discharger or reclaimed water user to be prevented by implementation of best management practices;

- Provision requiring all reclaimed water storage facilities owned and/or operated by reclaimed water users to be protected against erosion, overland runoff, and other impacts resulting from a 100-year frequency storm, 24 hour storm. This requirement may be waived if the discharger submits information demonstrating that releases from the storage facilities caused by storm events of less than 100-year frequency will not cause violation of the Basin Plan water quality standards;

- Provision requiring all reclaimed water storage facilities owned and/or operated by reclaimed water users to be protected against 100-year frequency peak stream flows as defined by the local flood control agency. However, if information is made available to the Regional Board which shows that a reclaimed water storage facility presents no potential impairment to the beneficial uses, the Regional Board may exempt requirements for 100-year flood protection on a case-by-case basis;

- Provision for notification to reclaimed water users that the Regional Board may initiate enforcement action against any reclaimed water user who discharges reclaimed water in violation of any applicable discharge prohibitions prescribed by the Regional Board or in a manner which creates, or threatens to create conditions of pollution, contamination, or nuisance, as defined in Water Code Section 13050; and

- Provision for notification to reclaimed water users that the Regional Board may initiate enforcement action against the discharger/producer, which may result in the termination of the reclaimed water supply, if any person uses, transports, or stores such water in violation of the discharger/producer's rules and regulations or in a manner which creates, or threatens to create conditions of pollution, contamination, or nuisance, as defined in Water Code Section 13050.

WASTE DISCHARGE PROHIBITIONS

California Water Code Section 13243 provides that a Regional Board, in a water quality control plan, may specify certain conditions or areas where the discharge of waste, or certain types of waste is not permitted. The following discharge prohibitions are applicable to any person, as defined by Section 13050(c) of the California Water Code, who is a citizen, domiciliary, or political agency or entity of California whose activities in California could affect the quality of waters of the state within the boundaries of the San Diego Region.

(1) The discharge of waste to waters of the state in a manner causing, or threatening to cause a condition of pollution, contamination or nuisance as defined California Water Code Section 13050, is prohibited.

(2) The discharge of waste to land, except as authorized by waste discharge requirements or the terms described in California Water Code Section 13264 is prohibited.

(3) The discharge of pollutants or dredged or fill material to waters of the United States except as authorized by an NPDES permit or a dredged or fill material permit (subject to the exemption described in California Water Code §13376) is prohibited.

(4) Discharges of recycled water to lakes or reservoirs used for municipal water supply or to inland surface water tributaries thereto are prohibited, unless this Regional Board issues a NPDES permit authorizing such a discharge; the proposed discharge has been approved by the State Department of Health Services and the operating agency of the impacted reservoir; and the discharger has an approved fail-safe long-term disposal alternative.

(5) The discharge of waste to inland surface waters, except in cases where the quality of the discharge complies with applicable receiving water quality objectives, is prohibited. Allowances for dilution may be made at the discretion of the Regional Board. Consideration would include streamflow data, the degree of treatment provided and safety measures to ensure reliability of facility performance. As an example, discharge of secondary effluent would probably be permitted if streamflow provided 100:1 dilution capability.

(6) The discharge of waste in a manner causing flow, ponding, or surfacing on lands not owned or under the control of the discharger is prohibited, unless the discharge is authorized by the Regional Board.

(7) The dumping, deposition, or discharge of waste directly into waters of the state, or adjacent to such waters in any manner which may permit its being transported into the waters, is prohibited unless authorized by the Regional Board.

(8) Any discharge to a storm water conveyance system that is not composed entirely of "*storm water*" is prohibited unless authorized by the Regional Board. [The federal regulations, 40 CFR 122.26 (b) (13), define storm water as storm water runoff, snow melt runoff, and surface runoff and drainage. 40 CFR 122.26 (b) (2) defines an illicit discharge as any discharge to a storm water conveyance system that is not composed entirely of storm water except discharges pursuant to a NPDES permit and discharges resulting from fire fighting activities.] [§122.26 amended at 56 FR 56553, November 5, 1991; 57 FR 11412, April 2, 1992].

(9) The unauthorized discharge of treated or untreated sewage to waters of the state or to a storm water conveyance system is prohibited.

(10) The discharge of industrial wastes to conventional septic tank/subsurface disposal systems, except as authorized by the terms described in California Water Code Section 13264, is prohibited.

(11) The discharge of radioactive wastes amenable to alternative methods of disposal into the waters of the state is prohibited.

(12) The discharge of any radiological, chemical, or biological warfare agent into waters of the state is prohibited.

(13) The discharge of waste into a natural or excavated site below historic water levels is prohibited unless the discharge is authorized by the Regional Board.

(14) The discharge of sand, silt, clay, or other earthen materials from any activity, including land grading and construction, in quantities which cause deleterious bottom deposits, turbidity or discoloration in waters of the state or which unreasonably affect, or threaten to affect, beneficial uses of such waters is prohibited.

(15) The discharge of treated or untreated sewage from vessels to Mission Bay, Oceanside Harbor, Dana Point Harbor, or other small boat harbors is prohibited.

(16) The discharge of untreated sewage from vessels to San Diego Bay is prohibited.

(17) The discharge of treated sewage from vessels to portions of San Diego Bay that are less than 30 feet deep at mean lower low water (MLLW) is prohibited.

(18) The discharge of treated sewage from vessels, which do not have a properly functioning US Coast Guard certified Type I or Type II marine sanitation device, to portions of San Diego Bay that are greater than 30 feet deep at mean lower low water (MLLW) is prohibited.

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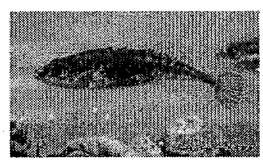


WATER QUALITY CERTIFICATION (SECTION 401)

In addition to the issuance of NPDES permits or waste discharge requirements, the Regional Board acts to protect the quality of surface waters through water quality certification pursuant to Section 401 of the Clean Water Act. Section 401 requires that any person applying for a federal permit or license which may result in a discharge of pollutants into waters of the United States, must obtain a state water quality certification that the activity complies with all applicable water quality standards, limitations, and restrictions.

No license or permit may be issued by a federal agency until certification required by Section 401 has been granted or waived by the state. Further, no license or permit may be issued if certification has been denied by the state. The activity must also meet the requirements of the Coastal Nonpoint

Pollution Control Program required under the Coastal Zone Act Reauthorization Amendments (CZARA).

The following permits or licenses are subject to Section 401 of the Clean Water Act:

- NPDES permits issued by the US EPA under Section 402 of the Clean Water Act;

- Clean Water Act, Section 404 permits issued by the US Army Corps of Engineers;

- Permits issued under Sections 9 and 10 of the Rivers and Harbors Act (for activities which may affect navigation);

- Licenses for hydroelectric power plants issued by the federal Energy Regulatory Commission under the Federal Power Act; and

- Licenses issued by the Nuclear Regulatory Commission.

The Regional Board's water quality certification activities have focused on applications for permits for the discharge of dredged or fill material to surface waters. These permits are issued by the US Army Corps of Engineers (Clean Water Act, §404 permits) subject to any conditions imposed by the Regional Board pursuant to Section 401.

The Section 404 program is administered at the federal level by the US Army Corps of Engineers and the US EPA. The US Fish and Wildlife Service and the National Marine Fisheries Service have important advisory roles. The US Army Corps of Engineers has the primary responsibility for the permit program and is authorized, after notice and opportunity for a public hearing, to issue permits for the discharge of dredged or fill material. US EPA develops the regulations under which permits may be granted.

The Regional Board evaluates the projects for which Section 404 permits are requested and determines whether to deny water quality certification, issue a certification with or without conditions, or waive the certification pursuant to regulations in Article 4, Title 23. Regional Board certification is dependent upon assurance that the project will not reduce water quality below applicable standards as defined in the Clean Water Act (i.e., the water quality objectives established and the beneficial uses which have been designated for the surface waters). A certification is usually denied if the proposed activity does not meet water quality standards. If the activity may violate standards, a conditional certification is given. If the activity does not violate any standards, a Section 401 waiver may be given. The Executive Director of the State Board may issue a water quality certification after review of the application, all relevant data, and taking into consideration any recommendations from the Regional Board.

SELF MONITORING, COMPLIANCE MONITORING, AND INSPECTIONS

Compliance with NPDES permits and waste discharge requirements is generally self-monitored by each individual discharger, with oversight by the Regional Board. Dischargers are required to report and take necessary corrective actions when they discover that they are not in compliance with the permit effluent limits. The Regional Board conducts periodic inspections and compliance monitoring and, as necessary, will take enforcement actions to ensure compliance.

Self Monitoring Program: Waste discharge requirements and NPDES permits issued by the Regional Board include requirements for the discharger to collect samples of the waste discharge. In some cases, the receiving waters must also be monitored by the dischargers. The results of the "*self monitoring*" programs are reported to the Board and are used to determine compliance with the waste discharge requirements. (Additional information on this topic is presented in Chapter 6, Surveillance and Monitoring).

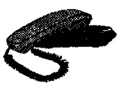
Compliance Monitoring and Inspections: Regional Board staff can conduct unannounced inspections (including collection of samples) to determine the status of compliance with NPDES permit or WDRs/WRRs requirements. All major dischargers are inspected at least once a year. (Additional information on this topic is presented in Chapter 6, Surveillance and Monitoring).

ENFORCEMENT

The Regional Board is committed to the maintenance of a strong and uniform enforcement program. Appropriate and timely response to instances of noncompliance with Regional Board NPDES permits, waste discharge requirements, waste discharge prohibitions and enforcement orders is necessary to ensure protection of the quality of surface and ground waters in the Region.

Regional Board response to noncompliance incidents include the establishment of a specific time frame for compliance and or correction. All dischargers are expected to correct violations in the shortest time frame possible. With the exception of special circumstances, failure to terminate, comply, or complete corrective actions on a noncompliance incident in a specified time frame will result in the escalation of the matter to a higher level enforcement action.

Regional Board responses to instances of violation correspond to the following enforcement action level sequence, unless circumstances warrant a more expeditious escalation to a higher level.



LEVEL A ENFORCEMENT ACTION

In this action level the Regional Board staff requests the discharger, by telephone or letter, to correct the problem and prevent recurrence. Regional Board staff may also request the discharger to correct the problem during routine compliance inspections.

LEVEL B ENFORCEMENT ACTION

In this action level the Regional Board Executive Officer issues a notice of violation to the discharger for failure to comply with a compliance schedule for corrective action.

LEVEL C ENFORCEMENT ACTION

In this action level the Regional Board may take a variety of formal higher level enforcement actions. The California Water Code provides the Regional Board with a number of enforcement remedies for violations of requirements. These remedies include time schedules, cease and desist orders, cleanup and abatement orders, and administrative civil liability orders.

Time Schedule Orders

When a discharge is taking place or threatening to occur that will cause a violation of a Regional or State Board requirement, a discharger may be required to submit a detailed list of specific actions the discharger will take to correct or prevent the violation. (California Water Code §13300). These schedules may also be required when the waste collection, treatment, or disposal facility of a discharger are approaching capacity. Time schedule orders are adopted by the Board after a public hearing or issued by the Executive Officer pursuant to authority delegated by the Regional Board.

Cleanup and Abatement Orders

The Regional Board may issue a cleanup and abatement order to any person who has discharged, is discharging or is threatening to discharge wastes that will result in a violation of waste discharge requirements or other order or prohibition of the State or Regional Board. The Regional Board may also issue a cleanup and abatement order to any person who discharges or has discharged waste to waters of the state and causes, or threatens to cause, a condition of pollution or nuisance. The cleanup and abatement order may require the waste discharger(s) to cleanup and abate the effects of the discharge or to take other appropriate remedial action (California Water Code §13304). A cleanup and abatement order is issued if a pollutant can actually be cleaned up or the pollutant effects abated. The Regional Board has delegated issuance of these orders to the Executive Officer. Cleanup and abatement orders do not require Board adoption, but may be brought before the Regional Board for consideration at the request of the discharger.

Cease and Desist Orders

If discharge prohibitions or requirements of the State Board or Regional Board are violated or threatened, the Regional Board may adopt a cease and desist order (California Water Code §13301) requiring the discharger to comply forthwith, to comply in accordance with a time schedule, or if the violation is threatened, to take appropriate remedial or preventive action. Cease and desist orders may restrict or prohibit the volume, type or concentration of waste added to community sewer systems, if existing or threatened violations of waste discharge requirements occur. Cease and desist orders may specify interim time schedules as well as limitations that must be complied with until full compliance is achieved. Cease and desist orders are adopted by the Regional Board after a public hearing.

Administrative Civil Liability

Administrative civil liability complaints and orders may be issued by the Regional Board for certain categories of violations. In this process the Regional Board may impose monetary penalties on dischargers. The Regional Board (or the Executive Officer) may issue Administrative Civil Liability complaints (ACLs) to persons who intentionally or negligently violate enforcement orders of the Board, or who intentionally or negligently discharge wastes in violation of any order, prohibition, or requirement of the Board where the discharge causes conditions of pollution or nuisance (California Water Code §13350). ACLs may also be issued in cases where a person fails to submit reports requested by the Board (California Water Code §13261 and §13268) or when a person discharges waste without first having filed the appropriate Report of Waste Discharge (ROWD) (California Water Code §13265). ACLs may be issued pursuant to California Water Code Section 13385 for violations of any Regional Board prohibition or requirement implementing specified sections of the Clean Water Act, or any requirement in an approved pretreatment program. Amounts of administrative civil liability that the Board can impose range up to $10,000 per day of violation. The Water Code also provides that a superior court may impose civil liability assessments in substantially higher amounts. The Regional Board may conduct a hearing if a discharger contests the imposition of the Administrative Civil Liability.

LEVEL D ENFORCEMENT ACTION

Referral to the Attorney General or District Attorney

Judicial Civil Liability: The California Water Code provides that a Regional Board may request the State Attorney General to petition a superior court to enforce orders and complaints issued by the Board and impose civil monetary remedies. The monetary remedies may be in excess of the administrative civil liability penalties that the Regional Board is authorized to impose. The court imposed fines and or imprisonment vary depending upon the seriousness of the violation.

Injunctive Relief: The Regional Board may also request that the Attorney General seek injunctive relief in specific situations, such as violations of cease and desist orders or discharges which cause or threaten to cause a nuisance or pollution that could result in a public health emergency (California Water Code §13331 and §13340).

Criminal Penalties: The Regional Board may also refer violations to the District Attorney to seek criminal penalties by judicial action in the county where the discharge occurred. The court imposed fines and or imprisonment vary depending upon the seriousness of the violation.

SELECTION OF APPROPRIATE ENFORCEMENT ACTION

The following criteria are considered by the Regional Board in selecting the appropriate enforcement action in response to an incident of noncompliance:

- Degree of water quality impairment and/or threat to the public health including the degree of toxicity of the discharge;
- Past history of discharge violations;
- Degree of cooperation or recalcitrance shown by the discharger;
- Culpability of the discharger;
- Financial resources of the discharger;
- Whether the circumstances leading to the noncompliance have been corrected;
- Whether the discharge violations are likely to continue in the future;
- Whether the discharge can be cleaned up;
- The need to take immediate cleanup action;
- Any economic benefit realized by the discharger as a result of the noncompliance; and
- Other actions as justice may require.

STATE WATER RESOURCES CONTROL BOARD PLANS AND POLICIES

The State Board has adopted a number of plans and policies for statewide water quality management. The Regional Board implements these plans through Waste Discharge Requirements, NPDES permits, and any necessary enforcement actions. These policies are explained in more detail in Chapter 5, Plans and Policies.

HAZARDOUS WASTE SOURCE REDUCTION

The Department of Toxic Substance Control (DTSC) has adopted regulations regarding hazardous waste source reduction pursuant to the Hazardous Waste Source Reduction and Management Review Act of 1989 (Article 11.9, starting with §25244.12 of the

Health and Safety Code). These regulations are contained in Sections 67100.1 through Sections 67100.14 of Title 22 of the California Code of Regulations. These regulations require that each generator of hazardous or extremely hazardous waste within the limits set by the regulations conduct a source reduction evaluation review and plan, plan summary, hazardous waste management performance report, and report summary on or before September 1, 1991 and every four years thereafter. Every generator is required to retain a copy of the current review and plan, plan summary, report, report summary, progress report, and compliance checklist at each site, at a public library, or at a local governmental agency. The Regional Board supports these efforts of hazardous waste source reduction because any successes achieved will mean less hazardous waste which could pollute California's waters.

MUNICIPAL AND DOMESTIC WASTEWATER

Municipal wastewater in the San Diego Region consists primarily of domestic sewage and minor quantities of industrial wastes in some of the more highly urbanized and industrialized areas. Facilities to control municipal wastewater include wastewater collection systems, pumping stations, transport pipelines, treatment plants, storage ponds and ocean outfalls. These facilities are sometimes collectively referred to by the term Publicly Owned Treatment Works (POTW).

Municipal wastewater treatment in the San Diego Region is generally at the secondary treatment level. Secondary treatment results in the removal of more than 85 percent of the biochemical oxygen demand and suspended solids found in municipal wastewater. Tertiary (advanced) wastewater treatment is used at some treatment plants for additional removal of pollutants to reclaim wastewater for beneficial reuse. Effluent from the wastewater treatment plants is disposed of by various means including:

- Discharge to the Pacific Ocean via long deep ocean outfalls;
- Percolation into the soil; and
- Reclamation and reuse in conformance with uniform reclamation criteria (California Code of Regulations, Title 22, Division 4, Chapter 3).

Sludge disposal at most major municipal wastewater treatment plants in the Region consists of aerobic or anaerobic digestion and land disposal. Dried sludge is either disposed of at landfills or made available to the public as a soil conditioner. Some treatment plants, located upstream of major regional wastewater treatment plants discharge sludge to the sewage collection system for treatment at a "*downstream*" regional wastewater plant. The term municipal sewage treatment plant and Publicly Owned Treatment Works are used interchangeably in the Basin Plan.

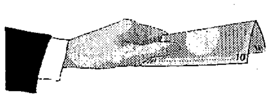
The Regional Board regulates wastewater discharges from municipal wastewater treatment plants through either the issuance of National Pollutant Discharge Elimination System (NPDES) permits where the discharge is to surface waters or through waste discharge requirements (WDRs) where the discharge is to land.

Discharges of wastewater to surface water must meet the effluent limitations prescribed in the NPDES permit issued by the Regional Board. Effluent limitations are based on the following criteria:

- Secondary treatment effluent limitations defined by US EPA contained in 40 CFR 133, unless a waiver to the secondary treatment standards is obtained (more stringent effluent limitations than secondary treatment may be imposed by the Regional Board if necessary);
- Applicable water quality objectives and beneficial uses contained in the Basin Plan and State Board Water Quality Control Plans;
- Applicable public health protection standards for total and fecal coliform;
- Assimilative capacity of the receiving water;
- The terms and conditions of the federal Antidegradation Policy (40 CFR 131.12) and the State Antidegradation Policy (Resolution No. 68-16) (See Chapter 3);
- Anti-backsliding Provisions described in Clean Water Act Section 404; and
- Land disposal or recycling of sludge as a soil amendment.

Discharges of wastewater onto land must meet the effluent limitations in the waste discharge requirements prescribed by the Regional Board through the issuance of waste discharge requirements. The waste discharge requirements contain effluent limitations based on the following criteria:

- The treatment capability of the treatment process employed by the dischargers;
- Applicable water quality objectives and beneficial uses contained in the Basin Plan;
- Applicable public health protection standards for total and fecal coliform;
- Assimilative capacity of the receiving water;
- The terms and conditions of the State Antidegradation Policy (Resolution No. 68-16) (See Chapter 3); and
- Land disposal or recycling of sludge as a soil amendment.



CLEAN WATER GRANTS AND LOANS

From 1972 until 1988 the State Water Resources Control Board assisted the US EPA in administering the multibillion dollar Clean Water Grants Program in California to finance the construction of municipal wastewater treatment facilities. This program ended in 1988. The Clean Water Act provides for the creation of a State Revolving Fund (SRF) Loan Program capitalized in part by federal funds. The Clean Water Act authorizes loan funding for construction of Publicly Owned Treatment Works (POTWs), for implementation of a nonpoint source pollution control management program, and for the development and implementation of an estuary conservation and management program. The State Board converted the Clean Water Grant Program to a Grants and Loans program on October 1, 1988, and ultimately replaced this completely with the State Revolving Fund Loan Program on June 30, 1989.

INDIVIDUAL DOMESTIC SUBSURFACE DISPOSAL SYSTEMS

Some areas in the Region rely on subsurface disposal systems for disposal of domestic household sewage. The most common type of subsurface disposal system is the septic tank-leach field disposal system. Seepage pits are sometimes used when site conditions are not suitable for leachfields. Occasionally, alternatives to conventional septic tank/leachfield or seepage pit systems are proposed for individual residences. Alternatives that have been proposed but not necessarily approved in the Region have included mound systems, evapotranspiration (ET), evapotranspiration/infiltration (ETI), small in-house package treatment facilities, sand filters, and other innovative approaches.

The purpose of a septic tank system is to treat household wastes so that the discharge will readily percolate into the soil. Treatment or conditioning of the waste is achieved by the removal of solids through settling and decomposition of some of the soluble organic chemicals 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 or ground waters. Septic tank systems used in undersized lots or unsuitable soils are subject to failure, and can lead to untreated or poorly treated sewage seeping into yards, roadside ditches, streams, lagoons, or into ground water, thus creating a public nuisance and health hazard. Even well-functioning septic systems can pollute ground water under adverse conditions.

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 in the unsaturated zone, these nitrogen compounds are easily transported to ground water. 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. Both the federal drinking water standard of 10 mg/l nitrate plus nitrite (expressed as nitrogen) and the equivalent state drinking water standard of 45 mg/l nitrate (expressed as NO_3) is based on this relationship.

The California Water Code, Chapter 4, Article 5, sets forth criteria for regulating on-site disposal systems. In the past, the Regional Board placed certain types of septic tank systems under individual waste discharge requirements. However, the regulatory process for establishing and enforcing waste discharge requirements for individual disposal systems is cumbersome and for the most part overlaps the regulatory process of local agencies. Consequently, the Regional Board has deferred regulation of most single-family dwellings and certain commercial septic tank disposal systems to the local health departments. The Regional Board has asserted its authority with multiple-dwelling units, some larger developments in problem areas, non-domestic septic tank systems, and any situation which is creating, or has the potential to create, a water quality problem.

In the past, the Regional Board staff reviewed all proposals of individual sewerage systems for residential subdivisions involving more than five family units and for all commercial and industrial establishments. As part of this review, the Regional Board staff evaluated the adequacy of the consultants' field tests, the conformance of the design proposal with the criteria of the appropriate county regulatory agency, and in most instances, the cumulative impacts of the discharges on nitrate concentrations in the groundwater. Letters were forwarded to the appropriate local health agency approving those projects that demonstrated: (a) surfacing sewage from the proposed disposal systems will not take place either adjacent to, or within, the project boundaries; (b) the historic high groundwater and the effects of the discharge will not result in groundwater rising within 5 feet below the base of the disposal system; and (c) the cumulative impacts of the discharges will not cause nitrate concentrations in the ground water to exceed water quality standards.

Generally, project proponents have been able to address water quality issues by completing the routine field investigations required by the local health agencies. Regional Board staff review of the investigation reports often duplicated the review efforts of the local agencies. On occasion, the Regional Board staff has required further investigations to address concerns regarding the cumulative impacts of the discharges. These investigations are not part of the local agencies' normal review process and the criteria for conducting these investigations are not specified by local regulations. On these occasions, significant staff resources are expended evaluating the technical information submitted by the project proponents.

In 1990, Regional Board staff suspended review of all proposed subsurface disposal system projects in order to direct staff resources to more critical water quality issues. In lieu of reviewing individual projects, staff prepared interim screening procedures for implementation by the appropriate local agencies. The objective of the procedures is to assist the local agencies in identifying those projects with potential for causing degradation of ground water quality. Only those projects would then be referred to the Regional Board staff.

The determination by Regional Board staff to require project proponents to conduct an investigation of the cumulative impacts of the individual systems has been on a case-by-case basis. Staff considers factors such as the location of proposed project, the number of proposed lots, and the density of the development. However, without written review criteria, staff decisions requiring project proponents to conduct further investigations has been inconsistent.

GUIDELINES FOR NEW COMMUNITY AND INDIVIDUAL SEWERAGE FACILITIES

Background

The Regional Board adopted *Guidelines for New Community and Individual Sewerage Facilities* (Resolution No. 79-44) on June 25, 1979. By the mid-1980s, the Regional Board recognized the need to update the 1979 guidelines to simplify the regulatory process by providing local agencies with the necessary review criteria for addressing cumulative impacts from individual systems. Those projects complying with the criteria would not be directly subject to the Regional Board regulatory process.

As part of the Clean Water Act Section 205(j) Basin Plan update project, the Regional Board contracted a study to review the portion of the 1979 guidelines pertaining to subsurface disposal and to recommend any changes that would result in a more effective and efficient regulatory program. The contractor was directed to conduct file research and literature review regarding the impacts of subsurface disposal on ground water quality and to interview the staff of responsible regulatory agencies in San Diego, Riverside, and Orange Counties to incorporate their concerns and recommendations into a revised set of subsurface disposal guidelines. A report, entitled "*Review Of Subsurface Wastewater Disposal Policy, San Diego Regional Water Quality Control Board*" discusses phosphates, nitrate contamination, sources of nitrates in the ground water, reasons for septic systems failure, local and regional water table rises, and the implications of regulatory restrictions.

The report recommends that:

- The Regional Board should delegate the authority for review and approval of all septic systems and seepage pits to appropriate county regulatory agencies, eliminating the duplicative review function of the board staff.

- Effort currently directed toward review of subsurface disposal applications should be redirected to investigation of basin-specific limitations on subsurface disposal. These studies should be undertaken in cooperation with county regulatory agencies.

- The Regional Board should establish subsurface disposal guidelines for the county regulatory agencies at the time that authority for review is delegated. These guidelines should:

  ✓ Specify a continuation of existing design criteria for leachline length, spacing, setback, and slope requirements.

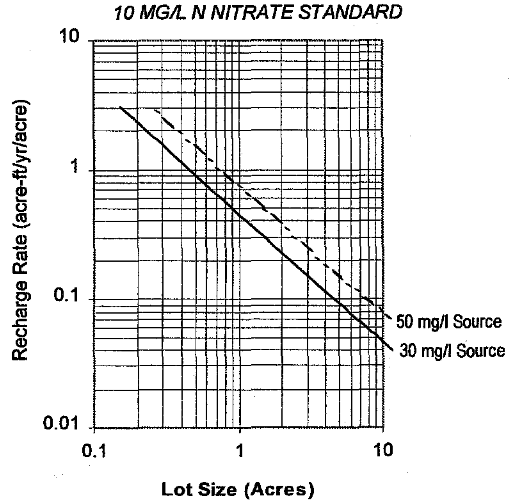
  ✓ Increase minimum unsaturated soil thickness below the leachlines to 9 feet for soils with good percolation rates, 12 feet for moderate percolation rates, and 14 feet for soils with poor percolation rates for individual systems.

  ✓ Require hydrogeological studies in areas of imported domestic water if the minimum lot size is not met, or if significant downslope accumulation of effluent is likely, or if septic systems discharge to a basin with restricted outflow.

  ✓ Restrict septic system densities to those indicated in the figure 4-1 in those areas where ground water is a significant source of drinking water.

Figure 4-1

REQUIRED RECHARGE RATES TO MAINTAIN 10 MG/L N NITRATE STANDARD



The policy described below updates and supersedes Resolution No. 79-44. The policy incorporates current practices and pertinent conclusions based upon the above recommendations to improve the efficiency of the review process, to eliminate unnecessary Regional Board regulation, and to improve protection of ground water quality.

Principles

The following management principles are designed to ensure that the goals of the Basin Plan are implemented:

- Sewerage systems must be designed, constructed, and installed so as to be capable of preventing pollution or contamination of the waters of the State or creating nuisance for the duration of the development.

- Sewerage systems must be operated, maintained and monitored so as to continually prevent pollution or contamination of the waters of the State and the creation of a nuisance.

- The responsibility for both of the above must be clearly and legally assumed by an entity with the financial and legal capability to assure that the system provides protection to the quality of the waters of the State for the duration of the development.

Purpose

The purpose of the guidelines below is to provide guidance to proponents of projects involving new discharges of wastes from community or individual sewerage facilities. However, the Regional Board may exercise discretion and approve exceptions to these guidelines if it is demonstrated that conformance with the above principles will be achieved. The Regional Board recognizes that there are certain actions which are best undertaken by local governments to minimize the potential water quality problems resulting from new community and individual sewerage systems. The guidelines are based on the assumption that it is desirable that city and county governments:

- Prohibit the use of new community and individual sewerage systems where existing community sewerage systems are reasonably available. The determination of whether or not existing systems are reasonably available should be the responsibility of the local agency or agencies having jurisdiction over the project.

- Prohibit the use of new individual disposal systems for any subdivision of land unless the governing body having jurisdiction determines that the use of individual disposal systems will be in the best public interest.

- Assure that individual disposal systems are maintained to the satisfaction of the responsible health officer. This could be accomplished through establishment of special maintenance districts, by the amendment of existing ordinances to assure adequate maintenance documented through periodic inspections, or other alternatives as deemed appropriate by the local health officer.

- Consider the cumulative impacts of individual disposal system discharges as a part of the approval process for development.

Community Sewerage Systems

The Regional Board will regulate all discharges of wastes from community sewerage systems. The Regional Board will require a report of waste discharge to be filed for all proposed waste discharges which involve the use of new community sewerage systems. Before the Board will consider the report of waste discharge to be complete, the following requirements must be met:

- A public entity must assume legal authority and responsibility for the ownership, operation, and maintenance of the proposed wastewater treatment and disposal system. The Report of Waste Discharge must be submitted by the public entity.

- The Report of Waste Discharge must include the following:

  ✓ A final Environmental Impact Report or Negative Declaration covering the total project, unless categorically exempt, prepared and approved by the local lead agency pursuant to the California Environmental Quality Act (CEQA) of 1970 (as amended) and Chapter 3, Division 6, Title 14, of the California Code of Regulations (as amended). In the approval process the Environmental Impact Report or Negative Declaration must be circulated through the State Clearinghouse; and

  ✓ Operation, maintenance, revenue and contingency plans for the wastewater treatment and disposal facilities or a commitment by the public entity to prepare such plans and submit them to the Regional Board at least 60 days prior to the initiation of discharge.

In the absence of a satisfactory Report of Waste Discharge, the discharge will be prohibited.

Individual Sewerage Systems

Projects Involving Five Family Units or Less - Conventional Septic Tank/Subsurface Disposal

When individual sewerage systems consisting of conventional septic tanks and leach fields or seepage pits would be provided to serve each dwelling for projects of five family units or less, or to serve to dispose domestic waste from commercial or industrial projects with a design flow of equal to or less than 1200 gallons per day, the Regional Board will defer the authority to regulate the discharge of domestic wastes to the appropriate county health officer.

Projects Involving More Than Five Family Units - Conventional Septic Tank/Subsurface Disposal

The above deferral of authority to the appropriate county health officer to regulate the discharge of domestic wastes will also apply when individual sewerage systems consisting of conventional septic tanks and leach fields or seepage pits would be provided to: (1) serve dwellings involving more than five family units in a single project or (2) dispose of domestic waste from commercial or industrial projects with a design flow of more than 1200 gallons per day. The deferral will apply if the project proponent demonstrates to the satisfaction of the appropriate county health officers that the following conditions are met:

- The use of new individual subsurface disposal systems for any subdivision of land will be in the best public interest; and

- Individual disposal systems will comply with all existing county design criteria including but not limited to percolation testing, minimum required leachline length, leachline spacing, setback and slope requirements; and

- Individual disposal systems will meet the minimum unsaturated soil thickness between the bottom of leachlines or the bottom of seepage pits and the historic high ground water level. The minimum unsaturated soil thickness is 9 ft for soils with good percolation rates [less than

15 minutes per inch (mpi)], or 12 ft for soils with moderate percolation rates (15 to 40 mpi), or 14 ft for soils with poor percolation rates (greater than 40 mpi). However, exceptions to the unsaturated soil thickness criteria may be allowed by the appropriate county health officer, based upon knowledge of local site conditions; and

- The cumulative impact from proposed individual disposal system(s) or from new commercial and/or industrial development(s) will not cause adverse impacts to the beneficial uses of ground water.

If it is determined that the discharge could cause a significant water quality problem, then a Report of Waste Discharge must be filed with the Regional Board and waste discharge requirements must be obtained prior to final subdivision map recording.

For any discharge of industrial wastes a Report of Waste Discharge must be filed with the Regional Board and waste discharge requirements must be obtained prior to recording of the final map and/or issuance of a building permit.

Alternative Systems

When an evapotranspiration (ET), or an evapotranspiration/infiltration (ETI), or a mound system is proposed to serve a single residential project, Regional Board defers regulation of the discharge to the appropriate county health officers provided that the project proponents demonstrate to the satisfaction of appropriate county health officers that the following conditions are met:

- ET, or ETI, or mound systems will comply with all conditions for conventional subsurface disposal systems as noted above; and

- The design, construction, and installation of an ET or ETI system will comply with the criteria approved by this Regional Board Resolution No. 80-84 and the criteria contained in the State Water Resources Control Board, *Guidelines for Evapotranspiration Systems* dated January 1980. The design, construction, and installation of mound systems will comply with criteria contained in the State Water Resources Control Board, *Guidelines for Mound Systems* dated January 1980; and

- The ET, or ETI, or mound systems will be for domestic waste only; and

- The ET, or ETI, or mound systems will be used for single family dwelling on a single lot which has previously undergone a proper satisfactory CEQA process; and

- The ET, or ETI, or mound systems will not be used as a waste discharge method for new subdivisions; and

- The ET, or ETI, or mound systems will not be used as a group collection system; and

- The ET, or ETI, or mound systems is considered experimental, and will be monitored for at least three years.

As the counties develop and adopt standards for alternative systems, the Regional Board may, in the future, defer regulation of additional types of individual sewerage systems to the appropriate county health officer in much the same manner as is now done for conventional septic tank/subsurface disposal systems.

Report of Waste Discharge Submission

The Regional Board will review specific proposals not meeting the above criteria at the request of the appropriate county authority. For such proposals, a Report of Waste Discharge must be filed with the Regional Board and waste discharge requirements must be obtained or waived by the Regional Board prior to recordation of the final map and/or issuance of a building permit. Before the Regional Board considers the Report of Waste Discharge to be complete, the following technical information must be submitted:

- A hydrogeologic study which will, using accepted ground water hydrologic techniques and practices, assess the probable rise in the water table associated with the project, including effects of septic system recharge, landscape irrigation, and ground water pumpage. The study will additionally address the impact of the projected water table rise or fall on the operation of new and existing septic systems.

- A nitrate study which will, using an acceptable mass balance method, demonstrate that the proposed project will not cause the basin plan objective for nitrate to be exceeded.

In addition to the technical information submitted, the following conditions must be met:

- In most instances a public entity must assume legal authority and responsibility for the operation and maintenance of the proposed individual wastewater treatment and disposal systems;

- In some instances, such as commercial/industrial establishments, or projects involving only a single homesite, or special extenuating circumstances, the public entity condition may be set aside;

- A final Environmental Impact Report or Negative Declaration must be included covering the total project, unless categorically exempt, prepared and approved by the local lead agency pursuant to the California Environmental Quality Act of 1970 (as amended) and Chapter 3, Division 6, Title 14, of the California Administrative Code (as amended). In the approval process the Environmental Impact Report or Negative Declaration must be circulated through the State Clearinghouse;

- Operation, maintenance, revenue, and contingency plans must be submitted for the wastewater treatment and disposal facilities or a commitment must be made by the public entity to prepare such plans and submit them to the Regional Board at least 60 days prior to the initiation of discharge; and

- In the absence of a satisfactory Report of Waste Discharge, the discharge will be prohibited without prejudice.

WATER RECLAMATION AND REUSE

Water reclamation is a process consisting of the following elements:

- Treatment of wastewater to a level of quality suitable for reuse;

- Transportation of reclaimed water to reuse areas; and

- Application of reclaimed water to an actual use.

Reclaimed water use typically falls into the following seven broad categories:

- Agricultural irrigation;

- Landscape irrigation (including highway landscape and golf courses);

- Impoundments for landscape, recreational or wildlife uses, wetland and wildlife enhancement;

- Industrial and Construction processes (e.g., cooling water, process water, washdown water or for dust control);

- Ground water recharge.

- Flushing of toilet and urinals in non-residential buildings; and

- Stream enhancement.

The State of California has a strong interest in promoting the conservation and efficient use of water through water reclamation. The California Constitution, Article X, Section 2 provides that:

> "*...Water resources of the state be put to beneficial use to the fullest extent of which they are capable, and that waste or unreasonable use of water be prevented, and that conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare...*"

The State interest in the conservation and efficient use of its waters is further emphasized by California Water Code Section 13510 which deals specifically with water reclamation. Section 13510 provides that:

> "*It is hereby declared that the people of the state have a primary interest in the development of facilities to reclaim water containing waste to supplement existing surface water and underground water supplies and to assist in meeting the future water requirements of the state.*"

In addition, California Water Code Section 13241 provides that the Regional Board consider the need to develop and use reclaimed water when establishing water quality objectives.

The State Board adopted the *Policy with Respect to Water Reclamation In California and the related "Action Plan for Water Reclamation in California"* in 1977 (State Board Resolution No. 77-1). The policy directs the State Board and Regional Boards to encourage reclamation and reuse of water, and to promote water reclamation projects which preserve, restore, or enhance instream beneficial uses. The policy also states that the State and Regional Boards recognize the need to protect public health and the environment in the implementation of reclamation projects.

The Porter-Cologne Water Quality Control Act also requires the State Department of Health Services (DHS) to establish statewide reclamation criteria (see Table 4-5) for each type of reclaimed water use to protect public health. Any person proposing to discharge reclaimed water must file a report of waste discharge containing appropriate information related to the discharge with the Regional Board. The Regional Board, after consultation with DHS, may adopt waste discharge requirements for the reclaimed water discharge.

When reviewing potential reclamation projects, the Regional Board must also consider potential impacts from reclamation on ground and surface water quality. It is common for the use of reclaimed water to cause an increase in total dissolved solids concentration in the receiving ground waters due to the effects of evapotranspiration. A variety of techniques can be employed to protect the beneficial uses of the receiving waters. Where well controlled irrigation is practiced, nitrate problems in the dry season will be controlled. Vegetative uptake will utilize soluble nitrates which could otherwise migrate into ground water. Demineralization techniques or source control of total dissolved solids may be necessary in some inland areas where ground waters have been or may be degraded. Presence of excessive salts, boron, or sodium could be the basis for rejection of proposals to irrigate cropland with effluent.

WATER RECLAMATION PROJECTS IN THE SAN DIEGO REGION

The water supply in the San Diego Region is largely dependent upon water imported from northern California and the Colorado River. Future increases from these sources may be limited due to environmental concerns, contractual agreements, and over all capital costs. In light of the limited possibilities for future water sources, the need to develop water supply alternatives is important. For many water uses, reclaimed water is a viable alternative water supply.

The status of water reclamation projects in the San Diego Region during March 1993 is shown is shown in Table 4-6. For each water reclamation agency and/or facility in the San Diego Region, the table shows the permitted flow in million gallons per day (MGD), the average effluent flow (in MGD), the average effluent flow reused (in MGD), the annual volume reused in million of gallons (MG) and acre-feet (AC-FT), the treatment process and disposal method, the type of use for the reclaimed water, the reclaimed water user and the status of the project. In the San Diego Region, a total of about 175 MGD of reclaimed water flow is permitted. About 16 MGD is reused from an average effluent flow of about 79 MGD. The annual volume reused is about 5859 MG (18597 AC-FT).

REGIONAL BOARD ACTION PLAN ON WATER RECLAMATION

The Regional Board supports water reclamation and reuse to the maximum extent feasible to help meet the growing water needs of the Region. It has long been a policy of the Regional Board to encourage and promote water reclamation while taking into consideration the need to protect beneficial uses of surface and ground waters and protect the public health.

On March 24, 1986 the Regional Board adopted Resolution No. 86-06 which amended the Basin Plan to include an action plan for water reclamation. The policy described below updates and supercedes Resolution No. 86-06:

(1) The Regional Board will consider special amendments to the Basin Plan to encourage water reclamation.

(2) The Regional Board will consider comprehensive water quality monitoring programs for confirmation of original hydrogeological predictions, and an accurate measure of adverse ground water quality effects. These monitoring programs will be considered where water reclamation is not expected to result in adverse ground water quality impacts, and where ground water quality impacts are very difficult to predict.

(3) The Regional Board will consider projects involving stream and lagoon replenishment with reclaimed water where, as a minimum, a water quality management plan would be implemented and conformance with the Department of Health Services wastewater reclamation criteria for nonrestricted recreational use would be achieved.

Table 4 - 5. Permitted Uses and California Title 22 Health Requirements for Reclaimed Water.

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 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 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 - 5 (continued). **Permitted Uses and California Title 22 Health Requirements for Reclaimed Water.**

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 irrigation of parks, playgrounds, schoolyards, and other areas where the public has similar access or exposure shall be at all times 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 median 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.
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 in the effluent 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 23 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.

Table 4-6. Water Reclamation Projects as of March, 1993

NAME OF AGENCY / FACILITY	HYDRO-LOGIC UNIT	PERMIT FLOW (MGD)	AVERAGE EFFLUENT FLOW (MGD)	AVERAGE EFFLUENT FLOW REUSED (MGD)	ANNUAL VOLUME REUSED (MG)	ANNUAL VOLUME REUSED (AC-FT)	TREATMENT PROCESS AND DISPOSAL	TYPE OF USE	RECLAIMED WATER USER	STATUS
ORANGE COUNTY										
Joplin Youth Center	1.20	0.0075	0.0067	0.0067	2.45	7.50	AS,PB	Landscape Irrigation Groundwater Recharge		Operating
San Clemente, City of San Clemente WRP	1.20 1.30	7.00	3.996	0.610	222.65	683.28	AS,PS,CH, SF,OF	Golf Course Irrigation Construction	Municipal GC, Arvida Co, Talega, Pacific GC	Operating
SOUTH ORANGE COUNTY RECLAMATION AUTHORITY SERVICE AREA										
El Toro WD	1.13	5.50	0.000	0.000	0.000	0.00	AS, OF	Landscape Irrigation		Proposed
Los Alisos WD	1.13	5.50	0.000	0.000	0.00	0.00	AS, OF	Landscape Irrigation	El Toro Mat. Co.	Proposed
Moulton Niguel WD Plant 3A STP	1.20	2.40	0.484	0.484	176.66	542.15	AS,CH	Golf Course & Landscap Irrigation	Mission Viejo Country Club	Operating
Laguna Niguel (AWMA/MNWD) Joint Regional WRF	1.13 1.14	12.00	5.191	0.276	100.67	308.93	AS,F,CL, OF	Golf Course Irrigation	El Niguel Country Club	Operating
Santa Margarita WD Oso Creek STP	1.13 1.20	3.00	1.693	1.693	617.95	1896.39	AT,F,CH, OF	Landscape Irrigation	Oso Valley Asn. CALTRANS	Operating
Nicholls Institute	1.20	0.04	0.032	0.025	9.13	28.00		Property landscaping	Nichols Inst.	Operating
Chiquita WRF	1.20 1.30	3.50	2.103	0.016	5.92	18.18	CH,F	Nursery, Construction Dust Control	SeaTree Nursery Las Flores Dev. Desecha Landfill	Operating
South Coast County WD	1.12 1.13 1.14	2.61	0.738	0.738	269.19	826.10	AS,F,CH, OF	Irrigation of parks, greenbelt,golf course	AVCO Community De Ben Brown GC Orange Cnty Parks	Operating
Trabuco Canyon WD Trabuco WRP	1.13 1.20	0.25	0.459	0.561	204.77	628.40	OD,CH,PB	Golf Course Irrigation	Dove Canyon GC	Operating
RIVERSIDE COUNTY										
Eastern Municipal WD Rancho Calif. STP	2.51	5.00	4.800	1.210	441.65	1355.4	AS,PB	Irrigation sod farm	Ralph Daily Sod Farm	Operating
Rancho California WD Joaquin Ranch STP	2.31	0.60	0.575	0.376	137.24	421.2	OD,F,CH, PB	Golf Course Irrigation	Bear Creek Golf Course	Operating
Santa Rosa SBR WRF	2.51	1.00	0.345	0.345	125.93	386.4	F,CH	Groundwater Recharge		Operating

TREATMENT PROCESS: AQ=aquaculture, AS=activated sludge, CH=chlorination, EA=extended aeration, F=filtration, MS=microscreen, OD=oxidation ditch, OF=ocean outfall, OP=oxidation pond, PB=percolation pond or bed, PS=primary sedimentation, RBC=rotating biological contactor, RO=reverse osmosis, TF=trickling filter

Table 4-6 (continued). Water Reclamation Projects as of March, 1993

NAME OF AGENCY / FACILITY	HYDRO-LOGIC UNIT	PERMIT FLOW (MGD)	AVERAGE EFFLUENT FLOW (MGD)	REUSED (MGD)	ANNUAL VOLUME REUSED (MG)	(AC-FT)	TREATMENT PROCESS AND DISPOSAL	TYPE OF USE	RECLAIMED WATER USER	STATUS
SAN DIEGO COUNTY										
Buena Sanitation Dist. Shadow Ridge WRP	4.32	1.10	0.809	0.062	22.63	69.4	MS,RBC,F, RO,CH,OF	Irrigation	Shadow Ridge Golf Course	Operating
Encina	4.40	22.50	19.000	0.001	0.37	1.1	AS,CH,OP	Landscape Irrigation	CAL TRANS	Operating
Escondido WRP	4.52 5.21	5.00	0.003	0.003	1.10	3.4	AS,CH	Internal Use Landscape Irrigation Golf Course	Escondido San Marcos	Operating
Fairbanks Ranch WRP	5.12	0.28	0.180	0.180	65.70	201.6	EA,PB	Groundwater Recharge		Operating
Fallbrook WD Plants 1 & 2	2.13	3.10	1.720	0.160	58.40	179.2	PS,EA,CH, OF	Landscape Irrigation (I-5 Freeway)	CALTRANS Nurseries	Operating
4-S Ranch 4-S Ranch WRP	9.31	0.60	0.062	0.038	13.69	42.0	CH	Compaction, Irrigation	Construction Pasture	Operating
Leucadia Water Dist. F. R. Gafner WRF	4.51	0.75	0.000	0.000	0.00	0.0	TF,PS,CH, OF	Aviara and La Costa Country Club Irrig.	La Costa & Aviara Country Clubs	Proposed
Oceanside, City of N. San Luis Rey STP	3.12	10.50	8.700	0.020	7.30	22.4	AS,CL,OF PB	Golf Course Irrigation Groundwater Recharge	Oceanside Golf Course	Operating
La Salina	4.10	0.50	0.000	0.000	0.00	0.00	EA,AS,CH	Landscape Irrigation	Oceanside	Proposed
Otay Municipal WD Ralph W Chapman WRF	9.21	1.30	0.900	0.900	328.50	1008.1	EA,F,RO, CH,OF	Landscape Irrigation	Eastlake Dev.	Operating
Otay Estates Hidden Valley Estates	9.11	0.15	0.000	0.000	0.00	0.0	AS,CH	Landscape Irrigation		Proposed
Padre Dam Municipal WD Water Reclamation Pl	7.12	1.00	0.521	0.521	190.17	583.6	AS,PS,OP, CH,OF	Recreational Lakes & Park Irrigation	Santee Lakes	Operating
Pauma Valley	4.63	0.00	0.000	0.000	0.00	0.0	EA,CH	Groundwater Recharge		Proposed
Ramona Municipal WD Santa Maria WWTP	5.41	1.00	0.600	0.600	219.00	672.1	EA,PB	Irrigation, Pasture Groundwater Recharge	Ramona WD site	Operating
San Vicente STP	7.23	0.60	0.541	0.541	197.47	606.0	OD,CH,F, RO,PB	Avocado Grove Irrig. Groundwater Recharge	Solk Ranch	Operating
Rancho Sante Fe	4.61	0.45	0.220	0.220	80.30	246.4	AS,EA,CH PB	Golf Course Irrigation	Rancho Sante Fe Golf Course	Operating
San Diego, County of Descanso STP	9.31	0.04	0.026	0.026	9.56	29.3	AS,PB	Landscape Irrigation	Descanso Facil.	Operating
Julian	7.43	0.04	0.035	0.035	12.78	39.20	OP	Irrigation (cattle feed)		Operating
Mount Woodson SD	5.11	0.08	0.000	0.000	0.00	0.0	CH	Irrigation	Golf Course	Proposed
Rancho Cielo SD	5.11	0.20	0.000	0.000	0.00	0.0		Landscape Irrigation		Proposed
Whispering Palms CSD	5.11	0.40	0.175	0.175	63.88	196.0	EA,CH,PB	Ground Water Recharge	Del Rayo Prop.	Operating
San Diego, City of Water Utilities Dept San Pasqual WAP STP	5.31	1.00	0.019	0.019	6.94	21.3	AS,CH,PB	Irrigation & Animal Stock Watering	Wild Animal Park	Operating

TREATMENT PROCESS: AQ=aquaculture, AS=activated sludge, CH=chlorination, EA=extended aeration, F=filtration, MS=microscreen, OD=oxidation ditch, OF=ocean outfall, OP=oxidation pond, PB=percolation pond or bed, PS=primary sedimentation, RBC=rotating biological contactor, RO=reverse osmosis, TF=trickling filter

Table 4-6 (continued). Water Reclamation Projects as of March, 1993

NAME OF AGENCY / FACILITY	HYDRO-LOGIC UNIT	PERMIT FLOW (MGD)	AVERAGE EFFLUENT FLOW (MGD)	AVERAGE EFFLUENT FLOW REUSED (MGD)	ANNUAL VOLUME REUSED (MG)	ANNUAL VOLUME REUSED (AC-FT)	TREATMENT PROCESS AND DISPOSAL	TYPE OF USE	RECLAIMED WATER USER	STATUS
SAN DIEGO COUNTY CONTINUED										
Mission Valley Pilot Aquaculture Project	7.11	1.00	0.026	0.025	9.13	28.0	AQ,OF	Freeway Landscaping (I-15 & I-8)	CALTRANS	Operating
North City	6.10	30.00	0.000	0.000	0.00	0.0		Landscape Irrigation	CALTRANS	Proposed
San Elijo JPA	4.51	3.68	0.000	0.000	0.00	0.0	CH,AS	Landscape Irrigation	Encinitas, Del Mar	Proposed
US Marine Corps Base Camp Pendleton										
Plant No. 1	2.13	1.50	0.429	0.678	247.54	759.7	TF,CH,PB	Ground water recharge	Camp Pendleton	Operating
Plant No. 2	2.11	0.92	0.309	0.694	253.13	776.8	TF,CH,PB	Golf Course Irrigation	Camp Pendleton	Operating
Plant No. 3	2.12	1.10	0.492	0.753	274.66	842.9	TF,CH,PB	Ground water recharge	Camp Pendleton	Operating
Plant No. 8	1.51	0.59	0.074	0.296	107.86	331.0	TF,CH,PB	Ground water recharge	Camp Pendleton	Operating
Plant No. 9	1.52	1.10	0.142	0.357	130.34	400.0	TF,CH,PB	Ground water recharge	Camp Pendleton	Operating
Plant No. 10	1.51	0.85	0.325	0.378	138.08	423.7	TF,CH,PB	Ground water recharge	Camp Pendleton	Operating
Plant No. 11	1.51	0.85	0.836	1.088	397.01	1218.4	TF,CH,PB	Ground water recharge	Camp Pendleton	Operating
Plant No. 12	1.40	0.85	0.142	0.420	153.37	470.7	TF,CH,PB	Ground water recharge	Camp Pendleton	Operating
Plant No. 13	2.11	2.50	1.397	1.225	447.16	1372.3	TF,CH,PB	Ground water recharge	Camp Pendleton	Operating
Plant No. 16	1.53	0.03	0.008	0.008	2.74	8.4	EA,PB	Ground water recharge	Camp Pendleton	Operating
Vallecitos WD Meadowlark WRP	4.51	2.00	0.995	0.525	191.63	588.1	MS,RBC,F CH,OF	Golf Course Irrigation	La Costa GC Carlsbad City	Operating
Valley Center MWD Lower Moosa Canyon WRP	3.13	0.50	0.250	0.250	91.25	280.0	AS,CH,PB	Golf Course Irrigation Ground water recharge	Circle R GC Valley Center MWD	Operating

TREATMENT PROCESS: AQ=aquaculture, AS=activated sludge, CH=chlorination, EA=extended aeration, F=filtration, MS=microscreen, OD=oxidation ditch, OF=ocean outfall, OP=oxidation pond, PB=percolation pond or bed, PS=primary sedimentation, RBC=rotating biological contactor, RO=reverse osmosis, TF=trickling filter

SUMMARY OF SAN DIEGO REGION WATER RECLAMATION PROJECTS AS OF MARCH, 1993

COUNTY SUBTOTALS	PERMIT FLOW (MGD)	AVERAGE EFFLUENT FLOW GENERATED (MGD)	AVERAGE EFFLUENT FLOW REUSED (MGD)	ANNUAL VOLUME REUSED (MG)	ANNUAL VOLUME REUSED (AC-FT)
Orange	41.81	14.70	4.41	1609	4939
Riverside	35.20	25.53	2.00	729	2237
San Diego	98.05	38.94	10.20	3722	11421
REGION TOTALS	175.06	79.17	16.05	5859	18597

(4) The Regional Board will encourage use of ephemeral streams, that are not used for domestic water supply, for the conveyance of reclaimed water for beneficial uses during periods of need.

(5) The Regional Board will consider the possibilities for the buyout of a beneficial use that is only minimally realized, and that if protected, would stand in the way of a water reclamation project.

(6) The Regional Board will continue efforts to seek the most recent and accurate environmental and technical information for the purpose of reviewing Basin Plan standards pertaining to the discharge of reclaimed water.

(7) Regional Board will require all ocean and inland dischargers, having the potential to produce reclaimed water, to develop water reclamation plans.

(8) The Regional Board will encourage economic incentives for using reclaimed water, such as rebates by the San Diego County Water Authority and the Metropolitan Water District of Southern California to water suppliers engaged in water reclamation.

(9) The Regional Board will seek funding for studies to evaluate the potential of water reclamation in various areas of the Region including streams and coastal lagoons.

(10) The Regional Board will take appropriate actions, recommend legislation, and recommend actions by other planning agencies (county, federal, etc.) in the areas of (1) planning, (2) project funding, (3) regulation and enforcement, (4) research and demonstration, and (5) public involvement and information.

(11) The Regional Board will encourage and support measures which conserve the water resources of the San Diego Region.

(12) The Regional Board will encourage other agencies to assist in implementing this policy.

(13) As mitigation against potential nuisance odors and health hazards resulting from reclaimed water use, the Regional Board will continue to adopt and enforce waste discharge requirements containing prohibitions against nuisance odors and implementing the State Department of Health Services' Wastewater Reclamation Criteria.

(14) The Regional Board will prepare Basin Plan amendments necessary for implementation of water reclamation projects in compliance with state policy for water quality control and, to the extent surface waters will be affected, with Environmental Protection Agency water quality standards regulations. Site specific environmental impacts will be evaluated in conformance with the California Environmental Quality Act (CEQA) for specific Basin Plan amendments.

FACTORING WATER SUPPLY CONSIDERATIONS INTO THE REGIONAL BOARD REGULATION OF WATER RECLAMATION PROJECTS

Conventional reclamation facilities are not designed to reduce mineral constituents. Consequently, the mineral effluent quality is dependent on the composition of the water supply plus the mineral pickup during its use. Historically, water supply Total Dissolved Solids (TDS) concentrations have varied significantly. For example, concentrations of TDS of the blended water stored in Lake Skinner ranged from below 400 mg/l to above 700 mg/l between 1985 and 1995.

Residential wastewater discharges will typically be 250 to 300 mg/l higher in TDS than their water supply source. Self-regenerating water softeners, brine from industrial dischargers, and ground water infiltration can further increase TDS concentrations in wastewater effluent. Many wastewater management agencies within the region are implementing programs to minimize the incremental pickup of minerals from these sources. These programs have had varying degrees of success.

Effective water conservation measures that are being implemented within the region may result in higher mineral and other constituent concentrations in wastewater effluent. Although the volume of wastewater is reduced by water conservation, the mineral and organic loading from its use remains nearly constant. As a result, the strength of the wastewater influent becomes stronger. In some cases, the characteristics of the wastewater influent may range briefly above the design parameters of the treatment plant.

In recognition of the variables in wastewater quality that are beyond the control of the discharger, the Regional Board authorizes the Executive Officer to suspend formal enforcement action, when a discharger submits an initial technical report with subsequent quarterly updates, that demonstrate to the satisfaction of the Executive Officer, compliance with the following conditions:

1. The discharge is not subject to regulation by means of a National Pollutant Discharge Elimination System (NPDES) Permit; and

2. The enforcement is only for violations of discharge specifications for mineral constituents, total suspended solids (TSS), biological oxygen demand (BOD) or carbonaceous biological oxygen demand (CBOD); and

3. The effluent violations are due solely to changes in the quality of the imported water supply and/or to water conservation measures being implemented within the service area tributary to the treatment plant; and

4. The discharge does not result in a mass loading of TSS, BOD and CBOD that exceeds the loading prior to implementation of water conservation measures; and

5. The discharge will not cause Basin Plan water quality objectives to be exceeded, in the long term; and

6. The discharge will not cause a violation of any applicable section from Title 22 of the California Code of Regulations or any requirement specified by either the State Department of Health Services or the appropriate county health officer for the protection of public health; and

7. The discharge does not contain a concentration of total dissolved solids (TDS) exceeding 1500 milligrams per liter (mg/l), or the concentration in the water supply plus 500 mg/l, whichever is less, with comparable adjustments for other mineral constituents; and

8. The discharger implements a program to identify major sources of the mineral constituents of concern in the discharge, including but not limited to water softener regeneration brine; and to determine the average contribution of each major source and the best available options for reducing levels in the discharge; and to identify any negative effects on the potential for water reclamation caused by the failure to control the constituents of concern in the discharge. The program should include a time schedule to reduce mineral constituents in the discharge as necessary to assure that the potential for water reclamation will be realized to the maximum extent practicable.

RECLAIMED WATER CONFORMANCE WITH WATER QUALITY OBJECTIVES

The Regional Board has established various policies concerning the compliance of reclaimed water discharges with applicable Basin Plan water quality objectives. These policies are described below:

Discharges to Coastal Lagoons from Pilot Water Reclamation Projects

The Regional Board may grant an exception to the "*Biostimulatory Substances*" water quality objective described in Chapter 3 to provide for discharges to coastal lagoons from pilot water reclamation projects. The project proponent must demonstrate that the pilot water reclamation project is consistent with the conditions described in the Principles of the State Water Resources Control Board's *Policy and Action Plan for Water Reclamation in California*. The *Policy and Action Plan for Water Reclamation in California* was adopted by the State Board in January 1977 and is summarized below. In addition, the proponent must demonstrate that the threat of eutrophication as a result of the addition of nitrogen and/or phosphorus is reduced as a consequence of one or more of the following factors:

- Waters of the coastal lagoon are highly laden with natural silts or colors which reduce the penetration of sunlight needed for photosynthesis;

- The coastal lagoon is characterized by morphometric features of steep banks, great depths, and substantial flows which have contributed to a history of no plant problems;

- The coastal lagoon is managed primarily for waterfowl or other wildlife;

- An identified element other than nitrogen or phosphorus is limiting to plant growth in the coastal lagoon, and the level and nature of the limiting element would not be expected to increase to an extent that would influence eutrophication; or

- Control of nitrogen and/or phosphorus in the coastal lagoon cannot be sufficiently effective under present technology to make phosphorus or nitrogen the limiting nutrient.

The Principles of the *Policy and Action Plan for Water Reclamation in California* provide, in part, that water reclamation projects shall be encouraged which do not adversely impact vested water rights or unreasonably impair instream beneficial uses or place an unreasonable burden on present water supply systems, and which meet the following additional conditions:

- 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.

Exceptions to the numerical water quality objectives will be made only when a pilot reclamation project meets the following criteria:

- Need for the reclaimed water is demonstrated;

- Alternative disposal facilities are available in the event discharge to a coastal lagoon proves unfeasible;

- Conformance with the State Water Resources Control Board's *Water Quality Control Policy for the Enclosed Bays and Estuaries of California* is demonstrated;

- Data will be generated that will be useful and timely for Regional Board review of water quality objectives for nutrients; and

- The project will include a lagoon management plan addressing the proposed methods of identifying and eliminating any pollution, contamination, or nuisance problems resulting from the proposed discharge and clearly identifying management responsibilities and capabilities.

Discharges to Inland Surface Waters

Regional Board Resolutions Nos. 90-53 and 91-23 established an alternate method of conformance with the Biostimulatory Substances Water Quality Objectives for portions of the San Diego River and Santa Margarita River. The Policy presented below supersedes Resolutions Nos. 90-53 and 91-23 and is applicable to all inland surface waters of the San Diego Region at a point downstream of lakes or reservoirs used for municipal water supply.

The Regional Board has developed an alternate method of showing compliance with the Biostimulatory Substances water quality objective contained in Chapter 3 to:

- Promote water reclamation;

- Enhance opportunities for reclaimed water discharges to inland surface waters; and

- Protect and enhance existing inland surface water beneficial uses through the greater use of reclaimed water.

The alternate method of compliance described below is applicable to reclaimed water discharges to inland surface waters at a point downstream of lakes or reservoirs used for municipal water supply. The alternate method of compliance is meant to encourage reclaimed water discharges into inland surface waters without degradation of the ambient water quality or adverse effects on beneficial uses.

Compliance Methods

The Regional Board will establish appropriate effluent limitations for nitrogen and phosphorus in waste discharge requirements for discharges of reclaimed water to surface waters using one of the following methodologies:

- The Regional Board may use the goal for phosphorus concentration in flowing water contained in the Biostimulatory Substances objective as guidance in establishing appropriate effluent limitations; or

- Alternatively, the Regional Board may determine compliance with the narrative objective based upon the following four factors:

  ✓ measurement of ambient concentrations of nitrogen and phosphorus;

  ✓ the dissolved oxygen requirements of downstream beneficial uses;

  ✓ use of best available technology (BAT) economically feasible for the removal of nutrients; and

  ✓ the development and implementation of a watercourse monitoring and management plan.

  Best Available Technology for the removal of nutrients includes biological and chemical removal. The extent to which the Regional Board may require additional removal of nutrients through chemical addition processes will be based upon an evaluation of the economic feasibility of this additional treatment in concert with an evaluation of the effectiveness of the watercourse monitoring management plan.

  The watercourse monitoring and management plan shall include:

  - A comprehensive program for chemical monitoring in receiving waters and effluent that will generate adequate data on ammonia nitrogen, nitrate nitrogen, nitrite nitrogen, organic nitrogen, total phosphate, ortho phosphate, dissolved oxygen (including vertical and diurnal dissolved oxygen profiles), pH, turbidity, biochemical oxygen demand (BOD) and other appropriate constituents and properties which may contribute to, or result from, nutrient related problems and impact beneficial uses.

  - A comprehensive program for physical and biological monitoring in the receiving waters that will generate adequate data on chlorophyll 'a', corrected chlorophyll 'a', pheophyton 'a'; temperature (including diurnal and vertical temperature profiles); acute and chronic toxicity; the diversity and numbers of microinvertebrates, macroinvertebrates, and fish; the dynamics of the aquatic flora (macroalgae, phytoplankton, and emergent vegetation) and the related dissolved oxygen regime; substrate composition; frequency of nuisance conditions; flow rate; and other appropriate constituents and properties which may contribute to nutrient related problems and impact beneficial uses.

- A comprehensive program for physical and biological monitoring of the effluent that will generate adequate data on flow, temperature, chronic and acute toxicity, and other appropriate constituents which may contribute to nutrient related problems and impact beneficial uses.

- A procedure for evaluating the data collected under items (1), (2), and (3) above and determining the potential for nutrient related problems that may impact beneficial uses.

- Development and implementation of preventive and corrective actions that will ensure that a discharge containing nutrients will not adversely impact beneficial uses. These preventative and corrective actions may include, but are not limited to, the following:

  ✓ Achievement of more stringent effluent limits for nutrient constituents discharged to the watercourse, through additional chemical treatment methods at the treatment facility, to further reduce nutrient loading to the river,

  ✓ Maintenance of minimum reclaimed water flows discharged to the watercourse to prevent stagnant areas subject to nutrient related problems and to maintain the aquatic and riparian habitat beneficial uses that have been enhanced and/or created by such a discharge,

  ✓ Effective measures for the instream chemical treatment of surface waters to prevent nutrient and stagnant water related nuisance problems that can adversely impact aquatic habitat beneficial uses, where this instream treatment will not adversely impact beneficial uses,

  ✓ Effective measures for the physical management of the watercourse channel and vegetation,

- ✓ Effective source control measures to reduce the amount of nutrient constituents in the reclaimed water, and

- ✓ Other measures deemed appropriate and necessary by the Regional Board to ensure compliance with the Basin Plan narrative objective for nutrients and for the protection of beneficial uses.

Additional Mitigation

As mitigation against adverse impacts of nuisance odors and health hazards resulting from use of reclaimed water, the Regional Board will continue to adopt and enforce waste discharge requirements containing prohibitions against creation of nuisance odors and implementing the State Department of Health Services' Water Reclamation Criteria.

Additionally, as mitigation measures against degradation of ground and surface water quality resulting from an inland reclaimed water discharge, the Regional Board will require well head treatment or treatment at the point of use, or other appropriate measures acceptable to the Board, adequate to maintain the existing quality of ground and surface waters and the beneficial uses for all ground and surface waters adversely impacted by a discharge. The Regional Board will require monitoring of all ground water wells and legal direct diversions of surface water prior to permitting a discharge in order to establish the baseline quality that must be maintained.

As mitigation against any adverse effects to instream or downstream surface or ground water quality and the environment resulting from the discharge of reclaimed water, the Regional Board will require the discharger to establish and implement a comprehensive river monitoring and management program. The implementation of the watercourse monitoring and management plan will often require close coordination between many different public and private entities. The Regional Board shall recognize an agency to implement the watercourse monitoring and management plan and such recognition shall be made part of the provisions of appropriate waste discharge requirements for the discharge.

The watercourse monitoring and management plan, and all the associated requirements, shall apply to all downstream waters, including rivers, lagoons, estuaries, and bays, which may be impacted by the reclaimed water discharge. The Regional Board will regulate the volume of reclaimed water discharged into all inland surface waters to those levels which do not significantly and adversely alter the salinity regimes of downstream lagoons, estuaries, or bays. This regulation of flows will include a prohibition of fresh water flows that could result in the conversion of a lagoon, estuary, or bay from a saline environment to a fresh water environment. Salt marsh habitats are to be considered an integral part of the lagoon, estuary, or bay to which they are associated, and therefore shall be fully protected from conversion.

Implementation of Ground Water Quality Objectives for Reclaimed Water Discharges

In order to facilitate water reclamation in the Region, the Regional Board, adopted Resolution No. 90-61 on November 5, 1990. Resolution No. 90-61 established a methodology for determining reclaimed water effluent limits. The policy described below updates and supersedes Resolution No. 90-61.

The Regional Board shall regulate discharges of reclaimed water by establishing effluent limitations designed to protect beneficial uses and ensure compliance with State Water Resources Control Board Resolution No. 68-16. Use of adequately treated reclaimed water for irrigation or ground water recharge shall be encouraged in basins where reuse is clearly beneficial. Regulation of discharges of reclaimed water, where the reclaimed water displaces the use of imported water, or ground water having a quality exceeding the ground water quality objective, shall be in the following manner:

- For discharges upgradient of municipal water supply reservoirs the Regional Board shall adopt numerical effluent limitations for constituents at levels no lower than the quality of the basin's water supply but no higher than the Basin Plan ground water quality objective.

- In ground water basins not upgradient of municipal water supply reservoirs the Regional Board shall adopt numerical effluent limitations for constituents at levels no lower than the quality of the basin's water supply concentration plus an incremental increase equal to the typical incremental increase added to the water supply as a result of domestic use. The effluent limitations shall be no higher than the Basin Plan ground water quality objective.

- For discharges where the discharger has demonstrated sufficient assimilative capacity exists and ground water quality objectives will not be exceeded, the Regional Board may consider adoption of numerical effluent limitations for constituents based on the discharge quality and assimilative capacity analysis results.

The Regional Board shall also require the implementation of effective salinity source control measures to ensure a reclaimed water quality that is suitable for long-term agricultural and landscape irrigation.

Water Reclamation Under Resolution No. 81-16

On March 23, 1981 the Regional Board adopted Resolution No. 81-16 which modified the water quality standards by relaxing the ground water objectives and modifying the beneficial use designations for portions of the Aliso Hydrologic Subarea (HSA) 1.13, Carlsbad HSA 4.21, Agua Hedionda HSA 4.31, Batiquitos HSA 4.51, and Telegraph HSA 9.11. These areas are described in Table 3-3. The terms and conditions of Resolution No. 81-16 are incorporated in this Basin Plan; accordingly Resolution No. 81-16 is superseded. The use of reclaimed water in these areas is subject to the following provisions:

- Notwithstanding the water quality objectives, the Regional Board will regulate waste discharges in the affected portions of Hydrologic Subareas 4.21 and 4.31 in a manner that will protect the waters produced by the existing operating wells. A presently existing ground water use will be considered terminated when the well has been abandoned pursuant to County of San Diego Water Well Standards.

- In applying the modified standards, the Regional Board will condition waste discharge requirements for discharges of domestic and municipal wastewater to require that the wastewater be reclaimed and reused in a manner that will displace the need for approximately equal volumes of imported potable water.

Water Reclamation as an Alternative to Ocean Disposal

The State Board in Order No. WQ 84-7 concluded that water reclamation should be carefully considered by persons proposing to discharge substantial quantities of once-used wastewater to the ocean particularly in a water short area where water is imported. Order No. WQ 84-7 directs the regional boards to require persons applying for permits to discharge once-used wastewater to the ocean in water-short areas to justify as part of each report of waste discharge why the wastewater is not being reclaimed.

The San Diego Region water supply is primarily imported water and the Region is clearly a water short area. Pursuant to State Board Order No. 84-7, the Regional Board will require persons proposing a discharge of once-used wastewater into the ocean to:

- Carefully analyze as an alternative, or partial alternative, the feasibility of reclaiming the wastewater for a beneficial use in lieu of ocean disposal.

- Submit, with the report of waste discharge in application for waste discharge requirements, sufficient information to justify why any wastewater proposed for discharge to the ocean after a single use is not being reclaimed for a beneficial use.

Reports of waste discharge which do not contain the water reclamation feasibility analysis described above, to the satisfaction of the Regional Board Executive Officer, will be considered incomplete and the Regional Board will not issue waste discharge requirements for the proposed discharge.

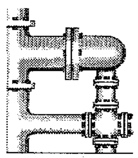
Reclaimed Water Storage Requirements

During the winter season, wet weather, and other periods when there is little or no demand, treatment plants continue to operate at normal flows and the excess treated effluent must either be: (1) discharged to storage facilities until such time as the irrigation demand requires the use of the stored water; (2) discharged through a fail-safe land outfall connection to an ocean outfall under the terms of an NPDES permit; or (3) discharged to inland surface waters for ground water recharge and/or stream replenishment under the terms of an NPDES permit. Theoretical water balance calculations for disposal of reclaimed water at golf courses and other reuse sites in the Region indicate that storage facilities should be sized for 84 days of storage. (1975 Comprehensive Water Quality Control Plan Report, Page II-16-32). In situations where reclaimed water storage ponds are necessary, the Regional Board will require reclaimed water producers to:

- provide 84 days of storage capacity; or

- provide storage capacity based upon water balance calculation procedures such as described in:

  US EPA. 1981. Process Design Manual for Land Treatment of Municipal Wastewater. Center for Environmental Research Information. Cincinnati, OH. EPA 625/1-81-013 (COE EM1110-1-501).



INDUSTRIAL WASTE

PRETREATMENT PROGRAM FOR INDUSTRIES

It is generally recognized that the discharge of industrial pollutants can be controlled most economically at their source. This is particularly true for industries discharging waste to municipal wastewater treatment plants (commonly called "*POTWs*" for "*publicly owned treatment works*"). On that basis US EPA has developed pretreatment requirements (40 CFR 403) for many industries and has developed minimum standards for POTW pretreatment programs. A POTW is required to implement a pretreatment program as a condition of its National Pollutant Discharge Elimination System (NPDES) Permit if its design flow is greater than five million gallons per day (MGD) or there are significant industrial users discharging to the POTW. POTWs with design flows less than 5 MGD may also be required to establish a pretreatment program if nondomestic waste causes upsets, sludge contamination, or violations of NPDES permit conditions, or if industrial users are subject to national pretreatment standards.

The goal of the US EPA's National Pretreatment Program is to protect municipal treatment plants and the environment from the adverse impact that may occur when hazardous or toxic wastes are discharged into a sewer system. This protection is achieved mainly by regulating nondomestic users of POTWs that discharge toxic wastes or unusually strong conventional wastes. Local pretreatment programs are required to fulfill the following objectives:

- Prevent the introduction of pollutants into POTWs which will interfere with the operation of a POTW, including interference with its use or disposal of municipal sludge;

- Prevent the introduction of pollutants into POTWs which will pass through the treatment works or otherwise be incompatible with such works;

- Improve opportunities to recycle and reclaim municipal and industrial wastewaters and sludges; and

- Prevent exposure of POTW personnel from chemical hazards and poisonous gases.

The general pretreatment regulations establish industrial pretreatment standards to control industrial pollutant discharges into wastewater collection systems and treatment plants. The discharge standards apply to all industrial and commercial establishments discharging waste to wastewater collection systems tributary to POTWs. The standards prohibit the discharge of pollutants that may damage the POTW's facilities, disrupt operations or expose workers to hazards. Categorical pretreatment standards are numerical effluent limits which apply to industrial and commercial discharges in 25 specific industrial categories determined to be the most significant sources of toxic pollutants. All firms regulated by a particular pretreatment standard are required to comply with these standards. One hundred and twenty-six toxic pollutants are regulated in the 25 categorical standards. Prohibited discharges into POTW plants, besides toxic substances, include:

- Substances that create a fire or explosion hazard in the plant or sewer system;

- Discharges that are corrosive (have a pH < 5.0);

- Discharges that obstruct flow in the sewer system or interfere with plant operation;

- Discharges that upset the treatment process or cause a violation of the POTW's permit;

- Discharges that increase the temperature of the wastewater entering the treatment plant to above 104 F (40°C);

- Oil based products in amounts that will cause interference or pass through;

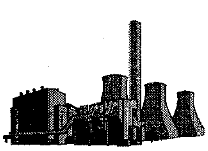
- Substances which cause toxic gases, vapors or fumes in a quantity which may cause worker health or safety problem(s); and

- Trucked or hauled pollutants, except at discharge points designated by the POTW.

Municipalities are required to use and enforce these standards as well as locally developed standards, to control nondomestic users discharging to their wastewater collection and treatment systems. The federal regulations require all states that administer NPDES programs to POTW operators to develop local pretreatment programs. The California pretreatment program includes the same general elements which parallel the pretreatment compliance schedule activities specified in most POTWs' NPDES permits. Pretreatment programs are required to contain the following elements:

- Identification and evaluation of the nondomestic discharges to a treatment system.
- The POTW must operate under a legal authority that will enable it to apply and enforce the requirements of pretreatment regulations and other state and local rules needed to control nondomestic discharges.
- The POTW must establish local industrial effluent limits to protect treatment plant operation, receiving water quality and sludge quality.
- The POTW must develop procedures for monitoring its industrial users to determine compliance and non-compliance.
- The POTW must develop administrative procedures to implement its pretreatment program.
- The POTW must have sufficient resources (funds, equipment, personnel) to operate an effective and ongoing program.

STEAM ELECTRIC POWER PLANTS



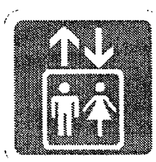
The Region has five steam electric power plants, four are operated by San Diego Gas and Electric Company (SDG&E) and one by Southern California Edison (SCE). Each of the SDG&E plants has one cooling water intake and one outfall structure. A separate NPDES permit has been issued for each SDG&E plant. The SCE plant, called the San Onofre Nuclear Generation Station (SONGS) has three power generating units, each with its own cooling water intake and outfall structure, and a separate NPDES permit has been issued for each of the three power generating units. All of these plants obtain cooling water from the ocean or San Diego Bay.

The SDG&E power plants are conventional fossil-fuel burning electrical generating facilities. The SDG&E plants are located in San Diego County, three of them are adjacent to San Diego Bay and one is adjacent to the Pacific Ocean. The San Onofre Nuclear Generating Station is located adjacent to the Pacific Ocean in northern San Diego County and consists of three nuclear fueled electrical generating units.

The cooling water discharges from the power plants are regulated under the provisions of the Thermal Plan, which incorporates provisions of Section 316(a) of the Clean Water Act. All of the plants employ a once-through cooling water system. Seawater is pumped into the facility and used to cool the condensers, which results in an increase in the cooling water temperature of approximately 20 degrees fahrenheit above the ambient seawater temperature. The cooling water is then discharged to marine waters, where the heat accumulated in the cooling water is dissipated.

The power plant NPDES permits establish effluent limitations for the discharge of cooling water and other wastes generated at the facilities. The effluent limitations are based upon applicable state water quality objectives and US EPA effluent guidelines and standards for steam electric power plants contained in 40 CFR 423. Each facility has a unique arrangement and thus a unique set of waste streams. Other wastewater discharges regulated by power plant NPDES permits, in addition to the cooling water discharge, include boiler blowdown, evaporator blowdown, floor drain discharges, chemical cleaning wastes and boiler wash.

Each power plant is required under the terms and conditions of its NPDES permit to comply with federal Clean Water Act Sections 316(a) and (b). Section 316(a) addresses the control of the thermal component of a discharge and its effects on fish population and wildlife. Section 316(b) requires that the location, design, construction, and capacity of cooling water intake structures reflect the best available technology for minimizing adverse impacts to the environment.



SUBSURFACE DISPOSAL FROM CAMPGROUNDS AND RECREATIONAL VEHICLE (RV) PARKS

Since the early 1970's, the Regional Board has been issuing waste discharge requirements to campgrounds/RV parks that discharge wastewater to subsurface disposal systems. Chemical preservatives in recreational vehicle holding tanks increase the threat to ground water quality from these facilities. At one time, the waste discharge requirements specified that wastes other than domestic sewage shall be excluded from the discharge. Consequently, the requirements prohibited the discharge of water softener regeneration brine and RV holding tank waste to the septic tank and leach line systems and required the discharger to provide impervious storage tanks for RV holding tank wastes. In order to comply with the waste discharge requirements adopted by the Regional Board prior to 1978, the RV campground managers required RVs to empty their holding tank wastes into the campground's dump station if the RV would be provided with sewer hookups. Waste Discharge Requirements adopted after 1978 do not require the installation of impervious holding tanks at RV parks nor are RVs required to dispose of RV holding tank wastes to impervious tanks. Currently, most campgrounds/RV parks in the Region do not have impervious storage tanks for RV holding tank wastes.

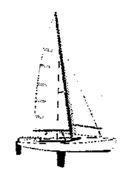
In 1978, the Regional Board adopted Resolution No. 78-24, suspending all ground water monitoring requirements at the campgrounds until such time as a study by the State Board on RV waste disposal was completed and reviewed by the Regional Board staff. In June 1980, the Sanitary Engineering Research Laboratory at University of California, Berkeley published a report for the State Board entitled, "*Recreational Vehicle Waste Disposal in Roadside Rest Septic Tank Systems*". This report however, did not address the requirements for ground water monitoring.

The Regional Board "*Waiver Policy*" described earlier in this Chapter provides for waivers of waste discharge requirement adoption for campgrounds where no facilities are provided for recreational vehicles to connect to the campground sewerage system. Consequently, the Regional Board has deferred to the county health departments regulation of campgrounds/RV parks that do not provide sewer connections for recreational vehicles. The policy also waives Waste Discharge Requirements for residential, commercial, industrial, and individual subsurface disposal systems subject to the conditions set forth in the *Guidelines for New Community and Individual Sewerage Facilities* described earlier in this Chapter.

A common problem with community systems is that individual property owners and homeowners associations often deny responsibility for system failure and necessary repairs. Additional problems result when private entities operate community systems and do not have sufficient funds available to correct problems. Consequently, prior to approval of projects proposing community subsurface disposal systems, the Regional Board requires as part of the Report of Waste Discharge, documentation from the proponent that demonstrates that adequate funding is available to operate and maintain the disposal systems.

VESSELS (RECREATIONAL, COMMERCIAL, AND NAVAL) AND MARINAS

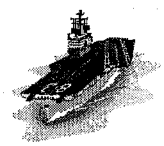
Vessels of all types and sizes including recreational, commercial, and Naval craft, and the marinas (or other facilities) in which they berth can have serious impacts on water quality. This section will describe the most important waste categories, pollutants, and other water quality problems associated with vessels and marinas. A description of best management practices and applicable regulations is also included. Although presented below, it should be noted that vessels and marinas are typically considered a nonpoint source category.



Vessels and Marinas in the San Diego Region

There are approximately 8,400 boat slips in San Diego Bay, 2,400 in Mission Bay, over 1,000 in Oceanside Harbor, and over 1,500 in Dana Point Harbor. In addition to boats with assigned slips, there are several hundred additional boats moored at a variety of "*free*" anchorages. In San Diego Bay, the San Diego Unified Port District has organized two of its free anchorages into formal anchorages which have shoreside showers, rest rooms, and docking facilities. Boat owners are required to pay fees for these services. In 1986, the San Diego Unified Port District was granted permission by the Coast Guard to establish additional formal anchorages in San Diego Bay. Because of the reluctance of some boat owners to pay fees for mooring in the bay, many have elected to move their boats to new free anchorages. Such anchorages can be especially important sources of human pathogens from vessel sewage releases. In addition to the vessels normally maintained in the water, there are several thousand additional "*trailer*" boats using San Diego's boat harbors. In total, approximately 55,000 vessels are registered in San Diego County.

Navy Vessels in the San Diego Region



Home port to approximately one hundred US Navy vessels, San Diego Bay is one of the largest Naval ports on the west coast of the United States. As described above, Navy vessels are responsible for the same types of water quality impacts as other vessels. They are also subject to the same regulations and requirements as other vessels except that discharges from Naval vessels under certain circumstances are not subject to NPDES permits. A description of this exclusion (as found in Title 40, Code of Federal Regulations, Part 122.3) was discussed earlier in this Chapter.

If enforcement action is necessary, operators of Naval vessels are subject to all of the same enforcement mechanisms outlined previously in this Chapter with one exception; the Navy is not subject to Administrative Civil Liability.

Vessel Wastes

The most significant waste categories associated with vessels include:

- hull maintenance related wastes;
- sewage;
- marine engine related wastes; and
- trash.

Of these categories, hull maintenance related wastes, and particularly antifouling paint, is believed to pose the greatest potential threat to water quality. This is because of its high degree of toxicity. Antifouling paint, which is applied to vessel hulls, is specifically designed to prevent the growth and attachment of marine organisms by continuously releasing toxic substances into the surrounding water. Cuprous oxide and tributyltin fluoride or tributyl tin oxide (TBT) are the principal toxicants in copper-based and organotin-based paints, respectively. Although the use of TBT is now significantly limited, leaching pollutants from antifouling paints remains a widespread and serious concern especially in areas of high vessel density and low hydrologic flushing.

Antifouling paint may pose an even greater water quality threat during and after its removal from vessel hulls since the pollutants in the paint chip wastes may continue to leach into receiving waters. In most cases, because paint removal activities on ships are conducted in ship repair yards, responsibility for the paint chip wastes is transferred from the vessel owner to the shipyard. (See shipyards and boatyards discussion.) The same is generally true for recreational craft serviced at boatyards. However small craft can also obtain some hull maintenance services directly in the water by underwater hull cleaners. In addition to paint, other examples of hull maintenance wastes include strippers, cleaners, and cathodic protection products. Although a variety of pollutants can be released during hull maintenance activities, metals are the pollutants of greatest concern.

Sewage is often intentionally discharged directly into receiving waters due to the lack of pumpout stations, inconvenience or inoperation of pumpout stations, or the irresponsibility or ignorance of vessel operators. Human pathogens present in sewage include a variety of fecal bacteria and viruses. Today sewage discharges in recreational marinas are believed to be more significant than at Naval berthing areas. This is because all US Navy vessels are currently equipped to connect to pumpout facilities while in port.

Marine engine related wastes such as fuels, oils, lubricants, antifreeze, solvents, and polluted bilge water are commonly released from vessels into receiving waters. The pollutants of greatest concern for marine engine wastes are metals and petroleum hydrocarbons. Polynuclear aromatic hydrocarbons (PAHs) are a particular concern because they tend to accumulate and persist in aquatic sediments for years, poisoning benthic organisms. Garbage and trash are also discharged from vessels.

Each of the above waste categories can be, and frequently are, washed, spilled, scraped, dumped, and pumped directly into receiving waters. As a result, each of the wastes can take a major toll on water quality and beneficial uses. The marine habitat and shellfish harvesting beneficial uses are particularly sensitive to vessel wastes.

Furthermore each of the waste categories is relevant to all vessel types and sizes including recreational boats as well as commercial and Naval ships. However, because of a ship's greater size and corresponding greater magnitude, variety, and toxicity of wastes generated, ships (particularly Navy ships) are generally believed to pose a greater threat to water quality than boats. For example, Navy vessels are typically drydocked for hull maintenance only once every five or more years and spend more time in port or at anchor than underway. Fouling organisms attach more readily when a ship is stationary. For these reasons, Navy coating systems are required to be effective for longer periods of time than those applied to commercial and recreational vessels. Accordingly, Navy vessels are blasted to "*white metal*" meaning all paint is removed to bare metal and the surface is abraded in preparation for adherence of a complete new coating system. Additionally antifouling paints used on Navy vessels contain higher levels of toxicants than those used on commercial and recreational vessels.

Nevertheless, there is a formidable set of water quality impacts associated with small craft and small craft marinas as described below.

Marinas

Marinas and other boat berthing facilities typically have high boat densities and low hydrologic flushing. As a consequence of these characteristics, the following significant water quality problems often result within marinas:

- increased pollutants in the water column;
- decreased dissolved oxygen in the water column;
- increased pollutants in aquatic sediment;
- increased toxicity in the water column and sediments;
- increased pollutants in the tissues of aquatic organisms; and
- physical alteration or destruction of aquatic habitat.

The physical disruption, or destruction of wetlands, sediment, and other aquatic habitat is an especially troublesome impact. It is a result of both the original construction of the marina, ramps, and related facilities, as well as their ongoing use, operation, and maintenance.

Although most of the water quality problems listed above arise from the direct discharge of wastes by vessels, pollutants can also be transported into marina waters by way of storm water runoff from parking lots, docks, and other impervious surfaces.

CZARA(g) Guidance for Marinas

Most of the impacts listed above can be mitigated by utilizing best possible siting and design criteria for each marina. Construction and operation and maintenance practices are also crucial to protecting water quality. Recognizing the importance of this, US EPA developed fifteen specific management measures (best management practices) to protect coastal waters from nonpoint pollution from marinas and recreational boating.

The management measures for marinas which are grouped into two broad headings, (1) siting and design; and (2) operation and maintenance, were developed pursuant to Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA) and are incorporated into the (g) guidance. As with all nonpoint source pollution protection measures, the key to protecting water quality in marinas is pollution prevention.

Regulation of Vessels and Marinas

Management measures related to preventing pollutants, such as sewage, fuel and oil leaks, toxics, fish wastes, and hull scrapings from entering coastal waters are primarily the responsibility of the Regional Board. The Regional Board prohibits the discharge of these wastes through a variety of Basin Plan discharge prohibitions. The Board also encourages and participates in public education/awareness campaigns. The Harbors and Navigation Code Section 151 prohibits the intentional or negligent discharge of oil to the waters of the state. Penal Code Section 374(e) as amended in 1970 provides that any person who litters or places waste matter into any bay, lagoon, channel, river, creek, slough, canal or reservoir or body of water is guilty of a misdemeanor.

Local governments have significant authority to carry out these CZARA management measures through their zoning ordinances, and by using their police, fire, or building departments to ensure implementation.

The California Department of Pesticide Regulation regulates the application of antifouling paints. Regulations for organotin-based paints have been established which limit the TBT release rate, require application by certified commercial applicators, and allow application only on vessels at least 25 meters in length and/or aluminum hulls and parts. As described earlier, tributyltin fluoride or tributyl tin oxide are the principal toxicants in organotin-based paints.

The Health and Safety Code Section 4425 prohibits a vessel with a toilet from operating upon the waters of any lake, reservoir, or fresh water impoundment of this State unless the toilet is designed so that no human sewage can be discharged in such waters. This code section does not apply to rivers, estuaries or saltwater areas of California. Section 312 of the Clean Water Act provides that marine sanitation devices on board new or existing vessels must be designed to prevent the discharge of untreated or inadequately treated sewage into or upon the navigable waters of the United States (see discussion below on "*No Discharge Zone*"). The Marine Sanitation (Section 775) of the Harbors and Navigation Code declares that every vessel terminal shall be equipped with vessel pumpout facilities for the transfer and disposal of sewage from marine sanitation devices in order to protect water quality.

No Discharge Zone

Division 7 of the California Water Code authorizes the Regional Board to regulate any discharge of waste, including sewage, to waters of the state. The Federal Clean Water Act however partially preempts the state's authority to regulate vessel sewage discharges. Section 312 of the Clean Water Act provides that no state or local entity may adopt or enforce any laws regarding the design, manufacture, installation or use of marine sanitation devices (MSDs). Instead, US EPA must adopt federal standards of performance for MSDs which must be enforced and implemented through regulations adopted by the United States Coast Guard (USCG).

Marine sanitation devices either retain sewage or discharge treated sewage. If sewage is discharged, the effluent must meet USCG specified effluent standards described in 33 CFR 159, Coast Guard Regulations on Marine Sanitation Devices. Types I and II MSDs are flow-through systems which treat and discharge sewage. Type I MSDs produce an effluent having a fecal coliform bacteria count not greater than 1,000 per 100 milliliters and no visible floating solids. Type II MSDs produce an effluent having a fecal coliform bacteria count not greater than 200 per 100 milliliters and suspended solids not greater than 150 milligrams per liter. Type III MSDs are holding tanks only and prevent the overboard discharge of treated or untreated sewage.

There is one significant exception to the federal preemption of a state's regulation of vessel sewage discharges. Clean Water Act section 312 (f) allows states to <u>completely</u> prohibit vessel sewage discharges into waters requiring greater water quality protection, provided that US EPA determines that adequate vessel sewage pumpout facilities are available for these waters.

In 1976 the State of California petitioned US EPA, pursuant to Section 312 (f)(3) of the Clean Water Act, for a determination that adequate pump-out facilities were reasonably available for that portion of San Diego Bay that is less than 30 feet deep at mean lower low water (MLLW); and for all of Mission Bay, Oceanside Harbor, and Dana Point Harbor (41 Federal Register 21516 May 26, 1976). On August 6, 1976, US EPA made the requested determination (41 Federal Register 34453 August 6, 1976).

As a result, the discharge of all sewage, treated or untreated, from all vessels is completely prohibited in all portions of Mission Bay, Oceanside Harbor, and Dana Point Harbor (regardless of vessel size or water depth). Mission Bay, Oceanside Harbor, and Dana Point Harbor are, in their entirety, "*No Discharge Zones*". (Note that this prohibition includes discharges from a properly functioning USCG certified MSD.)

The discharge of all sewage, treated or untreated, from all vessels is completely prohibited in all portions of San Diego Bay that are less than 30 feet deep at mean lower low water (MLLW). The No Discharge Zone in San Diego Bay is defined as all portions of the bay having a depth of less than 30 feet MLLW. In the absence of the no discharge zone (i.e., in those portions of San Diego Bay having a depth of 30 feet or greater), discharge of treated sewage through a properly functioning United States Coast Guard certified Type I or II marine sanitation device is allowed. (USCG certification provides that the specified effluent limitations will be met). The discharge of untreated sewage from a Type III holding tank is not allowed under any condition in any portion of San Diego Bay (regardless of depth).

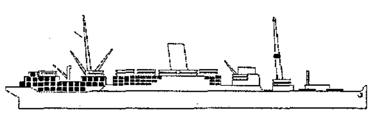
Because of dilution and circulation in San Diego Bay, it is assumed that the discharge of treated sewage into waters deeper than 30 feet from a properly functioning USCG certified Type I or II MSD will not degrade the bay's beneficial uses. Additionally, with the exception of a few recent uses (such as jet skiing and sail boarding), the REC I designated beneficial use occurs in shallow waters (i.e., in waters less than 30 feet). This supports the need for a complete prohibition in such shallow waters.

Furthermore, as a practical matter, it is not possible to regulate sewage discharges from all vessels in San Diego Bay. For example, some foreign vessels may not be equipped to use the existing pump-out facilities. Since the no discharge designation is conditioned upon the existence of adequate pump-out facilities, it was necessary to make an allowance in the prohibition for such vessels. These vessels require berthing accommodations outside of the designated area. (All US Navy vessels are equipped to connect to pump-out barges or pier-side sewage facilities.)

Most small pleasure craft are equipped with either a Type I or II flow-through treatment device or a Type III holding tank, but rarely both. Those vessels equipped with only a flow-through treatment device must secure their device while in a No Discharge Zone in order to prevent overboard sewage discharges. Those vessels equipped with only a holding tank are required to utilize pump-out facilities at all times and may not discharge into any portion of any bay. In other words, a vessel in San Diego Bay with a holding tank may not move into water greater than 30 feet and discharge sewage from its holding tank.

A study of the levels of coliform and Enterococcus bacteria caused by vessel discharges is needed to allow the Regional Board to make decisions based on measured levels. The Regional Board could then advise the county health officer, the Port District, and the Coast Guard so appropriate actions could be taken to abate the effects of sewage discharges from vessels.

SHIPYARDS



This section contains a general discussion of shipyards, their threat to water quality, and regulatory complexity. A discussion specific to San Diego Bay shipyards is included near the end of this section.

Shipyard activities may result in the discharge of wastes to receiving waters. The presence of elevated concentrations of pollutants, primarily heavy metals, in the sediment adjacent to shipyards nationwide is well documented in the literature (see references). Although there are numerous other potential threats, the single most significant threat to water quality posed by shipyards is the potential discharge of abrasive blast waste to receiving waters.

Shipyard Threat to Water Quality

From the perspective of protecting beneficial uses, a discharger's threat to water quality is critically important and plays a role in virtually all regulatory decisions. By definition, the basis of a discharger's threat to water quality is the effect the discharger would have on the receiving water if discharges occurred in violation of its NPDES permit. In other words, a discharger's threat to water quality is its potential for degrading water quality. The following six characteristics are relevant in evaluating a shipyard's threat to water quality: (1) primary activities; (2) facilities; (3) industrial processes; (4) materials used; (5) wastes generated; and (6) waste discharges to receiving waters (actual and potential). A discussion of each follows.

Primary Activities at Shipyards

The shipbuilding and repair industry is engaged in the construction, conversion, alteration, repair, and maintenance of all types of military and commercial ships and vessels. Shipbuilding and repair encompasses a large number and variety of activities and industrial processes including, but not limited to, formation and assembly of steel hulls; application of paint (coating) systems; installation and repair of a large variety of mechanical, electrical, and hydraulic systems and equipment; repair of damaged vessels; removal and replacement of expended or failed paint (coating) systems; and provision of entire utility/support systems to ships (and crew) during repair.

The list of occupations required to conduct these activities is also extensive, including sandblasters, painters, shipfitters, machinists, metalsmiths, welders/burners, blacksmiths, boilermakers, chemists, carpenters, coppersmiths, electricians, electronic technicians, joiners and patternmakers, laborers, riggers, pipefitters, and foundrymen. Not all occupations are present at all shipyards.

Shipyard Facilities

There are four major types of building/repair facilities at shipyards, which together with cranes, enable ships to be assembled, launched, or repaired. These facilities are graving docks/shipbuilding ways, floating drydocks, marine railways, and berths/piers. With the exception of berths and piers, the basic purpose of each facility is to separate the vessel from the bay and provide access to parts of the ship normally underwater.

Each facility type presents its own unique set of environmental concerns. Depending on size and capabilities, a single shipyard will generally have a combination of two or more of these facilities.

In addition to these facilities, shipyards must also conduct the wide range of support or complementary activities previously described. Many of these activities require their own facility, space, or shop; for example concrete platens (for steel fabrication), machine shop, pipe shop, electroplating shop, weld shop, sheet metal shop, electrical shop, coppersmith shop, blacksmith shop, carpentry shop, and boiler shop, etc. Not all facilities are present at all shipyards.

Shipyard Industrial Processes

The primary activities described above involve a multitude of industrial processes, many of which must be conducted over water or very close to the waterfront. Because they typically represent the greatest threat to water quality, the following discussion will focus primarily on the industrial processes conducted inside graving docks or floating drydocks.

Surface Preparation and Paint Removal: Methods of surface preparation and paint removal include dry abrasive blasting, wet abrasive or slurry blasting, hydroblasting, and chemical paint stripping. Each paint removal method has a unique purpose and poses its own set of water quality risks.

Dry abrasive blasting is the preferred method of preparing steel surfaces for application of a new paint (coating) system for saltwater immersion. It is used for most exterior hull work and virtually all interior tank work (e.g., fuel, bilge, ballast tanks etc). Dry abrasive blasting is the process in which blasting abrasive is conveyed in a medium of high pressure air, through a nozzle at velocities up to 450 feet per second resulting in very large quantities of solid waste and airborne particulates (dust). Although the most efficient of the paint removal methods, dry blasting produces the largest quantity of airborne particulates.

Wet abrasive or slurry blasting is the process in which water replaces air as the abrasive propellant. The use of water significantly reduces airborne particulate emissions but generates large quantities of wet residue and wastewater.

Hydroblasting is a process in which water under very high pressure is used instead of abrasive. Hydroblasting produces large amounts of wastewater and is primarily used at shipyards to remove marine growth, not to remove existing coatings. Chemical paint stripping is uncommon in drydocks and used primarily for removable parts.

Paint (coating) Application: After preparation, surfaces are painted. Most painting occurring in a drydock involves the ship hull and internal tanks. Painting is also conducted in other locations throughout a shipyard including piers and berths. Paint application is accomplished by way of air or airless spraying equipment.

Tank Cleaning: Tank cleaning operations utilize steam to remove dirt and sludge from internal tanks, particularly fuel tanks and bilges. Detergents, cleaners, and hot water may be injected into the steam supply hoses. Wastewater is generated.

Other Industrial Processes (graving docks/drydocks): Other industrial processes conducted inside graving docks or floating drydocks include mechanical repair, maintenance, installation; structural repair, alteration, assembly; and integrity/ hydrostatic testing. Hydrostatic or strength testing (flushing) is conducted on hull, tanks, or pipe repairs and on new systems during ship construction phases. Hydrostatic testing generates significant water flow.

Other Industrial Processes (elsewhere): Numerous other industrial processes take place at numerous other locations throughout a typical shipyard, including activities at a variety of repair and specialty shops. Examples include paint equipment cleaning; engine repair/ maintenance/ installation; pipe fitting; steel fabrication and machining; electrical repair/ maintenance/ installation; hydraulic repair/ maintenance/ installation; tank emptying; fueling; patternmaking; shipfitting; boiler cleaning; carpentry; refurbishing/ modernization/ cleaning; air conditioning/ refrigeration repair; sheet metal fabrication; fiberglass repair; electroplating/ metal finishing; blacksmithing; zinc primer application; printing; and photo processing. As a result of these processes, an assortment of wastes are generated, many of which are hazardous.

Materials Used at Shipyards

Materials commonly used at shipyards are described below beginning with those utilized during graving dock or floating drydock operations.

Abrasive Grit: Abrasive grit is typically slag from the smelting of copper ore and consists principally of iron. Trace elements such as copper, zinc and titanium may also be present in the slag. Sand, cast iron, or steel shot are also used as abrasives. Very large amounts of abrasive are needed to remove paint to bare metal. For example, removing paint from a 15,000 square foot hull can take up to 6 days and consume 87 tons of grit. Grit is needed in all dry and wet (slurry) abrasive blasting.

Fresh Paints: Fresh paints contain copper, zinc, chromium, and lead (all priority pollutants) as well as numerous hydrocarbons. The two major types of paints used on ship hulls are anticorrosive paints and antifouling paints. Anticorrosive paint (primers) include vinyl, vinyl-lead, or epoxy based coatings. Others contain zinc chromate and lead oxide. (Although newer paint formulations no longer include chromium and lead, such constituents may be present in shipyard wastes due to the removal of older coating systems.)

Antifouling paints are designed to prevent growth and attachment of marine organisms by continuously releasing toxic substances into the water. Cuprous oxide and tributyltin fluoride or tributyl tin oxide are the principal toxicants in copper-based and organotin-based paints, respectively.

Other Materials: Other materials used include oils (engine, cutting, and hydraulic); lubricants, grease; fuels; weld rod; detergents, cleaners; rust inhibitors; paint thinners; hydrocarbon and chlorinated solvents; degreasers; acids; caustics; resins; adhesives/ cement/ sealants; cyanide; zinc (e.g., zinc dust); chlorine; and mercury.

Wastes Generated at Shipyards

The major categories of wastes commonly generated by shipyard industrial processes are discussed below. Wastes resulting from graving or floating drydock operations are presented first.

Abrasive Blast Waste: Abrasive blast waste, consisting of spent grit, spent paint, marine organisms, and rust is generated in very large quantities during all dry or wet abrasive blasting procedures. The constituent of greatest concern with regard to toxicity is the spent paint, particularly the copper and tributyltin antifouling components, which are designed to be toxic and designed to continuously leach into the water column. Other priority pollutants in paint include zinc, chromium, and lead. Although the grit itself is not highly toxic, it is a major component in the large solid waste load and is settleable. As a result, its deposition can degrade the benthic community and increase the need for dredging. Abrasive blast waste can be conveyed by water flows, become airborne (especially during dry blasting), or fall directly into receiving waters. Wet abrasive blasting of a Naval DDG class destroyer (437-536 feet long; 47-67 feet wide; 15-20 feet draft) can generate up to 180 tons of solid wet abrasive waste.

Paint Losses: Paint losses, or paint which ends up somewhere other than its intended location (e.g., drydock floor, bay, worker's clothing), results from spills, drips, and overspray. Typical overspray losses are estimated at approximately 5% for air spraying and 1-2% for airless spraying.

Bilge Waste/Other Oily Wastewater: This is generated during tank emptying, leakages, and cleaning operations (bilge, ballast, fuel tanks). In addition to petroleum products (fuel, oil), tank washwater may also contain detergents or cleaners (nitrogen and phosphorus compounds) and can be generated in large quantities.

Blast Wastewater: Wet abrasive (slurry) blasting and hyroblasting generates large quantities of wastewater. Wet abrasive blasting of a Naval DDG class destroyer can generate up to 500,000 gallons of contaminated water. In addition to suspended and settleable solids (spent abrasive, paint, rust, and marine organisms) and water, blast wastewater may also contain rust inhibitors such as diammonium phosphate and sodium nitrite.

Other wastes: These include oils (engine, cutting, and hydraulic); lubricants, grease; fuels; waste paints/ sludge/ solvents/ thinners; construction/ repair wastes and trash; asbestos (from ship refurbishing/ modernization); sewage (black and grey water from vessels or docks); boiler blowdown, condensate, discard; spent hydrocarbon or chlorinated solvents; electroplating/ metal finishing wastes; acid wastes; caustic wastes; and aqueous wastes (with and without metals).

Shipyard Waste Discharges to Receiving Waters

Actual and potential waste discharges to receiving waters from typical shipyard operations are discussed below. Most are either the direct result of an industrial process (drydock, marine railway, or berth operations) or, more commonly, the result of water coming into contact with wastes, typically spent abrasive blast waste. There are numerous sources of water at a shipyard including: industrial processes; building or repair facilities (e.g., drydock); vessels under repair (e.g., cooling water); bay water (e.g., due to tidal influence or wave action); storm water; or other sources.

Actual and potential waste discharges to receiving waters include: floating drydock deballasting (tanks); floating drydock submergence/ emergence (platform); floating drydock operations; graving dock dewatering; gate leakage; hydrostatic relief flows; shipbuilding ways dewatering/ gate leakage/ relief flows; marine railway operations; berth and pier operations; storm water; integrity/ hydrostatic testing discharge (new vessels); boiler and cogeneration feedwater; fire protection system discharge; cooling water; and miscellaneous water flows.

Shipyard Complexity

From a regulatory and environmental control standpoint, shipyards present a unique and difficult problem. Traditional NPDES dischargers generate or intake wastewater, treat it to specified effluent limits, and discharge treated effluent, often by way of a single pipe. Unlike traditional dischargers, shipyards are significantly more complex in all respects: numerous and diverse industrial processes; numerous discharge mechanisms, waste streams, and discharge points; and Best Management Practices Plan (BMP) based permits. Each is discussed below.

Numerous and Diverse Industrial Processes

As described previously, shipyards conduct a large number and broad range of industrial processes which require a wide range of facilities and substantial workforce.

Numerous Discharge Mechanisms, Waste Streams, and Discharge Points

Shipyards are complex to regulate because they have numerous discharge mechanisms, discharge points, and waste streams. A less complex discharger will typically have a single or small number of each. A discussion of abrasive blast waste with respect to discharge mechanisms, discharge points, and waste streams follows. Abrasive blast waste is discharged primarily as a result of graving dock flooding, drydock immersion, drainage, or runoff. In other words, at shipyards, the principle mechanism by which wastes are conveyed to receiving waters is via the contact of wastes with water, both of which occur in large quantities. For this reason, storm water and storm drain inlets are of particular concern at shipyards. Abrasive blast waste can also become subject to tidal or wave action. Airborne releases represent another important discharge mechanism. Because abrasive blast waste is generated in part as airborne particulates, such releases to receiving waters pose a significant threat to water quality. Furthermore, and because of their proximity to receiving waters, a third discharge mechanism exits at shipyards. Direct discharges from shipyards occur when wastes are allowed to fall directly into receiving waters (off the end drydock, edge of pier, between gratings, etc).

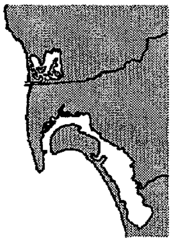
In summary, because abrasive blast waste can be washed, hosed, pushed, blown, become subject to tidal/wave action, and be directly or otherwise discharged, the potential for abrasive blast waste from shipyards to enter receiving waters is great. In addition to multiple discharge mechanisms, numerous waste streams, and discharge points also exist at shipyards. The discharges described above can potentially enter receiving waters from numerous shipyard worksites including graving docks, drydocks, marine railways, piers, repair/ specialty shops, as well as via storm drains and sheet flow runoff.

Best Management Practices (BMP) Based Permits

Unlike traditional NPDES discharges which are regulated by numerical effluent limits, the control of waste discharges from shipyards is accomplished by the implementation of Best Management Practices (BMP) plans. The purpose of a BMP plan is to prevent, reduce, or eliminate the spillage or illicit discharge of pollutants into receiving waters and can include any number of preventive controls or measures. Due to the types of activities and multiple discharge pathways, numerical effluent limitations are not practical at shipyards. The evaluation of the effectiveness of BMP Plans from a regulatory standpoint is more complicated and resource intensive than comparison of end-of-pipe monitoring results to numerical effluent limitations.

Long-Term Effects of Shipyard Discharges on Water Quality and Beneficial Uses

Unlike short lived pollutants (e.g., BOD and bacteria) the type of pollutants present in shipyard discharges are typically long-lasting. Shipyard pollutants, such as heavy metals and polyaromatic hydrocarbons (PAHs) are persistent in the marine environment, in part, because they can become attached to sediment particles and can accumulate to high concentrations in both sediments and in marine organisms. Once incorporated into sediment and tissues, these pollutants are very difficult to remove and may recycle in the marine system indefinitely. Because sediment cleanup projects are difficult, expensive, and lengthy, contaminated sediment can remain in place, adversely affecting beneficial uses and water quality, for many years.



San Diego Bay Shipyards

The following discussion is specific to San Diego Bay shipyards.

NPDES Permits

There are currently four commercial shipyards in the San Diego Region, all of which are located adjacent to San Diego Bay. All of the shipyards are currently regulated under individual NPDES permits which are BMP based, rather than based on effluent limits. The shipyard permits also include standard receiving water limitations and discharge prohibitions. Additionally, all of the shipyards are also subject to the statewide General Industrial Storm Water Permit.

Threat to Water Quality and BMPs

Although the discussion above was intended as a general description of the shipyard industry as a whole, the majority of the information is applicable to the San Diego Bay shipyards. One notable exception is that wet abrasive or slurry blasting and chemical paint stripping are currently not conducted at San Diego Bay shipyards.

By definition a discharger's threat to water quality is its potential to cause damage to water quality and beneficial uses under worst case conditions, i.e., assuming all BMPs and treatment measures fail. For this reason, the general shipyard discussion on threat to water quality focuses on potential risks rather than on BMPs. As described, a shipyard's potential risks to water quality are significant in many respects. BMPs are specifically designed to reduce those risks and are therefore extremely important for shipyards. Hence, the second reason to focus on potential risks is to emphasize the need for effective BMPs at shipyards.

San Diego shipyards report strict adherence to a large number of BMPs to control water and airborne wastes during a variety of industrial processes. Such BMPs include physical and procedural controls. Physical controls isolate runoff pathways from contact with abrasive blast wastes through the use of shrouding, sealing of drains, and diversion of sump discharge pathways. Procedural control methods include dock sweeping and elimination of sources of runoff during blasting operations. The shipyards also report the effective management of their wastes including treatment, recycling, and disposal in compliance with the San Diego County Hazardous Materials Management Division, their San Diego Metropolitan Industrial Waste Program permits, and the San Diego County Air Pollution Control District.

Contaminated San Diego Bay Sediment and Mussels

Regional Board staff has reviewed the results of sediment samples collected adjacent to the shipyards in San Diego Bay. Elevated concentrations of copper, tributyltin, and zinc exist in these sediments. Copper, tributyltin and zinc are contained in both the materials used by San Diego Bay shipyards as well as in the wastes which they generate. Furthermore elevated concentrations of copper, tributyltin, and zinc have also been measured in the tissues of mussels collected from stations located adjacent to San Diego Bay shipyards.

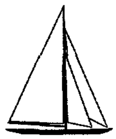
Although this data may suggest that the BMPs employed by San Diego Bay shipyards are not effective, it may also represent historical discharges which occurred at a time when BMPs were not carefully implemented. Regional Board staff plans to investigate the matter further. The existence of contaminated sediment adjacent to the shipyards serves to further underscore the importance of shipyard BMPs.

Shipyards -- General Conclusions

In summary, shipyards typically pose a significant threat to water quality for the following reasons. Relative to other regulated dischargers, shipyards conduct a large number and wide variety of activities and industrial processes. The conduct of these industrial processes requires numerous physical facilities and a large number, amount, and variety of materials. As a result, a large number, amount, and variety of wastes are generated and are, or may be, discharged to receiving waters. Shipyard discharges have the potential to cause the long-term loss of a designated beneficial use in receiving waters.

From a regulatory perspective, shipyards are complex. Toxic pollutants are, or could be, present in wastes discharged to receiving waters from shipyards. They have numerous discharge points and are regulated by permits which do not contain numeric effluent limits. Shipyards are typically "*major*" NPDES dischargers and require a high level of regulatory effort.

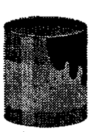
In conclusion, because shipyards pose a significant threat to water quality and are complex to regulate, the BMPs which they employ (to reduce or eliminate the discharge of wastes to receiving waters) are extremely important. It is critical that shipyard BMPs are effective and diligently implemented.



BOATYARDS

There are currently 12 boatbuilding and boat repair facilities (commonly called boatyards) adjacent to receiving waters in the San Diego Region. Most of the boatyards are located adjacent to San Diego Bay, while Mission Bay, Oceanside Harbor, and Dana Point Harbor are serviced each by a single boatyard. Additional boatyards are located in inland areas of the Region. Seven of the boatyards located adjacent to receiving waters are currently regulated under an individual NPDES permit. Eventually all of the waterfront boatyards will be regulated under an individual NPDES permit. Additionally, all of the boatyards in the Region are currently subject to the statewide General Industrial Storm Water Permit. Like the shipyard permits, boatyard permits do not contain numeric effluent limits but are based instead on best management practices (BMPs).

The most significant waste categories associated with boatyards include hull maintenance related wastes and marine engine related wastes. Hull maintenance related wastes, and particularly antifouling paints, are believed to pose the greatest threat to water quality from boatyard operations. Cuprous oxide (copper) and tributyltin fluoride or



tributyltin oxide (TBT) are the principle toxicants in antifouling paint used at boatyards. Marine engine related wastes include fuels, oils, lubricants, antifreeze, solvents, and bilge water. The pollutants of concern from marine engine wastes are metals and petroleum hydrocarbons. Polynuclear aromatic hydrocarbons (PAHs) are of particular concern because they persist in the marine environment. Implementation of BMPs is the key to controlling boatyard waste discharges to receiving waters.

GROUND WATER DEWATERING

A number of dewatering operations are associated with construction projects for foundations, bridges, roads, etc. Other dewatering operations are ground water remediation projects which are required uder Cleanup and Abatement Orders issued by the Regional Board. Many of the proposed dewatering operations are located where petroleum or other pollutants plumes exist. Petroleum or other pollutants may be pumped from the ground water and discharged to a storm drain and subsequently to a water of the United States.

Since the mid-1980's, the Regional Board has regulated dewatering operations under the NPDES permit process. Two general NPDES permits have been adopted by the Regional Board which regulate discharges from ground water remediation projects and discharges from ground water dewatering operations to surface waters of the United States. New permanent dewatering discharges are prohibited in both permits.

The first permit, Order No. 91-10, NPDES CA0108804, regulates ground water remediation and dewatering waste discharges to surface waters except San Diego Bay. Order No. 91-10 was adopted January 28, 1991.

The second permit, Order No. 90-31, NPDES CA0108707, regulates ground water dewatering discharges to San Diego Bay and storm drains or other conveyance systems tributary thereto. Order No. 90-31 was adopted April 23, 1990.

The Regional Board's Order No. 90-31 was subsequently modified by the State Water Resource Control Board Order No. WQ 91-10 on September 26, 1991. State Board Order WQ 91-10 amended certain discharge specifications, reporting requirements and ground water monitoring requirements in Order No. 90-31.

In addition, the Waiver Policy described earlier in this Chapter waives WDRs for short-term construction dewatering operations where there is no discharge to surface waters.

DREDGING AND DISPOSAL OF DREDGE SPOIL

REGULATORY FRAMEWORK FOR DREDGED MATERIAL DISPOSAL

Federal Statutes and Regulation

The regulation of dredged material disposal in waters of the United States (US) on a federal level is a responsibility shared by the US EPA and the US Army Corps of Engineers (ACOE). The Marine

Protection, Research and Sanctuaries Act, also called the Ocean Dumping Act, is the primary federal environmental statute governing the discharge of dredged material to the ocean. The Clean Water Act is the primary federal statute governing the discharge of dredged and/or fill material into US waters. Material dredged from waters of the US and disposed in the territorial sea is evaluated under the Marine Protection, Research and Sanctuaries Act unless the material discharged is for the primary purpose of fill (e.g., beach replenishment, island creation, or underwater berms), in which case the disposal is evaluated under the Clean Water Act [33 CFR 336.0(b)]. Other applicable federal statutes and regulations include:

- ***The Rivers and Harbors Act of 1899:*** The Rivers and Harbors Act of 1899 (33 USC 401 *et seq.*) requires a ACOE permit for any work or structure, including fill material discharges, in navigable waters of the United States. The primary purpose of Section 10 of this act is to ensure that structures (i.e., disposal berms, piers, pipelines, bridges, wharfs) constructed in navigable waters do not adversely affect federal interstate navigation.

- ***The Fish and Wildlife Coordination Act of 1958:*** The Fish and Wildlife Coordination Act requires that, for any proposed federal project or permit that may affect a stream or other body of water, the ACOE must first consult with federal and state fish and wildlife agencies. This consultation addresses the prevention of damages to wildlife resources and provides for the development and improvement of wildlife resources.

- ***The Endangered Species Act of 1973:*** Section 7(a)(2) of the Endangered Species Act (ESA), as amended (16 USC. 1531 *et seq.*) requires federal agencies, in consultation with the Secretaries of Interior (represented by the US Fish and Wildlife Service) and Commerce (represented by the National Marine Fisheries Service), to insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of such species.

- ***The Coastal Zone Management Act of 1972:*** The Coastal Zone Management Act (16 USC. 1451*et seq.*) authorizes a federal program for the effective management, beneficial use, protection and development of the coastal zone. The act requires the ACOE to coordinate permit review and federal projects with all state level coastal zone review agencies. Under this act, coastal states are required to formulate a management program for the land and water resources of its coastal zone, which extends out to the seaward limit of the territorial sea, and submit it for approval to the Secretary of Commerce. In 1977, the California Coastal Management Program was approved.

<u>Overview of the Clean Water Act</u>

Section 404 of the Clean Water Act requires the US EPA, in conjunction with the ACOE, to promulgate guidelines for the discharge of dredged or other fill material to ensure that such proposed discharge will not result in unacceptable adverse environmental impacts to waters of the United States. Section 404 assigns to the ACOE the responsibility for authorizing all such proposed discharges, and requires application of the guidelines in assessing the environmental acceptability of the proposed action. The ACOE and the US EPA also have authority under Section 230.80 to specify, in advance, sites that are either suitable or unsuitable for the discharge of dredged or fill material in US waters. In addition, Clean Water Act Section 401 provides the States a certification role as to project compliance with applicable water quality standards.

<u>Clean Water Act, Section 401 Certification State of California</u>

The Clean Water Act, Section 401 gives the states authority to grant, deny, or waive certification for a federally permitted or licensed activity that may result in a discharge to waters of the United States. Any applicant for a federal permit which conducts any activity which may result in any discharge into the navigable waters of the State must present to the permitting agency a certification (or waiver of certification) from the State that any such discharge will comply with the applicable Clean Water Act provisions of Section 301, 302, 303, 306, and 307. The certification issued by the State should establish relevant effluent limitations, monitoring requirements, and standards or performance which become conditions of the federal permit. In California, the responsibility for Section 401 certification is assigned to the State Board and regional boards. After review of data submitted by an applicant, and any other information available as to whether the proposed activity will comply with all applicable water quality standards, limitations and restrictions, the Regional Board may:

- waive water quality certification;
- issue waste discharge requirements; or,
- recommend approval with or without conditions, or denial of water quality certification, to the State Board.

In order to grant Section 401 certification, the State Board must certify that the proposed discharge will not result in unacceptable adverse environmental impacts to waters of the United States.

For a project to proceed, a waiver of certification or waste discharge requirements must be obtained from the Regional Board or a certification with or without conditions must be obtained from the State Board, indicating the Board's concurrence with the decision that the proposed action is not expected to cause a violation of the State's water quality standards.

State Statutes and Regulations

The State of California has several programs that parallel or overlap many of the listed Federal Acts. Relevant state statutes and regulations include the following:

- California Water Code, Division 7 (Porter-Cologne Water Quality Control Act);
- State Water Resources Control Board and Regional Water Quality Control Board Plans and Policies
- California Water Code, Division 4 (California Bay Protection and Toxic Cleanup Act);
- California Fish and Game Code;
- California Environmental Quality Act; and
- California Coastal Zone Management Act.

The primary statutory state law pertaining to the regulation of water quality and sediment control issues is the Porter-Cologne Water Quality Control Act which is contained in Division 7 of the California Water Code.

California Water Code, Division 7 (Porter-Cologne Water Quality Control Act)

Dredging and dredged material disposal is an ongoing activity at harbors within the San Diego Region. The discharge of dredged or fill material which comes within the purview of Section 404 of the federal Clean Water Act is not subject to regulation under the National Pollutant Discharge Elimination System (NPDES) permit program (Clean Water Act Section 402). However, if the project involves the discharge or potential discharge of waste (e.g. dredge spoils, dredge spoil return water, etc.) which may adversely impact water quality, then the discharge may be regulated through the issuance of waste discharge requirements (WDRs). WDRs are issued by the Regional Board pursuant to the Porter-Cologne Water Quality Control Act.

The Regional Board is concerned with turbidity, dissolved oxygen depletion, and other physical, chemical, and biological parameters in the receiving waters which are impacted by dredge/fill projects. In recent years, there has also been concern about the concentrations of chemicals in the material to be dredged. Harbor areas may contain high levels of contaminants in bottom sediments due to navigational use, and due to wastes from urban, industrial, and riverine sources. The Regional Board Waiver Policy described earlier in this chapter waives establishing WDRs for projects which involve dredging 5,000 cubic yards or less of material and are not expected to have any adverse impact on the environment. For projects involving dredging of more than 5,000 cy of material, or dredging of potentially or known contaminated material, the proponent is required to submit a Report of Waste Discharge (RWD) in application for WDRs. The RWD must include a characterization of the material to be removed to determine whether the proposed project is expected to meet all applicable water quality standards, limitations, restrictions and discharge prohibitions. The decision to issue or waive WDRs for dredging projects is made on a case-by-case basis regardless of dredge spoil volume.

Disposal of dredge material at authorized open-ocean disposal sites (e.g., LA-5 Ocean Dredged Material Disposal Site) fall under the jurisdiction of the federal Environmental Protection Agency (US EPA) and the ACOE. However, because of the potential threat to water quality due to dredging operations, the Regional Board may still issue a WDR for the actual dredging portion of the project.

Adopted WDRs typically require monitoring for dissolved oxygen, turbidity and, where concentrations of chemicals in the sediments are high, monitoring for chemical constituents. Monitoring may be required of the receiving water at the dredge site or at the disposal site(s), and of the dredge spoil return water if applicable.

Enforcement Process for Contaminated Sediment

Dredging is often part of the remediation process for contaminated sediments in marine waters. The Regional Board under the authority of the California Water Code Section 13304 may issue a cleanup and abatement order to require an identified responsible party which caused the discharge of chemical constituent(s) present in a contaminated sediment to remediate or effect cleanup of the contaminated sediment.

Specific directives of cleanup and abatement orders issued for remediation or cleanup of contaminated sediments typically direct the responsible party to:

- Quantify the lateral and vertical extent of the contaminated sediment;
- Examine the engineering feasibility of the following alternative sediment cleanup/remediation strategies;
    - ✓ Complete removal of all contaminated sediment;
    - ✓ Removal or remediation of contaminated sediment to a level that will conform with water quality objectives and protect/restore beneficial uses; and
    - ✓ No action alternative level - The "*no action*" alternative level involves reliance upon natural processes for the remediation of contaminated sediment sites;
- Examine the cost of sediment cleanup/remediation to various cleanup/remediation levels; and
- Examine the environmental consequences of sediment cleanup/remediation to various cleanup/remediation levels.

State Water Resources Control Board and Regional Water Resources Control Board Plans and Policies

State plans and policies which affect dredging and disposal of dredge spoil include the Ocean Plan, the Water Quality Control Policy for the Enclosed Bays and Estuaries of California (Resolution No. 74-43), the Basin Plan, and any other applicable plans or policies.

Ocean Plan: The Ocean Plan establishes general requirements for waste discharges which could affect state ocean waters. For dredge/fill projects, this may include discharges associated with dredging operations, dredge spoils disposal including beach replenishment, or discharge of dredge spoil return water. The Ocean Plan requirements are incorporated into WDRs issued by the Regional Board for dredge/fill projects.

Water Quality Control Policy for the Enclosed Bays and Estuaries of California (State Board Resolution No. 74-43): This policy requires that dredge spoils to be disposed of in bay and estuarine waters must comply with federal criteria for determining the acceptability of dredged spoils to marine waters, and must be certified by the State Board or Regional Board as in compliance with state plans and policies. Dredging must also comply with applicable discharge prohibitions contained in the policy (i.e., the policy prohibits the direct or indirect discharge of silt, sand, soil, clay, or other earthen materials from onshore operations including mining, construction, agriculture, and lumbering, in quantities which unreasonably affect or threaten to affect beneficial uses).

California Bay Protection and Toxic Cleanup Act

The California Bay Protection and Toxic Cleanup Act (California Water Code, Division 4, Chapter 5.6, Sections 13390-13396) requires the Regional Board to identify and characterize toxic hot spots in bays and estuaries and ocean waters of the state and plan for cleanup or remediation of the sites. Furthermore, CWC Section 13396 states that no person shall dredge or otherwise disturb a toxic hot spot without first obtaining Clean Water Act Section 401 certification or WDRs. Dredging projects involving removal or disturbances of sediments at toxic hot spots must meet the following conditions to the satisfaction of the Regional Board:

- The polluted sediment will be removed in a manner that prevents or minimizes water quality degradation.
- Polluted dredge spoils will not be deposited in a location that may cause significant adverse effects to aquatic life, fish, shellfish, or wildlife or may harm the beneficial uses of the receiving waters, or does not create maximum benefit to the people of the state.

- The project or activity will not cause significant adverse impacts upon a federal sanctuary, recreational area, or other waters of significant national importance.

California Coastal Zone Management Act

The California Coastal Zone Management Act requires that the dredging of coastal waters and estuaries be limited where feasible to maintaining navigational depths [Section 30233(a)(2)]. Section 30233(b) further encourages the transportation of dredged material so generated and determined to be suitable for beach replenishment to appropriate beaches or into suitable long shore current systems.

California Fish and Game Code

Dredging operations and the disposal of dredge spoil and dredge spoil return water are subject to applicable sections of the California Fish and Game Code, especially those pertaining to:

- Water pollution (Division 6, Chapter 2, §5650);

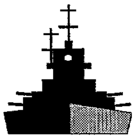
- Endangered species (Division 3, Chapter 1.5, §2050 - §2098); and/ or the

- Alteration of any river, stream or lake (Division 2, Chapter 6, §1601 and §1603).

California Environmental Quality Act of 1973

The Regional Board may not adopt WDRs for a dredge/fill project until the California Environmental Quality Act (CEQA; P.R.C. 21000-21177) requirements have been satisfied. CEQA requires full public disclosure of a project and the assurance that environmental factors are considered in the decision making process. CEQA requires one of the following:

- an Environmental Impact Report;
- a Categorical Exemption; or
- a Negative Declaration.



HISTORY OF DREDGE AND FILL PROJECTS

San Diego Bay

Dredging of San Diego Bay has occurred for a variety of reasons. San Diego Bay is a major port for commercial and military vessels. In order to provide adequate water depths for navigation and berthing of vessels, dredging projects are required from time-to-time to maintain existing water depths or to increase depths to accommodate these vessels. Significant dredging first occurred within San Diego Bay in the early 1900's.

The volume of material dredged from San Diego Bay over the years is estimated to be between 180 and 190 million cubic yards (mcy)(Smith, 1977 from US Navy, Sept. 1992). About 5 to 8 mcy was disposed at ocean dumping sites, about 35 mcy was placed along Silver Strand beach, and about 147 mcy was used around the Bay as fill. Most of this material was placed prior to 1970. During 1992 and 1993, there were a total of fifteen recent, ongoing, and future dredge and fill projects in San Diego Bay for a total volume of about 3.7 mcy. The US Navy anticipates dredging an additional 13 mcy through 1998.

Other Areas

There is on-going maintenance dredging in other areas throughout the San Diego region. These areas include:

- Agua Hedionda Lagoon;
- Mission Bay; and
- Oceanside Harbor.

Additional areas which have dredging projects scheduled include the following:

- Batiquitos Lagoon;
- Murrieta Creek;
- San Marcos Creek; and
- Santa Margarita River.

DISPOSAL OF DREDGED MATERIAL

Disposal of dredged material is a necessity whenever a dredging project is undertaken. There are alternatives for disposal available within the San Diego Region, including several which can yield significant environmental benefits. However, disposal of dredged material can be a significant problem when there is toxic contamination of the dredged materials. Prior to dredging, physical, chemical, and biological testing of the sediment have been required in order to determine the appropriate alternative for disposal of the dredged material. Potential alternatives for the disposal of dredged material from San Diego Bay include:

- Beach replenishment;
- Habitat restoration/ enhancement;
- Ocean disposal;

- Incineration;
- Upland disposal without treatment;
- Upland disposal with treatment;
- Confined aquatic disposal; and
- Reuse sites such as capping.

Physical Characteristics of Dredged Material

Evaluation of the physical characteristics of sediments proposed for discharge is necessary to determine potential environmental impacts of disposal, the need for additional chemical or biological testing, as well as potential beneficial use of the dredged material. The physical characteristics of the dredged material include: particle-size distribution, water content or percent solids, specific gravity of solids, and plasticity characteristics. The sediment physical characteristics should also be evaluated from the standpoint of compatibility with different kinds of biological communities likely to develop for the disposal environments under consideration.

Chemical Characteristics of Dredged Material

The initial screening for contamination is designed to determine, based on available information, if the sediments to be dredged contain any contaminants in forms and concentrations that are likely to cause unacceptable impacts to the environment. During this screening procedure, specific contaminants of concern are identified in a site-specific sediment so that any subsequent evaluation is focused on the most pertinent contaminants.

Physical behavior of the material at the disposal site

Physical testing and assessment should focus on both the short-term and long-term physical behavior of the material. For open-water alternatives, these assessments might include an analysis of water-column dispersion, mound development, and long-term mound stability or dispersion. For confined alternatives, these assessments might include an analysis of solids retention and storage requirements during disposal and long-term consolidation behavior in the confined disposal facility.

Any contaminant testing should focus on those contaminant pathways where contaminants may be of environmental concern, and the testing should be tailored to the available disposal site. For open-water alternatives, contaminant problems may be related to either the water column or benthic environment, and the appropriate testing and assessments would include required Clean Water Act or MPRSA testing. For confined sites, potential contaminant problems may be either water quality related (return water effluent, surface runoff, and groundwater leachate), contaminant uptake related (plant or animal), or air related (gaseous release).

Traditional locations for disposal of non-contaminated dredged material have included nearshore ocean waters along Silver Strand, in-bay waters of the Naval Amphibious Base Coronado, and the LA-5 Ocean Dredged Material Disposal Site (LA-5).

Dredging permits issued during the past twenty years have allowed about 10 million cy of material to be disposed either on Silver Strand beaches or LA-5. Chemical testing data for projected future US Navy projects suggest that 92 percent of the material planned to be dredged from San Diego Bay will qualify for placement at either habitat enhancement sites, Silver Strand beaches or at LA-5.

Material which is not physically compatible with the receiving disposal site may qualify to be disposed of at LA-5. Material which cannot meet either the 404(b)(1) Guidelines or the US EPA ocean dumping criteria must be disposed in a different manner.

Beach Replenishment

Shore erosion is a major concern along the coast of the San Diego Region. Beach replenishment is usually accomplished by dredging sand from inshore or offshore locations and transporting the sand by truck, by split-hull hopper dredge, or by hydraulic pipeline to an eroding beach (e.g., Silver Strand beach). These operations may result in displacement of the substrate, changes in the topography or bathymetry of the borrow and replenishment areas, and destruction of nonmotile benthic communities. However, a well-planned beach nourishment operation can minimize these effects by taking advantage of the resiliency of the beach and nearshore environment and its associated biota, and by avoiding sensitive resources. When dredged material is used for beach replenishment it should closely match the sediment composition of the eroding beach and be low in fine sediments, organic material, and pollutants. The ACOE requires that dredged sediments proposed for placement on a beach must be:

- Particles mostly greater than 74 microns (i.e. sand, gravel or rock);
- Compatible with sediments on the receiving beach; and

- Substantially the same as the disposal site.

Generally, the disposal of clean, sandy material on beaches poses no present problem in terms of sediment quality, quantity, or feasibility. In fact, to be consistent with the California Coastal Management Plan, every effort must be made to beneficially use sandy material for beach nourishment or habitat restoration/ enhancement.

Habitat Restoration/ Enhancement

Restoration/ enhancement of wetlands is an alternative that can benefit the environment. In general, restoration of a former wetland is more likely to be successful than creation of a new wetland where none had existed previously. In selecting a site, alteration of substrate and changes in circulation and sedimentation patterns should be considered. In general, the material used for wetland restoration should remain water-saturated, reduced, and near neutral in pH. These characteristics have a great influence on the environmental activity of any chemical contaminants which may be present.

Ocean Disposal

The ocean water disposal technique involves placing the dredged sediment in open ocean waters at an US EPA approved site. The suitability of dredged sediment for open-water disposal is evaluated by effects-based testing as there are no sediment criteria.

In situations where the contaminated sediment will not meet US EPA's or the Corps of Engineers' criteria for ocean disposal, the sediment must be treated to meet those criteria by physical, chemical, biological, or thermal treatment methods.

LA-5 Ocean Dredged Material Disposal Site: LA-5 received final designation from the US EPA in 1991. This site has been used for the disposal of dredged material since the 1970's and has no capacity or dumping rate restrictions. About 4 million cy were disposed there by the ACOE between 1977 and 1987. About 2.5 million cy were deposited by the US Navy, the National Steel and Shipbuilding Corporation, and Southwest Marine, Inc. during that same period (US EPA, 1988). The LA-5 site is a non-dispersive open water disposal site. Most of the material placed here is intended to remain on the bottom following placement. This site is located 11 km (5.4 nm) southwest of Point Loma on the continental shelf in 147 to 200 m (80 to 110 fm) of water. The center coordinates of the site are 32° 36' 83" North latitude and 117° 20' 67" West longitude, with a radius of 910 m (1,000 yd).

Upland (Landfill) Disposal without treatment

Upland disposal is the process of placing dredged material into or onto a designated solid waste disposal facility or landfill, or into a structure specifically designed to accept dredged material. This upland disposal alternative is used when the dredged material does not qualify for any aquatic disposal alternative.

Upland (Landfill) Disposal with treatment

The landfill disposal with treatment technique refers to situations where the contaminated sediment will not meet state criteria for landfill disposal without the employment of physical, chemical, biological or thermal treatment methods.

Confined disposal

Confined disposal is placement of dredged material within diked nearshore or upland confined disposal facilities via pipeline or other means. Confined disposal facilities are designed and operated to provide adequate storage capacity for meeting dredging requirements and to maximize efficiency in retaining the solids. If contaminants are present in the dredged material, then control of contaminant releases is important in the design and operation of the confined disposal facility.

In most cases confined disposal facilities must be used over a period of many years, storing material dredged periodically over the design life. Long-term storage capacity of these confined disposal facilities is therefore a major factor in design and management. Once water is drained from the confined disposal facility following active disposal operations, natural drying forces begin to dewater the dredged material, adding additional storage capacity.

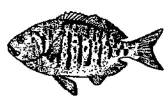
Reuse Sites - Capping

Capping can be done in place or through the controlled accurate placement of contaminated material at an open water disposal site. Capping in place is a type of non-removal action and refers to the placement of a clean cover material over the contaminated sediment. Capping can also be done by the accurate placement of contaminated material at an open water disposal site followed by a covering or cap of clean isolating material.

In both cases, the purpose of the cover material is to minimize or prevent the migration of contaminants from the sediment to the water column. In remedial actions involving capping, monitoring is needed to ensure that the integrity of the cap is maintained. The key elements of the monitoring program may include the monitoring of:

- Changes in cap thickness;
- Erosion around cap boundaries; and/ or
- Possible leakage of contaminants from the cap.

PROBLEMS POSED BY DREDGING SEDIMENT/CONTAMINATED SEDIMENT



Many chemical substances discharged into marine waters tend to become attached to sediment particles and thus accumulate to high concentrations in benthic sediments. The dredging process can disturb bottom sediments leading to the release of pollutants into the water column by resuspension of contaminated sediment particles; dispersal of interstitial water in the sediment pores; and desorption of chemicals from the contaminated sediment. Common toxic constituents of many sediments include ammonia, low dissolved oxygen and hydrogen sulfide.

Environmental Threat Associated with Contaminated Sediments

Benthic marine sediments support biological communities which reside there (e.g., clams, worms, bottom feeding fish), and provide spawning habitat for many pelagic species (e.g., invertebrates and fish). Elevated concentrations of chemicals in the sediment may cause acute mortality or affect the reproductive behavior, egg hatching characteristics, and early life development of these organisms. In addition to causing acute mortality and abnormal development, contaminated sediments can also lead to the accumulation of contaminants in organisms due to the effects of bioaccumulation. In addition, biomagnification of the contaminants can occur in the food chain when small contaminated organisms are consumed by higher trophic level species including man.

The threat to the public health from contaminated sediments centers around three principal pathways of exposure:

- Consumption of fish and shellfish contaminated by chemicals in the sediment through the processes of bioaccumulation and biomagnification;
- Direct contact with contaminated sediments by people; and
- Incidental ingestion of contaminated sediment or associated waters by people.

Disposal of Contaminated Material Dredge Spoil Return Water

After removal of the contaminated material from the water, the contaminated material must be separated from the slurry to attain two distinct waste streams, the concentrated contaminated material and the dredge spoil return water. The methods for separating the material solids from the water include the use of settling basins, clarifiers, impoundment basins, screens and cyclones. The dredge spoil return water consists of a substantially liquid waste stream that may need to be subsequently treated by physical, chemical or biological methods for removal of dissolved and suspended pollutants.

DISCHARGES OF WASTE TO LAND

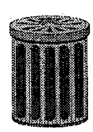
Discharges of solid, semi-solid, and liquid wastes to landfills, waste piles, surface impoundments, pits, trenches, tailings ponds, natural depressions and land treatment facilities (collectively called "*waste management units*") have potential to create significant pollution sources affecting water quality. Unlike surface waters, which often have capacity to assimilate waste discharges, ground waters have little or no assimilative capacity. This is due to slow contaminant migration rates, lack of aeration, minimal biological activity, and laminar flow patterns. Waste containing elevated pollutant concentrations can require containment in waste management units or active treatment for extended periods to prevent waste migration and impairment of the underlying ground water quality. The pollutants may continue to affect water quality long after the discharge has ceased, either because of continued leachate or gas discharges *from* the unit, or because pollutants have accumulated in underlying soils from which they are gradually released to ground water.

Landfills for disposal of municipal or industrial solid waste (solid waste disposal sites) are the major categories of waste management units in the Region. Surface impoundments are also used for storage or evaporative treatment of liquid wastes, waste piles for the storage of solid wastes, and land treatment units for the biological treatment of semi-solid sludge from wastewater treatment facilities. Sumps, trenches, and soil depressions have been used in the past for liquid waste disposal. The Regional Board issues waste discharge requirements to ensure that these discharges are properly contained to protect the Region's water resources from degradation, and to ensure that dischargers undertake effective monitoring to verify continued compliance with requirements.

Waste Management Units are subject to concurrent regulation by other state and local agencies responsible for land use planning, solid waste management, and hazardous waste management. "*Local enforcement agencies*" implement the State's solid waste management laws and local ordinances governing the siting, design, and operation of solid waste disposal facilities (usually landfills) with the concurrence of the California Integrated Waste Management Board (CIWMB). The CIWMB also has direct responsibility for review and approval of plans for closure and post-closure maintenance of solid waste landfills. The Department of Toxic Substances Control (DTSC) issues permits for all hazardous waste management treatment, storage, and disposal facilities (which include incinerators, tanks, and warehouses where hazardous wastes are stored in drums as well as landfills, waste piles and surface impoundments). The State Board, regional boards, CIWMB, and DTSC have entered into a Memorandum of Understanding to coordinate their respective roles in the concurrent regulation of these discharges.

The laws and regulations governing discharges of hazardous and non-hazardous wastes have been revised and strengthened in the last few years. The discharge of municipal solid wastes to land are closely regulated and monitored; however, some water quality problems have been detected and are being addressed. Recent monitoring efforts under the State and Regional Boards' Chapter 15 and SWAT programs have revealed that discharges of municipal solid wastes to unlined landfills have resulted in ground water degradation and pollution by volatile organic constituents (VOCs) and other waste constituents. VOCs are components of many household hazardous wastes and certain industrial wastes that are present within municipal solid waste streams. VOCs can easily migrate from landfills either in leachate or by vapor-phase transport. Clay liners and natural clay formations between discharged wastes and ground waters are largely ineffective in preventing water quality impacts from municipal solid waste constituents. In a recently adopted policy for water quality control, the State Board found that "*research on liner systems for landfills indicates that (a) single clay liners will only delay, rather than preclude, the onset of leachate leakage, and (b) the use of composite liners represents the most effective approach for reliably containing leachate and landfill gas*" (State Board Resolution No. 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*).

The US EPA has adopted new regulations under Subtitle D of the Resource Conservation and Recovery Act (RCRA) which require the containment of municipal solid wastes by composite liners and leachate collection systems. Composite liners consist of a flexible synthetic membrane component placed above and in intimate contact with a compacted low-permeability soil component. This liner system enhances the effectiveness of the leachate collection and removal system and provides a barrier to vapor-phase transport of VOCs from the unit. Regional Boards and the CIWMB are implementing these new regulations in California under a policy described in State Board Resolution No. 93-62 and new regulations from CIWMB. The State Board is in the process of developing revised regulations under 23 CCR, Division 3, Chapter 15, *Discharges of Waste to Land*, to fully implement water quality-related portions of the RCRA Subtitle D federal regulations. While a single composite liner of the type that can be approved under Subtitle D regulations is a significant improvement over past municipal solid waste containment systems, it should be noted that single composite liners will not necessarily provide complete protection for ground water resources.



CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 23, CHAPTER 15

Chapter 15 includes regulations governing discharges of waste to land for treatment, storage, or disposal. The regulations cover landfills, surface impoundments, waste piles, land treatment units, mining waste management units and confined animal facilities. In addition, actions to clean up and abate conditions of pollution or nuisance at contaminated sites are covered by relevant portions of the regulations where contaminated materials are taken off-site for treatment, storage, or disposal and, as feasible, where wastes are contained or remain on-site at the completion of cleanup actions. The regulations classify wastes according to their threat to water quality, classify waste management units according to the degree of protection that they provide for water quality, and provide siting, construction, monitoring, corrective action, closure and post closure maintenance criteria. Chapter 15 requirements are minimum standards for proper management of each waste category. These regulations require the complete containment of wastes which, if discharged to land for treatment, storage or disposal, have the potential to degrade the quality of water resources. The Regional Board may impose more stringent requirements to accommodate regional and site-specific conditions.

Some subcategories of Chapter 15 include:

Article 2 - Waste Classification and Management;

Article 3 - Waste Management Unit Classification and Siting;

Article 4 - Construction Standards;

Article 5 - Water Quality Monitoring for Classified Waste Management Units;

Article 6 - Confined Animal facilities;

Article 7 - Mining Waste Regulations;

Article 8 - Closure and Post-Closure Maintenance; and

Article 9 - Compliance Procedures.

Chapter 15 defines waste types including hazardous wastes, designated wastes, nonhazardous wastes and inert wastes as shown in Table 4-7.

Chapter 15 requires the review and update of waste discharge requirements for all nonhazardous waste treatment, storage, and disposal sites by July 1, 1994. As of 1994 the San Diego Region has no hazardous waste disposal sites. Designated wastes, nonhazardous solid wastes and inert wastes are regulated by the Regional Board.

The regulation of nonhazardous solid waste disposal sites (Class III) has been ongoing by the Regional Board since the early 1960's. Many of the small older sites have closed, and waste is now being disposed at large regional sanitary landfills. The Board's main actions at nonhazardous solid waste facilities are the review and revision of waste discharge requirements for the active sites to assure consistency with the current regulations. These actions include defining the levels of designated wastes, the upgrading of ground water monitoring systems to identify if water quality protection standards are violated, the establishment of corrective action programs where standards are violated, and review and oversight of the development and implementation of facility closure plans.

The criteria for determining whether a nonhazardous waste is a designated waste are based on water quality objectives in the vicinity of the site, the containment features of the solid waste facility, and the solubility/mobility of the waste constituents. Therefore, all owners and operators of active nonhazardous municipal solid waste facilities in the San Diego Region who wish to receive wastes other than municipal solid waste or inert waste must propose waste constituent concentration criteria above which wastes will be considered designated waste and therefore, not suitable for disposal at their site.

In addition, waste discharge requirements are to be revised to incorporate reclassification and retrofitting requirements and a revised monitoring program. Closed, abandoned and inactive landfills and other nonhazardous solid waste disposal sites are also subject to the provisions of Chapter 15. Persons responsible for such sites may be required to develop and implement monitoring, to comply with closure and post-closure maintenance requirements, and to comply with reporting, notification, and record keeping requirements.

WASTE CLASSIFICATION

Contaminated soil and other material must be treated or properly disposed in order to minimize threat to the quality of surface or ground waters. Waste is classified in California by two separate California Environmental Protection Agency (Cal-EPA) agencies with separate regulatory authority. The California Department of Toxic Substances Control (DTSC) classifies waste as hazardous or non-hazardous based on the threat to public health. The State Board, together with the regional boards, classifies non-hazardous waste as "*designated*", "*nonhazardous*", or "*inert*" based on the threat that each poses to the beneficial uses of ground and surface waters, as required by the Porter-Cologne Water Quality Control Act and regulations, water quality control plans and policies set forth by the Regional Board.

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 cmply with the aplicable provisions of Chapter 15 and have beeen 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 ocntain soluble polllutants 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 discarded 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 a 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 ration 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 wastes. The actual ratio required by the Regional Board shall be based on site-specific conditions. (d) Incinerator ash may be discharged at at 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 quailty objectives. It does not contain significant quantities of decomposable waste. (b) Inert waste 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, asphalt, plaster, brick, vehicle tires, uncontaminated soils.

CAUTION
HAZARDOUS WASTE STORAGE

As shown in Figure 4-2, the Chapter 15 regulations divide waste into four categories which in turn, determine the classes of waste management units to which their discharge is permitted for treatment, storage or disposal. Detailed criteria are contained in Title 22 of the California Code of Regulations, Division 4.5, Chapter 11, for determining whether a waste falls into the hazardous category. These criteria fall under the headings of toxicity, ignitability, reactivity, corrosivity, and listing under the Resource Conservation and Recovery Act (RCRA). Hazardous waste may be discharged only to Class I waste management units which provide both natural geologic and engineered containment features to isolate the wastes from the environment, unless a specific variance has been granted by DTSC from California's hazardous waste management requirements.

"*Nonhazardous solid waste*" (see Table 4-7) is the regulatory term for "*municipal solid waste*" or "*refuse*" and is characterized as having a significant proportion of putrescible (degradable) matter, stringent moisture limitations, and prohibitions against inclusion of "*designated*" or "*hazardous*" wastes. "*Nonhazardous solid waste*" may be discharged to Class III landfills that protect beneficial uses of nearby waters, but do not provide complete waste containment. The only threat to water quality posed by wastes in the "*inert*" category is siltation. Paving fragments and non-degradable construction debris are examples of "*inert waste*". Wastes in this category may be discharged to unclassified waste management units that are located and managed to keep the wastes from entering surface waters or drainage courses.

"*Designated waste*" is defined in the Chapter 15 regulations and is described in Table 4-7. The second part of the definition refers to those wastes granted a variance by DTSC from Class I disposal. 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.

Remediation treatment includes biodegradation (by a land treatment process) for hydrocarbon contaminated soil found on a 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.

RESOURCE CONSERVATION AND RECOVERY ACT OF 1976

The Resource Conservation and Recovery Act (RCRA) is the federal law regarding the treatment, storage and disposal of hazardous waste. The State implements RCRA's Subtitle C through the Department of Toxic Substance Control (DTSC) and the Regional Boards. In August 1992, the US EPA formally delegated RCRA Subtitle C program implementation authority to DTSC. As described above, regulation of hazardous waste discharges is also included in CCR Title 23, Chapter 15 (Chapter 15). Chapter 15 monitoring requirements were amended in 1991 to be equivalent to RCRA requirements. These monitoring requirements are implemented through the adoption of waste discharge requirements (WDRs) for hazardous waste sites covered by RCRA. The discharge requirements are then a part of a state RCRA permit issued by DTSC.

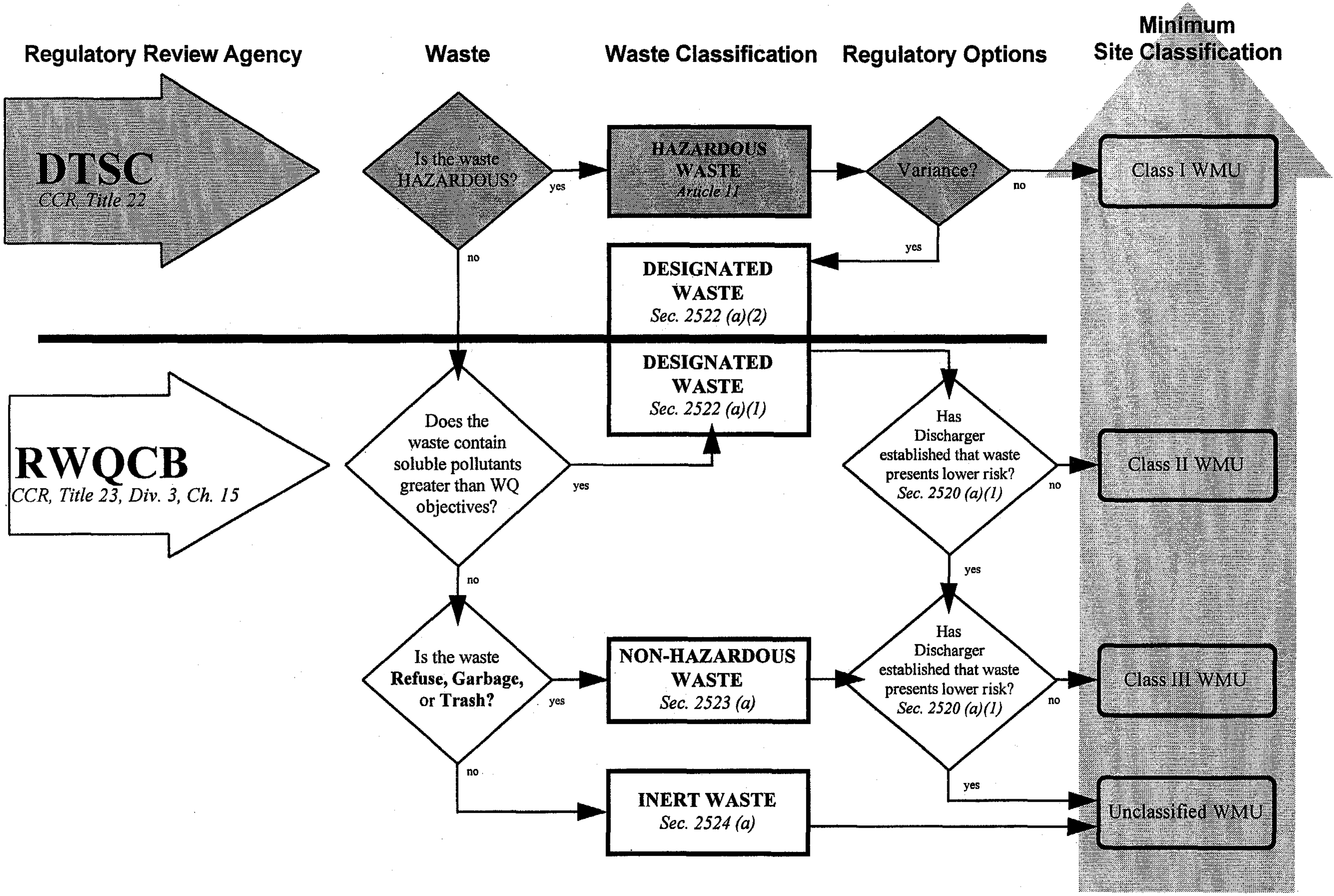
Federal regulations required by the RCRA's Subtitle D have been adopted for municipal solid waste landfills (40 CFR Parts 257 & 258). The California Integrated Waste Management Board (CIWMB) is the State lead agency for Subtitle D implementation. The State Board and the CIWMB are applying to the US EPA for State program approval. It is important to note that certain federal regulatory requirements will be effective unless and until the State program is approved. Delegation of authority for the State Board to implement Subtitle I (Underground Storage Tanks) will occur after US EPA approves the State's program application.

SOLID WASTE ASSESSMENT TEST (SWAT)

The Regional Board administers the Solid Waste Assessment Test (SWAT) Program in the Region. The SWAT program requires owners of active or inactive non-hazardous solid waste disposal sites to evaluate the possible migration of hazardous waste or leachate to waters of the state. The SWAT program was initiated with the enactment of Water Code Section 13273 in 1985. 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:

Figure 4-2. Waste Classification Process



RWQCB, San Diego Region, Land Discharge Unit

- Requires the State Water Resources Control Board to develop a ranked list of all solid waste disposal sites, on the basis of the threat which they may pose to water quality; and

- Requires operators of active and inactive solid waste disposal sites to implement a water quality monitoring system to verify that the solid waste disposal site has not been affected by leakage, and if there is leakage to take remedial actions under the Chapter 15 program.

Program funding was eliminated in 1991, reducing Regional Board review to SWAT sites under regulation due to higher priority work in other Regional Board programs. All sites eventually will be required to complete a SWAT and more sites will be reviewed if more program funding becomes available.

SLUDGE USE AND DISPOSAL

Sludge is a residual by-product of sewage treatment, water treatment, and certain industrial processes. The higher the degree of wastewater treatment, the larger the residue of sludge that must be handled. The treatment and disposal of sludge can be the single most complex and costly operation in a municipal wastewater treatment system. The sludge is made of materials settled from the wastewater - such as rags, sticks, and organic solids - and of solids generated in the wastewater treatment processes - such as the excess activated sludge created by aeration or the chemical sludge created by a tertiary treatment process.

The quantities of sludge involved are significant. For primary treatment the quantities of sludge may be 2,500 to 3,500 gallons per million gallons of wastewater treated. When treatment is upgraded to activated sludge, the quantities increase by 15,000 to 20,000 gallons per million gallons of wastewater treated. Use of chemicals can add another 10,000 gallons. For a typical activated sludge municipal wastewater treatment plant, the amount of sludge to be disposed of is typically about one ton per million gallons or about 20 pounds per month per home.

Raw sludge usually contains 93 to 99.5 percent water before it is treated further or dewatered. It contains organic solids and dissolved nutrients (e.g., nitrogen and phosphorus), making it useful as a supplement to chemical fertilizers and soil conditioners. Other typical constituents are inorganic ions, such as iron and zinc. While trace amounts of these inorganic ions are used by plants and organisms, some heavy metals that may be present in sewage sludge from household or commercial and industrial sources can be toxic to plants, animals, and humans. Untreated sludge also contains disease-causing organisms (e.g., bacteria, viruses, protozoa, and eggs of parasitic worms). In addition, sewage sludge may contain toxic chemicals from household, commercial, and manufacturing activities that use the sewer system to dispose of these liquid wastes.

Most wastewater treatment plants treat the sludge prior to ultimate use or disposal. Normally this treatment consists of some combination of the following processes:

- ***Conditioning:*** treatment of the sludge with chemicals or heat so that the water may be readily separated.

- ***Thickening:*** separation of as much water as possible by gravity or flotation process by subjecting the sludge to vacuum pressure, or other drying processes.

- ***Stabilization:*** stabilization of the organic solids so that they may be handled or used as soil conditioners without causing a nuisance or health hazard through processes referred to as "*digestion*".

- ***Reduction:*** reduction of solids to a stable form by wet oxidation processes or incineration.

The disposal point alternatives for municipal wastewater sludge in the San Diego Region are limited. Since treated and untreated sludge can contain high concentrations of toxic metals and significant amounts of toxic organic pollutants and pathogens, the US EPA and the Regional Board do not allow the direct discharge of sludge to the ocean or any other surface waters. Air pollution regulations have strict requirements on sludge incineration processes. Sludge disposal to land must be carefully controlled because of potential impacts on ground and surface water quality.

Sludge handling and disposal is regulated under 40 CFR Part 503 as a self-implementing program enforced by US EPA; the State does not have delegated authority for implementing the sludge program. Uses of sludge or sludge by-products and sludge disposal in the Region include:

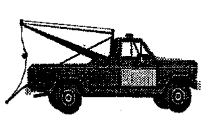
- Sludge digester methane gas as fuel in gas boilers to generate electricity;

- 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;
- Sludge disposal in-situ; and
- Incineration.

Prior to disposal of sludge, an initial analysis by a state certified laboratory is required to determine if there are any hazardous substances in the sludge. Nonhazardous sludge can be disposed of in the above ways, usually under WDRs. Disposal of nonhazardous sludge at Class III landfills is regulated under WDRs and must meet criteria listed in Table 4-7. Landfills are required to report the quantity and chemical composition of all accepted sludge as part of their individual WDRs.

Currently, the Regional Board can regulate handling and disposal of sludge pursuant to Chapter 15 and Department of Health Services standards. The US EPA has promulgated a policy of promoting those municipal sludge management practices that provide for the beneficial use of sludge while maintaining or improving environmental quality and protecting public health. US EPA is currently developing sludge use and disposal criteria. The US EPA has also proposed a rule which requires states to develop a program to assure compliance with the Federal criteria. The State Board will be developing a state sludge management program consistent with the US EPA policy and criteria.

AUTO SHREDDER WASTE



There is a significant volume of auto shredder waste generated in California every year. In 1985, 166,500 tons of auto shredder waste was produced. There was one producer of auto shredder waste in the San Diego Region as of February, 1994. Auto shredder waste is the material that remains after articles such as auto bodies, appliances and sheet metal are shredded and have had their metals removed. The majority of auto shredder waste is being treated to nonhazardous levels, but a significant portion of the waste must be disposed of in a hazardous waste landfill. Eight metal compounds, which include cadmium, total and hexavalent chromium, lead, copper, mercury, nickel and zinc, plus PCBs may cause auto shredder waste to be classified as hazardous. Senate Bill 976 was passed in 1985 which required Regional Boards to prepare a list of Class III, nonhazardous waste landfills as authorized to accept and dispose of auto shredder waste. There are only four landfills which currently accept auto shredder waste in California. They are West Contra Costa, Altamount, BKK landfill and Prima Deshecha.

SHREDDER WASTE POLICY (RESOLUTION NO. 85-92)

The Regional Board adopted Resolution No. 85-92, the *Designation of Class III Landfills within the San Diego Region to Accept Shredder Wastes as Required by Section 25143.6 of the Health and Safety Code* (Shredder Waste Policy) on December 16, 1985. The Shredder Waste Policy, required by Section 25143.6 of the Health and Safety Code, designates three landfills, the City of San Diego's West Miramar Solid Waste Disposal Facility, the County of San Diego's Otay Annex Sanitary Landfill, and the County of Orange's Prima Deshecha Canada Sanitary Landfill, as being authorized to dispose of shredder wastes as required by Section 25143.6 of the Health and Safety Code. These three landfills are subject to the following conditions:

The appropriate agency of the City of San Diego, the County of San Diego, and the County of Orange shall, prior to the start of such an operation, submit a report of waste discharge and obtain revised waste discharge requirements for the disposal of shredder wastes. The report of waste discharge shall contain sufficient information demonstrating conformance with Item "i" or, alternatively, Item "ii" listed below to their satisfaction of the Regional Board.

i. The report of waste discharge shall demonstrate that shredder waste will be discharged to a Class I or Class II waste management unit in accordance with the criteria stated in Chapter 15, Title 23 of the California Code of Regulations.

ii. The report of waste discharge shall demonstrate that under Section 2520 (a)(l), Chapter 15, Title 23, California Code of Regulations, the shredder waste contains a particular waste constituent or combination of constituents which present a lower risk of water quality degradation than indicated by its classification as a designated waste.

Upon application for modification of waste discharge requirements, other landfills within the San Diego Region may be authorized by the Regional Board to accept and dispose of shredder wastes, subject to the restrictions discussed above.

CONTROL OF NONPOINT SOURCE POLLUTION

CHRONOLOGY OF NONPOINT SOURCE POLLUTION CONTROL MEASURES

To implement nonpoint source pollution control, several regulatory measures have been taken by federal, state, regional and local government. The following chronology shows the applicable regulatory measure, responsible governmental agency, and year when each measure was enacted or adopted. These regulatory measures will be discussed in the pages that follow.

Regulatory Measure	*Responsible Agency*	*Year*
RB Resolution No. 79-25	RB	1979
RB Resolution No. 87-91	RB	1987
CWA, Section 201(g)(1)(b)	US EPA	1987
CWA, Section 205(j)(5)	US EPA	1987
CWA, Section 319(h)	US EPA	1987
CWA, Section 402(p)	US EPA	1987
CWA, Section 603(c)(2)	US EPA	1987
Coastal Zone Act Re-authorization Amendments, Section 6217	US EPA	1990
RB Resolution No. 92-21	RB	1992

THE NEED FOR NONPOINT SOURCE POLLUTION CONTROL

Efforts to improve water quality under the NPDES program have traditionally focused on reducing pollutants from the major point sources, namely municipal sewage and industrial process wastewater. Point sources are defined as discrete conveyances, from which pollutants are, or may be discharged. These point sources received early emphasis because they were obvious sources of pollution and easily linked to degraded water quality conditions. However, as the permitting effort proceeded and control measures for municipal sewage and industrial wastewater were implemented, it became increasingly clear that control and reduction of nonpoint source pollution was also needed in order to restore and protect the nation's waters.

DEFINITION OF NONPOINT SOURCE POLLUTION

In contrast to point sources, nonpoint sources of water pollution are generally defined as sources which are diffuse in nature, usually associated with man's uses of land, and are not subject to the federal NPDES permitting program. Diffuse sources originate over a wide area rather than from a definable point. They often enter receiving waters in the form of surface runoff but are not conveyed by way of pipes or discrete conveyances. By definition, nonpoint sources (like discharges to ground water) are exempt from the federal NPDES permitting program which regulates point sources to surface waters.

CATEGORIES OF NONPOINT SOURCE POLLUTION

Nonpoint source pollution is primarily the result of man's uses of land such as urbanization, roads and highways, vehicles, agriculture, construction, industry, mineral extraction, physical habitat alteration (dredging/ filling), hydromodification (diversion, impoundment, channelization), silviculture (logging), and other activities which disturb land. Additional categories of nonpoint sources include agricultural return water, marinas and recreational boating, confined animal facilities, resource extraction, channel erosion, resuspension of pollutants from contaminated aquatic sediments, waste disposal sites, septic systems (onsite or subsurface disposal), atmospheric deposition, acid precipitation, seawater intrusion, and geothermal development.

OVERLAPS BETWEEN NONPOINT & POINT SOURCES

The distinction between point source and nonpoint sources is not always clear. As a result, there have always been overlaps and ambiguities between programs designed to control nonpoint sources and those designed to control point sources of pollution. The most important example of such an overlap involves urban runoff and storm water which are clearly diffuse and nonpoint in origin, but become channelized and are ultimately discharged through discrete point source conveyance systems to receiving waters. Because it becomes channelized, urban runoff is legally considered a point source discharge. However, because it originates as nonpoint source, urban runoff and storm water are discussed in the Nonpoint Source section.

SEVERITY OF NONPOINT SOURCE PROBLEM

According to the 1988 National Water Quality Inventory, nonpoint source pollution has become the largest single factor preventing the attainment of water quality standards. The inventory reported over 40% of the nation's rivers and streams are impaired due to siltation and 25% are impaired due to nutrients (such as phosphorus and nitrogen) from nonpoint sources. Agricultural runoff was reported as the major nonpoint pollution source affecting over 50% of impaired rivers. Also, over half of the states reported threats to ground water from nonpoint pollution sources.

NONPOINT SOURCE FUNDING

Innovative ways of financing and implementing nonpoint source projects have been developed. Prior to the 1987 amendments to the Clean Water Act, states used Section 106 and 205(j) monies to fund limited nonpoint source activities. The primary federal funding for current nonpoint source program development and implementation includes Section 104(b)(3), 205(j)(5), 319(h), 201(g)(1)(b), 603(c)(2), and 604(b) monies as described below.

Section 104(b)(3): This section established grants for state water pollution control agencies and others for the purpose of conducting and promoting research and investigations related to the causes, effects, extent, prevention, reduction, and elimination of pollution. Such research and investigations are to be carried out in cooperation with federal, state, and local agencies.

Section 205(j)(5): This section established a set-aside of construction grants 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 this section can be used for the implementation of nonpoint source management programs but cannot be used for assessment activities. States must have an US EPA 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 percent which illustrates the intent of Congress and US EPA to have the states make a financial commitment to implementing nonpoint source programs.

Section 201(g)(1)(b): The 1987 amendments to the Clean Water Act added this section that established a new purpose for which 201 funds could be used - "*...any purpose for which a grant can be made under Section 310(h) and (i)*". These funds can be used for either nonpoint source development or implementation projects.

Section 603(c)(2): The 1987 amendments added Title VI to the Clean Water Act 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 (1) construction of publicly owned treatment works, (2) the implementation of state nonpoint source management programs, and (3) 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 Clean Water Act. 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.

SECTION 319 NONPOINT SOURCE MANAGEMENT PROGRAM

To address the nonpoint source pollution problem, Congress added Section 319 to the Clean Water Act in 1987. Section 319 requires each state to develop and implement a Nonpoint Source Management Program and to conduct an inventory of the water bodies in the State which are impaired due to nonpoint source pollution. To fulfill these requirements, the State Board adopted the *Nonpoint Source Management Plan (NPSMP)* in 1988 which is discussed in Chapter 5 and the Water Quality Assessment in 1990 which is discussed later in this chapter.

The NPSMP established a statewide policy for managing nonpoint source inputs to California's waters and is incorporated by reference into this Basin Plan. The objective of the Nonpoint Source Management Program in California is to measurably improve water quality through the implementation of various Best Management Practices (BMPs).

Unlike end of pipe treatment for point sources (which is impractical and cost prohibitive for nonpoint sources), the key to managing nonpoint source pollution is pollution prevention. Pollution prevention means stopping the generation of pollution at its source by reducing the use of products containing pollutants. Once pollutants have been generated, pollution control BMPs must be employed to prevent the existing pollution from coming into contact with the waters of the State. BMPs are defined as the schedules of activities, prohibitions, procedures, or other management practices designed to prevent or reduce the discharge of pollutants into receiving waters.

The State and Regional Board(s) believe that the voluntary and widespread application of BMPs is the most effective means by which nonpoint source pollution can be reduced. Accordingly the following three general management options are adopted in the Nonpoint Source Management Plan to address nonpoint source problems. In general, the least stringent option that successfully protects or restores water quality is employed. More stringent options are only required if water quality improvements are not achieved.

(1) ***Voluntary implementation of BMPs:*** Voluntary implementation of BMPs is encouraged through financial assistance, education, training, technical assistance, and demonstration projects. Grants and loans provide incentives.

(2) ***Regulatory based encouragement of BMPs:*** Regional Boards require waste discharge requirements for nonpoint sources but waive the requirement if BMPS are effectively implemented. Regional Boards can also enter into management agency agreements (MAAs) with other agencies which specify acceptable BMPs and their implementation. The MAAs are referenced in Regional Board basin plans and become the primary basis for evaluation of compliance. (The State Board has existing MAAs with the U.S. Forest Service, the California Board of Forestry and Department of Forestry).

In either case, the Regional Board will generally refrain from imposing effluent requirements on dischargers who are implementing BMPs in accordance with a waiver of waste discharge requirements or an approved management agency agreement. In both cases, the BMPs become the primary mechanism for meeting water quality standards.

(3) ***Issuance of permits:*** Adopt and enforce waste discharge requirements which set effluent limits on the discharge of specific pollutants.

The State Board has also established four program objectives for its Nonpoint Source Management Program, each of which are being implemented in the San Diego Region as follows:

(1) ***Implementation of Nonpoint Source Management Plan:*** This includes integration of the Coastal Nonpoint Pollution Control Program (which is required under the Coastal Zone Act Reauthorization Amendments and is described below) into the NPSMP.

(2) ***Outreach Activities:*** Regional Board outreach activities primarily center around the industrial, construction, and municipal participants in the NPDES Storm Water Permit Program (described in a later section). Other activities include participation in Resource Conservation District, technical advisory and planning committee, and lagoon foundation meetings.

(3) ***Watershed Assessment Projects:*** San Diego's target watershed is Escondido Creek and San Elijo Lagoon.

(4) ***Project Tracking and Participation***: The Regional Board has two nonpoint source program contracts. The first contract is entitled the Chollas Creek Watershed Protection Plan project. The Chollas Creek contract has been completed. However, the watershed remains a high priority for the toxic substances monitoring program and for chronic and acute toxicity monitoring. These monitoring programs may identify changes in the water quality due to the education program funded by this contract. The second project involves a nitrate contamination project in the

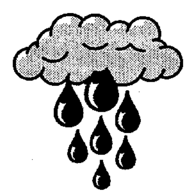
Rainbow Creek watershed. Although the US EPA funded study has not been formally initiated, the Flynn-Rainbow Nursery has converted to a complete tailwater recovery and reuse system. This conversion resulted in a reduction of nitrate loads to the creek. The Rainbow Creek contract will be modified to study other nurseries and sources of nutrients.

ALL NONPOINT SOURCE DISCHARGES ARE CURRENTLY REGULATED

Despite the overlaps between point and nonpoint sources, all nonpoint source discharges are currently regulated under one of two relatively new statutory requirements. These requirements are the NPDES Storm Water Permitting Program required under Section 402(p) of the Clean Water Act and the Coastal Nonpoint Pollution Control Program required under Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA).

Although the two programs are complementary and exclusive of each other (i.e., one program applies to any discharge that the other does not), their recent implementation has heightened the confusion about point source verses nonpoint source program applicability.

Both the programs are fully discussed in later sections, and a brief overview is included here. In its simplest form, the Clean Water Act Section 402(p) program, which is an NPDES permitting program, is designed to regulate storm water and urban runoff (i.e., the nonpoint source discharges that become point sources). Virtually all other nonpoint sources are subject to the Coastal Nonpoint Pollution Control Program under CZARA. Although there are a few minor complications which are also discussed later, the essential concept is that all nonpoint source discharges are currently subject to regulation under either the NPDES Storm Water Program or the Coastal Nonpoint Pollution Control Program.



NPDES STORM WATER PROGRAM

SECTION 402(P) CLEAN WATER ACT

Pursuant to the federal Clean Water Act, many municipalities and most industries in the United States are now required to obtain coverage under an NPDES permit for discharges of storm water runoff. NPDES storm water permits authorize only the discharge of storm water into storm water conveyance systems and prohibit all non-storm water discharges.

DEFINITION OF STORM WATER

The federal regulations (40 CFR 122, 123, 124, November 1990) define storm water as surface runoff from rain or snow melt, including sheet flow. This is a narrow definition which is meant to include the runoff of precipitation only. Storm water does not include water which originates from any source other than precipitation such as process wastewater, cooling waters, and wash waters. These are examples of non-storm water discharges and are not allowed in the storm water conveyance system. A non-storm water discharge is any discharge that is not composed entirely of storm water. Also unacceptable for discharge into the storm water conveyance system is precipitation runoff which has come in contact with pollutants.

THE PROBLEM

Although storm water runoff is part of the natural hydrologic cycle, human activities, particularly urbanization, can result in significant and problematic changes to the natural hydrology of an area. Under conditions of minimal urbanization, water is percolated through pervious surfaces in which soil filtration and biological action remove pollutants. During urbanization, pervious surfaces (i.e., vegetated and natural ground cover) are converted to impervious surfaces (i.e., rooftops and roads) decreasing the infiltration capacity of the soil for both water and pollutants.

As a result, when rain falls on and drains through urban freeways, industries, construction sites, and neighborhoods it picks up a multitude of pollutants. The pollutants can be dissolved in the runoff and quickly transported by gravity flow through a vast network of concrete channels and underground pipes referred to as storm water conveyance systems.

Such systems ultimately discharge the polluted runoff, without treatment, into the nation's creeks, rivers, estuaries, bays, and oceans. In short, urbanization results in a dramatic increase in the volume, velocity, and especially in the pollutant load carried by storm water runoff to receiving waters.

Pollutants typically found in urban runoff include sediment, nutrients (e.g., fertilizers), oxygen-demanding substances (e.g., decaying vegetation), bacteria, viruses, heavy metals, synthetic organics (e.g., fuels, oils, solvents, lubricants), pesticides, and other toxics. These pollutants severely degrade the beneficial uses of surface waters, and threaten the health of both humans and aquatic organisms.

In addition to the pollutants contributed by precipitation runoff, dry weather flows also cause serious degradation of receiving water quality. Dry weather flows, which can be substantial, consist of flows from illicit connections and illegal discharges to the storm water conveyance system. Common examples of the latter include illegally disposed used motor oil and antifreeze.

Studies, most notably the Nationwide Urban Runoff Program (NURP), found pollutants in urban runoff to be similar to those found in sewage and industrial wastewater discharges. Similar concentrations were also observed. Thirty-eight states report urban runoff as a major cause of impaired water quality. Locally, the closure of Southern California beaches following major storm events due to high bacteriological levels in ocean waters is a common occurrence. Clearly urban runoff is a significant water quality problem which deserves attention.

STATUTORY AUTHORITY

To address the storm water/urban runoff problem, Congress added Section 402(p) to the Clean Water Act in 1987. This section, and the federal regulations which implement it (40 CFR 122, 123, and 124; November 1990), require NPDES permits for storm water/ urban runoff discharges from municipalities and industries, including construction.

The distinction between point source and nonpoint sources of pollution begins to fade with the requirement for NPDES permits for storm water discharges. Although storm water is clearly diffuse and nonpoint source in origin, it is quickly channelized and ultimately discharged through discrete point source conveyance systems to receiving waters. Because of this, storm water is legally considered a point source discharge and as such is subject to the NPDES permitting program under Section 402(p).

MUNICIPAL, INDUSTRIAL, AND CONSTRUCTION PERMITS -- COMMON CHARACTERISTICS

As a result of the 1987 Clean Water Act amendments, there are currently three types of storm water permits in California: municipal, industrial, and construction. The municipal permits are areawide permits which were issued by the Regional Board. The industrial and construction permits are statewide general permits which were issued by the State Board. There are three important characteristics which all storm water permits have in common.

Permit Objective

The overall objective of the entire storm water program and all three types of permits is to reduce or eliminate the discharge of pollutants into the storm water conveyance system. Section 402(p) of the Clean Water Act does however establish different performance standards for municipal and industrial discharges. Municipalities must reduce pollutant discharges to the maximum extent practicable, or MEP (see discussion below). Industries (including construction) must implement Best Available Technology (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce pollutants.

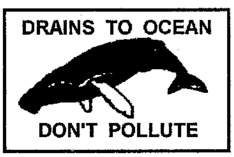
Pollution Prevention

The permit objective is achieved by way of pollution prevention. To eliminate pollutants in storm water, one can either clean it up by removing pollutants or prevent it from becoming polluted in the first place. Because of the overwhelming volume of storm water and the enormous costs associated with pollutant removal, pollution prevention is the only approach that makes sense. Pollution prevention which means stopping the generation of pollution at its source by reducing the use of products containing pollutants, is in fact, the basis of the entire storm water program. Once pollutants have been generated, pollution control BMPs must be employed to prevent the existing pollution from coming into contact with the water of the State. It is important to point out that this approach is distinctly different from the conventional end-of-pipe treatment approach commonly used in water quality regulation.

Pollution prevention is accomplished by way of Best Management Practices (BMPs) which are defined as schedules of activities, prohibitions, procedures, or other management practices designed to prevent or reduce the discharge of pollutants to storm water.

Source control BMPs include practices that eliminate or reduce pollutants at their point of generation, or source, so that they can not come into contact with storm water. Source controls are non-structural, inexpensive, and can be extremely effective. Because source control BMPs are site specific, they vary widely depending on the application. For example, regulatory powers and land use planning are important BMPs for municipalities. Berming and covering storage areas are excellent BMPs at industrial facilities; reduced vegetation removal and phased development planning are effective at construction sites.

Two source control BMPs are common to all three applications (municipalities, industries, and construction), namely good housekeeping practices (cleaning up and immediately disposing of wastes properly) and most importantly, education (employee and public). Education, which ultimately results in a change in behavior and increased public awareness, is the key to pollution prevention. Many people think that street gutters are plumbed to the sanitary sewage treatment plant and do not realize that they flow instead directly to the bays and ocean without treatment. Education should be conducted in two directions: (1) prevent the discharge of pollutants and (2) reduce the use of materials which are the sources of pollution.



No Numeric Effluent Limits

None of the three types of storm water permits contain numeric effluent limits at this time. The permits are intended to be BMP based and instead contain narrative receiving water limitations.

AREAWIDE MUNICIPAL STORM WATER PERMITS

Under Section 402(p) of the Clean Water Act and the federal regulations implementing it, operators of large and medium sized municipal storm water conveyance systems are required to obtain NPDES permits for their storm water conveyance systems at this time. Large and medium sized municipal storm water conveyance systems are defined as those serving populations greater than 250,000 and 100,000, respectively. Smaller municipalities (those under serving populations less than 100,000) have until late 1994 to obtain coverage but may be required to do so earlier if it is determined that (1) they are significant contributors of pollutants to receiving waters or (2) if their storm water conveyance systems are "*interrelated*" to larger municipal systems. In the municipal permits the Regional Board made a finding that all of the smaller municipalities in the San Diego Region meet both of these criteria (Order No. 90-42). All the municipalities contribute to the condition of water quality impairment (see Table 4-8) and the storm water discharges are "*interrelated*" in that they jointly and cumulatively contribute significant pollutants to the near coastal waters of San Diego County. Consequently, in July 1990, the Regional Board adopted an areawide Municipal Storm Water Permit for each of the three counties in the Region, San Diego, Riverside, and Orange as follows:

(1) Order No. 90-42 (NPDES Permit No. CA 0108758), Waste Discharge Requirements for Storm Water and Urban Runoff from the County of San Diego and Incorporated Cities of San Diego County and the San Diego Unified Port District.

(2) Order No. 90-46 (NPDES Permit No. CA 0108766), Waste Discharge Requirements for Storm Water and Urban Runoff from the Riverside County Flood Control and Water Conservation District, the County of Riverside and the Incorporated Cities of Riverside County within the San Diego Region.

(3) Order No. 90-38 (NPDES Permit No. CA 0108740), Waste Discharge Requirements for Storm Water and Urban Runoff from the County of Orange, the Orange County Flood Control District and the Incorporated Cities of Orange County within the San Diego Region.

Included as co-permittees in the above permits are all of the land use regulatory agencies; the county, all incorporated cities within the county, and special districts. For this reason, the municipal permits are referred to as "*areawide*" permits. As it moves from inland to coastal areas, storm water does not recognize jurisdictional boundaries. Since all municipalities contribute to the cumulative storm water pollution problem, a coordinated, "*areawide*" approach to managing it is essential, more effective, and far less expensive than numerous individual efforts.

Table 4 - 8. Receiving Waters Impacted by Pollution from Stormwater and Urban Runoff (Order No. 90 - 42)

IMPACTED RECEIVING WATER	REFERENCES	PARAMETERS	MUNICIPALITIES / JURISDICTION
San Diego Bay	WQLS, NPSI	PET, TRA, SYN, COL, DEB, MET	City of San Diego, Coronado, National City, Chula Vista, Imperial Beach, La Mesa, Lemon Grove, County of San Diego, San Diego Unified Port District
Mission Bay	WQLS, NPSI	COL, MET	City of San Diego
Santa Margarita Lagoon	WQLS, NPSI	NUT	Camp Pendleton, County of San Diego, County of Riverside, Temecula
Oceanside Harbor	NPSI	TRA, SYN	Camp Pendleton, Oceanside
Buena Vista Lagoon	NPSI	NUT, SED	Oceanside, Vista, Carlsbad, County of San Diego
Agua Hedionda Lagoon	SDOHSR	COL	Carlsbad, San Marcos
Batiquitos Lagoon	WQLS, NPSI	NUT, SED	Carlsbad, Encinitas, San Marcos, County of San Diego
San Elijo Lagoon	WQLS, NPSI	NUT, SED	Encinitas, Escondido, Solana Beach, County of San Diego
San Dieguito Lagoon	NPSI, TSMP	SED, TRA	City of San Diego, Del Mar, Solana Beach, County of San Diego, Escondido
Los Penasquitos Lagoon	WQLS, NPSI	NUT, SED	City of San Diego, Del Mar, Poway, County of San Diego
Tijuana River Estuary	WQLS, NPSI	TRA, SYN, DOX, NUT	Tijuana, Mexico, City of San Diego, Imperial Beach
San Diego River	NPSI	SYN, PES, SED	City of San Diego, La Mesa, El Cajon, Santee, County of San Diego
Forester Creek	NPSI	TRA	El Cajon, Santee
Tijuana River	WQLS, NPSI	NUT, DEB, COL, DOX, SYN, PES, TRA	Tijuana, City of San Diego
Lake Hodges	NPSI	NUT, DIS	City of San Diego, Escondido, Poway

*** ABBREVIATIONS FOR TABLE 2:**

<u>REFERENCES</u>

- WQLS - Water Quality Limited Segment
- NPSI - Nonpoint Source Inventory Report
- SDOHSR - State Department of Health Services Report on Shellfish Contamination in Agua Hedionda Lagoon
- TSMP - Toxic Substances Monitoring Program elevated values

<u>PARAMETERS</u>

- COL - Coliform bacteria or other microbes
- DEB - Debris
- DIS - Dissolved Solids
- DOX - Low dissolved oxygen, except when associated with algal blooms caused by nutrients
- MET - Metals, except trace elements
- NUT - Nutrients, macro- and micro-nutrients, including algal bloom-low dissolved oxygen syndrome
- PES - Pesticides, except trace elements, including insecticides, nematocides, herbicides, and fungicides
- PET - Petroleum distillates
- SED - Sedimentation/turbidity, including habitat alteration due to sedimentation
- SYN - Synthetic organics, except herbicides and pesticides
- TRA - Trace elements: aluminum, beryllium, cadmium, chromium, copper, lead, mercury, manganese, molybdenum, nickel, selenium, silver, titanium, and zinc.

Objective

The objective of an areawide municipal storm water permit is to reduce pollutants in storm water discharges to the maximum extent practicable (MEP). This is a standard used by US EPA for municipal discharges of storm water. Although not specifically defined in the federal regulations, the intent of MEP is to reduce as much as possible the discharge of pollutants. Thus, the municipal dischargers are required to employ whatever BMPs are feasible (i.e., are likely to be effective and are not cost prohibitive). Where a choice is made between two BMPs which provide generally comparative effectiveness, the discharger may choose the least expensive alternative and exclude the more expensive BMP. However, it would not be acceptable either to reject all BMPs which address a pollutant source or to pick a BMP based solely on cost, which would be clearly less effective. In order to reduce pollutants to the MEP many factors including technical feasibility and effectiveness, as well as economic factors, must be taken into consideration.

Permit Requirements

Municipal Storm Water Permits contain the following two major requirements:

(1) Prohibit non-storm water discharges; and

(2) Develop/implement a comprehensive storm water management program. The comprehensive storm water management program must include the following five components:

- BMP program;
- Monitoring and reporting program;
- Illicit connection/ illegal discharge detection program;
- Storm water ordinance or code; and a
- Funding source.

Ultimate Responsibility for Quality of Storm Water Discharges (Municipal Regulation of Industry)

Under an areawide municipal storm water permit, municipalities are ultimately held responsible for the quality of discharges from their storm water conveyance systems, including contributions from industrial and construction activities. This provides important incentive for municipalities to regulate these activities occurring within their jurisdiction.

As called for in the federal storm water regulations, the regulation of industrial storm water discharges (including construction) into municipal storm water conveyance systems should be accomplished by a cooperative effort between the Regional Board and the local municipality. Under a municipal storm water permit, municipalities are required to adopt and enforce ordinances (including ordinances for erosion control) which prohibit the discharge of pollutants to storm water conveyance systems. In order for the municipalities to be in compliance with their municipal permit, it is essential that the municipalities rigorously enforce their ordinances and grading permits and conduct inspections for compliance with both. They are further authorized to impose additional requirements on industry as necessary to ensure compliance with their municipal permit.

GENERAL INDUSTRIAL STORM WATER PERMIT

To reduce the administrative burden of issuing individual permits to the overwhelming number of industries now subject to NPDES storm water permitting, US EPA has initiated a four-tiered strategy for regulating industries. The first tier involves the use of a small number of "*general*" permits. A general permit is a single permit under which many facilities can obtain coverage (for example, all of the industries in a given type). Under the tiered strategy, the permitting process begins general and becomes increasingly more specific and rigorous over time. Subsequent tiers target specific watersheds, industry types, and finally individual facilities.

Consistent with the tiered approach, the statewide General Industrial Storm Water Permit entitled, "*Waste Discharge Requirement (WDR) for Discharges of Storm Water Associated with Industrial Activities excluding Construction Activities, Order No. 91-13 (General Permit No. CAS 000001)*" was adopted by the State Board on November 19, 1991.

Industries Requiring Coverage

As shown below, the federal regulations identify eleven categories of industrial facilities which are required to obtain coverage under an NPDES storm water permit. Ten of the eleven categories are covered under the statewide General Industrial Storm Water Permit. Category x, construction activities, is covered under a separate permit, which will be discussed in a later section. Categories i through ix are considered "*mandatory industries*" and are required to obtain coverage under the General Industrial Storm Water Permit whether or not they have materials and activities exposed to storm water. Category xi, "*conditional industries*", are only required to obtain coverage under the general permit if they have materials, equipment, or activities exposed to storm water. Six of the categories are defined by narrative descriptions of the industrial activity. The remaining five categories are defined by Standard Industrial Classification (SIC) codes.

(i) Facilities Listed Under 40 CFR Subchapter N
(ii) (Heavy) Manufacturing Facilities
(iii) Oil and Gas/Mining Facilities
(iv) Hazardous Waste Treatment, Storage, or Disposal Facilities
(v) Landfill, Land Application Sites, and Open Dumps
(vi) Recycling Facilities
(vii) Steam Electric Power Generation Facilities
(viii) Transportation Facilities
(ix) Sewage or Wastewater Treatment Works
(x) Construction Activities
(xi) (Light) Manufacturing Facilities (with exposure)

In addition to private industry, industrial facilities owned or operated by governmental entities (including federal, state, and municipal facilities) are also required to obtain permit coverage.

When Is Coverage Not Needed

If a facility discharges all of its storm water to a municipal sanitary sewer system or to evaporation ponds, percolation ponds, or dry wells, and if there is no discharge to surface water under any circumstances, coverage under the general permit may not be required.

Permit Requirements

The General Industrial Storm Water Permit and General Construction Storm Water Permit both contain the following three major requirements:

(1) Eliminate non-storm water discharges;

(2) Develop and implement a Storm Water Pollution Prevention Plan. A Storm Water Pollution Prevention Plan (SWPPP) is a site specific plan consisting of all Best Management Practices (BMPs) which will be implemented at a facility to reduce or eliminate the discharge of pollutants to storm water. (It is the most important requirement and the key to source controls); and

(3) Develop and implement Monitoring and Reporting program (in accordance with the general permit.)

GENERAL CONSTRUCTION STORM WATER PERMIT

Although it is one of eleven industrial categories specified in the federal regulations, construction activities are regulated under a separate general permit in California. The statewide General Construction Storm Water Permit entitled, "*Waste Discharge Requirements (WDRs) for Discharges of Storm Water Runoff Associated with Construction Activity, Order No. 92-08-DWQ (General Permit No. CAS 000002)*", was adopted by the State Board on August 20, 1992.

Definition of Construction

Construction activity includes, but is not limited to clearing, grading, and excavation, as well as building and reconstruction. Construction activity does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility.

Who Needs Coverage?

In California at this time, discharges of storm water associated with construction activities that result in the disturbance of five acres or more of total land are required to obtain coverage under the general permit. Construction activities disturbing less than five acres are also required to obtain coverage under the permit if they are part of a larger common plan of development or sale. Because of a recent court ruling, it is important to note that the current five acre exemption is subject to change.

Erosion - The Major Construction Concern

Natural erosion processes are greatly accelerated when protective ground cover is removed during construction activities. Studies reveal that the rate of erosion on land where construction activities are occurring is approximately 2,000 times greater than on timber land that has not been logged.

Erosion results in not only the loss of productive soil, which is essentially irreplaceable, but also in severe impacts to water quality. Twenty-one states, including California, report construction site runoff as a major cause of water quality impairment. "*Clean sediment*" alone is by definition, a pollutant because of its ability to degrade water quality. Although there are many water quality impacts associated with clean sediment, the two most important ones include: (1) increased turbidity and corresponding decreased light transmittance (resulting in reduced biological productivity and adverse effects on aesthetic value); and (2) direct suffocation of benthic (bottom dwelling) communities due to excessive sediment deposition. In addition to these problems, sediment also provides a major transport mechanism for countless other pollutants. First priority should be placed on soil stabilization and erosion prevention, not sediment interception.

Permit Requirements

The General Construction Storm Water Permit contains the same three requirements as the General Industrial Storm Water Permit (see discussion above).

Industries/Construction Are Subject To Municipal Regulation

There is a "*double*" system of regulation for industrial storm water which is discharged through municipal conveyance systems. Such discharges are regulated by both the statewide general permit (industrial or construction) issued to the discharger and by the municipality subject to the areawide Municipal Storm Water Permit. It is the Regional Board's responsibility to enforce the general permits and the areawide Municipal Storm Water Permit. It is the responsibility of the municipality to enforce its own ordinances. The statewide general permits (industrial and construction) specifically require dischargers to comply with the lawful requirements of local agencies regarding discharges to storm water conveyance systems within their jurisdiction.

HIGHWAY RUNOFF CONTROL PROGRAM

Cars, trucks, and other vehicles are the major contributors to highway runoff pollution. Landscaping, highway maintenance, and highway construction also contribute to highway runoff pollution (see Table 4-9). An essential component of the NPDES storm water 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). To comply with the requirements of the NPDES storm water program, Caltrans must either actively participate as an entity in the Area Wide storm water program, or 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.

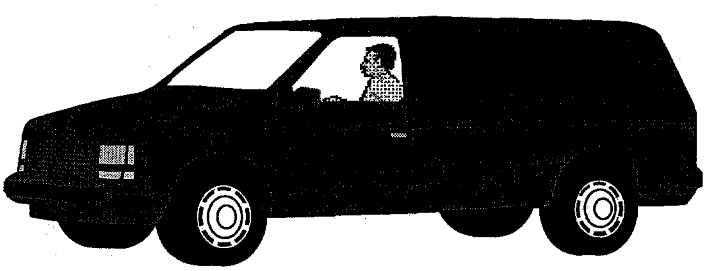
COASTAL NONPOINT POLLUTION CONTROL PROGRAM

COASTAL ZONE ACT REAUTHORIZATION AMENDMENTS (CZARA)

In 1990, Congress amended the Coastal Zone Management Act (CZMA). The amendments are referred to as the Coastal Zone Act Reauthorization Amendments (CZARA). Section 6217, "*Protecting*

Table 4-9. Highway Runoff Constituents and their Primary Sources

CONSTITUENT	PRIMARY SOURCES
Particulates	Pavement wear, vehicles, maintenance
Nitrogen, Phosphorus	Atmosphere, roadside fertilizer application
Lead	Tire wear (lead oxide filler material, lubricating oil and grease, bearing wear)
Zinc	Tire wear (filler material), motor oil (stabilizing additive), grease
Iron	Auto body rust, steel highway structures (guard rails, bridges, etc.), moving engine parts
Copper	Metal plating, bearing and bushing wear, moving engine parts, brake lining wear, fungicides and insecticides
Cadmium	Tire wear (filler material), insecticide application
Chromium	Metal plating, moving engine parts, brake lining wear
Nickel	Diesel fuel and gasoline (exhaust), lubricating oil, metal plating, bushing wear, brake lining wear, asphalt paving
Manganese	Moving engine parts
Cyanide	Anticake compound used to keep deicing salt granular (ferric ferrocyanide, sodium ferrocyanide, yellow prussiate of soda)
Sodium, Calcium, Chloride	Deicing salts
Sulphate	Roadway beds, fuel, deicing salts
Petroleum	Spills, leaks or blow-by of motor lubricants, antifreeze and hydraulic fluids, asphalt surface leachate

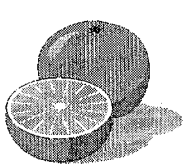


Coastal Waters", of CZARA established the Coastal Nonpoint Pollution Control Program. Section 6217 of CZARA requires US EPA to develop, and states to implement, enforceable "*management measures*" (i.e., BMPs) to control nonpoint source pollution in coastal waters. The definition of the "*coastal zone*" in California was expanded to encompass the entire state.

Like the NPDES storm water permitting program, implementation of the Coastal Nonpoint Pollution Control Program is still evolving. As of the 1994 Basin Plan update, US EPA has published management measures, which are collectively referred to as the "*(g) guidance*", pursuant to Section 6217(g) of the CZARA. There are six major categories of nonpoint sources addressed by the (g) guidance, including: agriculture sources, forestry, urban areas, marinas, hydromodification projects and wetlands.

The storm water NPDES permitting program under the Clean Water Act and the Coastal Nonpoint Pollution Control Program Section under CZARA are intended to be complimentary but exclusive of each other. In other words, the Coastal Nonpoint Pollution Control Program applies only to nonpoint sources that are not currently regulated under an NPDES storm water permit. This includes all of the traditional non-urban nonpoint sources such as agriculture and silviculture and those urban sources which are not currently subject to the NPDES storm water permitting program. Examples of the latter in 1994 include some municipalities with populations under 100,000; construction sites disturbing less than 5 acres; and storm water discharges from wholesale, retail, service, or commercial activities.

The key concept is that <u>all</u> nonpoint pollution sources, both urban and non-urban (including those that become point sources), are currently subject to regulation under either the NPDES Storm Water Permitting Program required under Section 402 (p) of the Clean Water Act or the Coastal Nonpoint Pollution Control Program required under Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA).



AGRICULTURE

In the San Diego Region, agriculture ranks as the forth largest industry in the economy and accounts for 1.7 percent of the Region's economy. The coastal and inland valley areas of the county possess a moderate and virtually frost-free climate able to support a variety of sub-tropical crops, making the San Diego area a unique agricultural region. The primary crops being grown for the national and international markets are avocados, citrus, cut flowers, and nursery products. To a lesser extent, local fresh market crops and livestock are produced in the area.

The San Diego County Water Authority (Authority) is the largest agricultural water consuming agency within Metropolitan Water District (MWD), requiring approximately 50 percent of MWD's total agricultural water supply each year. Agricultural water use within the Authority is concentrated mainly in north county agencies such as Rainbow MWD, Valley Center MWD, Fallbrook PUD and Yuima MWD.

Pursuant to the Coastal Zone Reauthorization Amendments (CZARA) Section 6217 (g), US EPA has identified management measures to protect coastal waters from sources of nonpoint pollution from agriculture. Specifically, the (g) Guidance for agriculture contains management measures to address erosion from cropland, applying nutrients to cropland, applying pesticides to cropland, confined animal facilities, land used for grazing, and cropland irrigation. The three most significant water quality impacts from agriculture in the San Diego Region are:

- erosion of agricultural soils;
- agricultural irrigation return water (salt loading and applied chemicals); and
- confined animal facilities.

Basic information on each impact is summarized below.

Erosion Control

Erosion is a problem, not only in terms of the loss of agricultural production, but also because it degrades important aquatic habitat. Eroded soils can bury benthic communities, cover spawning grounds, destabilize channel banks and fill sensitive wetland areas. Furthermore, other pollutants are often bound to eroded soils. Under certain conditions, these pollutants may be remobilized into the water column causing problems for human health, wildlife, and aquatic resources.

The State and Regional Boards have adopted narrative standards that prohibit the impairment of aquatic habitat from erosion. However, no specific numeric standard limiting sediment loads has been established. Implementation of effective management practices to control erosion is typically accomplished through the combined efforts of several agencies working with landowners. Local Resource Conservation Districts, with technical assistance from the U.S. Soil Conservation Service, help landowners prevent erosion problems. The University of California, Agricultural Extension Service also assists in developing management practices and informing growers of optimum strategies for soil fertility and stabilization. Additionally, the U.S. Agricultural Stabilization and Conservation Service provides grants and low interest loans to farmers for improvements which retain valuable topsoil in cultivated areas.

Agricultural Irrigation Return Water

Agricultural irrigation return water is the wastewater which runs off or leaches through an irrigated area. The two major concerns with agricultural irrigation return water are salt loading and the release of applied chemicals.

Salt Loading

Since the water supply in the San Diego Region is generally quite high in salts and the climate is dry, irrigation with this relatively saline water causes salt accumulation in the soil. Crop roots absorb only essentially pure water while leaving dissolved salts behind. If these salts are not leached out by regularly applying more irrigation water than is needed for evapotranspiration, salts accumulate in the root zone and the land eventually becomes too salty for agriculture. However, the saline soils may be reclaimed by leaching. The percolation of the water used to leach salts from the soil can be a serious source of ground water degradation.

The actual effect of irrigation return water on ground water quality in the Region is difficult to determine without further study. The construction of irrigation return water drain tiles to collect and transport return flows is a possible remedial measure that could be implemented in certain portions of the Region. This has not been considered necessary to date and no plans for such construction are presently pending.

Applied Chemicals

Modern agriculture is based on the extensive use of applied chemicals such as fertilizers, pesticides, and herbicides to obtain high crop yields. The improper use of these applied chemicals may lead to serious degradation of both ground water and surface water quality. Some of the chemicals applied to farm land move down with deep-percolation water from crop root zones and can contaminate underlying ground water. Surface waters are primarily contaminated by the runoff of irrigated agriculture containing sediments, nutrients such as phosphorus and nitrogen, pesticides, and other pollutants.

The release of applied chemicals, into surface and ground waters can have adverse effects on the quality of those waters and the beneficial uses supported by them. Aquatic toxicity, as measured by toxicity bioassay tests, has been found in many waters within the State. The application of agricultural chemicals, in some cases, has been linked directly to this toxicity and is suspect in many other impaired water bodies. In addition to degradation of the aquatic environment, the contamination of ground and surface waters by pesticides and fertilizers is believed to also pose a threat to human health. Pesticides for example are known to bioaccumulate.

The Basin Plan contains a water quality objective requiring that all waters be maintained free of toxic substances in concentrations that are toxic to human, plant, animal, or aquatic life. The Basin Plan also contains a water quality objective for pesticides requiring that no individual pesticide or combination of pesticides be present in the water column, sediments, or biota at concentrations that adversely affect beneficial uses.

Although the Department of Pesticide Regulation (DPR) controls the application and use of agricultural pesticides, regulation of the quality of agricultural runoff waters is the responsibility of the State and regional boards. The regional boards have adopted water quality standards that apply to all surface waters of the State. Although standards for certain metals and some older pesticides have been adopted, standards for the majority of currently used agricultural chemicals do not exist. Generally, narrative standards which prohibit toxicity and degradation of water bodies apply to agricultural discharges as do specific toxicity standards. To implement these standards, the regional boards have relied on a number of voluntary efforts and a concerted effort to educate growers on the need to protect water bodies from the adverse effects of farm chemicals. The State Board also uses grant funds to support implementation of projects which demonstrate improved management practices.

In coordination with DPR, the regional boards have begun to put restrictions on the use of certain agricultural chemicals to address water quality problems. DPR has the responsibility to condition the use of any agricultural chemical to ensure its safe use. Where DPR has been convinced of the significant potential to cause environmental problems, it has established restrictions on the application, release, or timing of pesticide applications. DPR also encourages changes in formulations or in the combinations of pesticides applied in order to minimize water quality problems. An overall integrated pest management program for each agricultural site, rather than sole reliance on pesticides is needed.

There are other reasons to be concerned with the judicious use of agricultural chemicals (in addition to environmental issues). These interests are often concerned with questions of production and profit. To the extent that the application of agricultural chemicals are limited for cost control reasons, these concerns often result in benefits for water quality as well.

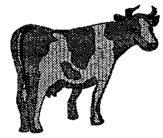
The narrative and/or numeric nutrient objectives presented in this Basin Plan are also applicable to irrigation return water. The State Board may require the use of pollutant control techniques to implement irrigation water management in its water rights permits or through Nonpoint Source Management Plan.

Irrigation water management may be implemented through reducing the use of fertilizers and pesticides to levels which minimize their presence in irrigation return water, as well as through the implementation of irrigation systems which reduce the volume of return water.

Irrigation Water

In 1992, two laws were passed which require agricultural water suppliers delivering more than 50,000 acre-feet of water per year to prepare water management plans (CWC, §10800 and §10904). The plans are to focus on water conservation measures, improved irrigation efficiency, and environmental enhancement. The Department of Water Resources has established an advisory committee to review and study irrigation practices for these purposes. The implementation of conservation plans will likely have a side benefit of reduced erosion as irrigation efficiency improves.

Dairies -- Confined Animal Facilities



Problems associated with dairy operations in the San Diego Region include ground water mineralization, the addition of nitrates to ground water, surface runoff of biodegradable and suspended material, nuisance odors, the addition of nutrients to adjacent surface water streams and other miscellaneous problems. All dairies in the Region are regulated under waste discharge requirements. These waste discharge requirements implement the regulations for confined animal facilities contained in CCR, Title 23, Division 3, Chapter 15, Article 6, Sections 2560-2565.

The major requirements contained in waste discharge requirements for dairies are as follows:

(1) Dairies must be designed and constructed to retain all facility wastewater generated, together with all precipitation on, and drainage through manured areas during a 25-year, 24-hour storm.

(2) All precipitation and surface drainage outside of manured areas, including that collected from roofed areas, and runoff from tributary areas during the storm events described in subsection (1) of this section, shall be diverted away from manured areas, unless such drainage is fully retained.

(3) Retention ponds and manured areas at dairies must be protected from inundation or washout by overflow from any stream channel during 20-year peak stream flows. Existing facilities that are protected against 100-year peak stream flows must continue to provide such protection.

(4) New facilities shall be protected against 100-year peak stream flows.

(5) Retention ponds shall be lined with or underlain by soils which contain at least 10 percent clay and not more than 10 percent gravel or artificial materials of equivalent impermeability.

(6) Facility wastewater, collected precipitation and drainage may be discharged to properly operated use or disposal fields or to wastewater treatment facilities approved by the Regional Board.

Regional Board Dairy Waste Management Policy (Resolution No. 87-71)

The Regional Board adopted Resolution No. 87-71, *"A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region"* (Regional Board Dairy Waste Management Policy) on November 16, 1987. On March 17, 1988, the State Board adopted Resolution No. 88-35 approving the Regional Board Dairy Waste Management Policy with a few minor changes. The Regional Board Dairy policy contained in Resolution No. 87-71 is incorporated below; accordingly Resolution No. 87-71 is superseded.

The Regional Board regulatory program on dairy waste disposal is designed to be a part of the Basin Plan. The program is based upon the following principles to ensure that the goals of the Basin Plan are implemented:

(1) The Regional Board is committed to the reasonable protection of present and future beneficial uses of ground water.

(2) Coordination among state, federal, and local agricultural and regulatory agencies, the dairy industry, local planning and land-use agencies is necessary to resolve potential water quality problems associated with dairies.

(3) Cooperation between this Regional Board and the dairy industry is required when developing and implementing measures to achieve conformance with the Basin Plan ground water objectives.

(4) Comprehensive assessments of salt loading on the ground water basins in the San Diego Region are necessary to develop reasonable and cost effective water quality protection measures for all nonpoint and point sources of waste.

(5) An interim dairy wasteload regulatory program is necessary until the assessment studies noted in Principle 4 are completed. The interim program should provide a simple, region-wide approach to controlling dairy wasteloads, that may be reviewed on a case-by-case basis if necessary. The program should be easy to understand, easy to implement and enforce and provide greater protection of water quality than present practices.

As part of an overall program of dairy waste management, the following measures shall be implemented:

(1) The Regional Board shall continue to enforce all State and Federal water quality laws, and regulations regarding dairy waste treatment and disposal, including Chapter 15, Title 23 California Code of Regulations and US EPA Effluent Guidelines and Standards for feedlots point source category (40 CFR 412).

(2) The Regional Board shall continue to seek funding to conduct the necessary studies and develop computer models to provide an accurate assessment of existing and projected wasteloads in the various ground water basins.

(3) Based upon the results of the studies described in item 2, the Regional Board will revise Basin Plan ground water objectives if warranted and specify or revise wasteload limits that will be appropriate for the point and nonpoint sources of waste, including dairies if necessary.

(4) For an interim period, until the necessary ground water assimilative capacity and wasteload assessment studies are completed, the Regional Board shall limit the disposal of corral manure to dairy disposal land to no more than 3 tons dry weight or 10 cubic yards per acre per year, and to cropland where crops are grown and harvested twice annually, to no more than 12 tons dry weight per acre per year. The Regional Board shall consider manure application higher than the 12 tons per acre per year limit upon demonstration that the crops require the increased manure loadings.

(5) The U.S. Department of Agriculture, Soil Conservation Service, University of California at Riverside, the State and County Departments of Agriculture and other governmental and educational institutions are encouraged to provide dairy operators with the latest technical information regarding waste disposal practices that would result in additional water quality protection.

(6) The local land use and planning agencies are encouraged to conduct long-term planning for addressing water quality issues of new and expanded dairies in the region. The dairy industry is encouraged to provide accurate five-year projections of dairy herds at existing dairies and potential locations for new dairies to the planning agencies and to the Regional Board, so that the Board may include the required Basin Plan studies as part of the Board's triennial review process.

(7) The Regional Board will continue to obtain and review technical information regarding the hydrologic basins and to recommend the update of Basin Plan standards if warranted.

(8) The Regional Board encourages the implementation of water conservation measures at dairies, and the beneficial reuse of dairy farm wastewater that would replace the use of imported water.

EROSION AND SEDIMENT CONTROL

Currently erosion and sediment control is accomplished primarily by way of the municipal and construction storm water permits (see previous discussion).

In 1987, the San Diego Regional Water Quality Control Board implemented a policy for the control of human induced erosion and sedimentation. This policy is presented below. The Regional Board deferred the implementation of regulatory programs for erosion and sedimentation control to local government agencies. The local Resource Conservation Districts have agreements with the Regional Board regarding erosion and sediment control.

Soil erosion resulting from a wide variety of causes, including construction, hillside cultivation and other agricultural activities, non-maintained roads, and off road vehicles may result in serious water quality impacts. The goal of the policy is the protection of water quality through the reduction and prevention of accelerated (man-caused) erosion to the level necessary to restore and protect beneficial uses of receiving waters now significantly impaired or threatened by impairment due to sedimentation through the implementation of the Best Soil Management Practices (BMPs). Construction sites can contribute runoff into storm drains at rates 100 to 2,000 times greater than non-developed sites, due to the large amounts of soil that are usually uncovered. Property owners are held responsible for all activities and practices that may cause an adverse impact on water quality due to waste discharges and surface runoff from their lands.

Sediment and erosion control is particularly important in areas with, or that drain into, delicate habitats such as lagoons, floodplains and some waterways. Lagoons are particularly sensitive to influx of silts and nutrients, which may cause severe turbidity and eutrophication problems. Severe amounts of silt may cause a lagoon to eventually become infilled. Siltation also damages tributaries and riparian corridors leading to the lagoons.

Poor agricultural grading practices may cause significant erosion of the soil, causing heavy sediment, nutrient and possibly herbicide and pesticide runoff loads to be discharged into nearby surface waters.

In most cases, the adverse results of man's activities can be reduced and in some instances eliminated through the use of both structural and non-structural measures of various types that are properly employed at the appropriate time. The high cost of lost resources, resource replenishment and after-the-fact repair and maintenance make both pre-project erosion control planning and preventive maintenance necessary.

EROSION AND SEDIMENT CONTROL PROGRAM (RESOLUTION NO. 87-91)

Regional Board Resolution No. 87-91 entitled, "*A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region*" (Erosion and Sediment Control Program) was adopted on December 21, 1987. The Regional Board Erosion and Sediment Control Program contained in Resolution No. 87-91 is incorporated below; accordingly Resolution No. 87-91 is superseded.

Goal of Program

The goal of the Regional Board's erosion control program is the protection of water quality through the reduction and prevention of accelerated (man-caused) erosion to the level necessary to restore and protect beneficial uses of receiving waters now significantly impaired, or threatened by impairment, by sediment.

Management Principles

(1) Property owners are considered ultimately responsible for all activities and practices that could result in adverse affects on water quality from waste discharges and from surface runoff.

(2) Local units of government should have the lead role in controlling land use and construction activities that cause erosion and may, as necessary, impose further conditions, restrictions, or limitations on waste disposal and

other activities that might degrade the quality of waters of the State.

(3) Best Management Practices (BMPs) should be implemented to reduce erosion and sedimentation and minimize adverse affects on water quality.

Regional Board Implementation Measures

(1) Local governments shall be encouraged to develop effective erosion and sedimentation control ordinances and regulatory programs that are at least equivalent to the model ordinance in the "*Erosion and Sediment Control Handbook*" published by the California Department of Conservation, May 1981.

(2) If necessary, a Memorandum of Understanding (MOU) or Management Agreement could be adopted to more clearly define the cooperative roles between the local units of government and the Regional Board.

(3) The Regional Board may participate with other concerned agencies such as the California Department of Fish and Game, the Resource Conservation Districts, the various lagoon foundations, etc., to identify watersheds, coastal lagoons and estuaries with critical erosion and sediment problems. The Regional Board may assist in the assessment of such problems and causes, and assist in the development of alternative measures to prevent future problems.

(4) As time and resources permit, the Regional Board will review existing local grading ordinances to determine the adequacy of the ordinances to provide effective erosion control. The Regional Board may then recommend specific improvements to the ordinances for consideration by the local agencies. If necessary, the Regional Board may request a report on the implementation of the Board's recommendation.

(5) If necessary, the Regional Board may request periodic status reports of construction and grading activities from local agencies to determine the effectiveness and potential problems with the implementation of local erosion and sediment control program.

(6) The Regional Board shall encourage the Resource Conservation Districts to review and update if necessary, their erosion control ordinances in order to develop more effective programs for erosion and sediment control for agricultural activities. Local units of government are encouraged to take a more active role in addressing erosion problems from agricultural activities.

THE ELSINORE-MURRIETA-ANZA RESOURCE CONSERVATION DISTRICT SEDIMENT CONTROL ORDINANCE (RESOLUTION NO. 79-25) AND THE RESOURCE CONSERVATION DISTRICTS OF SAN DIEGO COUNTY EROSION AND SEDIMENT CONTROL POLICY (RESOLUTION NO. 92-21)

The Elsinore-Murrieta-Anza Resource Conservation District and the Resource Conservation Districts (RCDs) of San Diego County were established to provide for the conservation of soil and water resources and for the prevention and control of soil erosion and sediment damage due to agricultural and other land use activities.

The RCDs establish guidelines for land management programs by adopting Best Management Practices (BMPs) such as those presented in the Soil Conservation Service Technical Guide covering San Diego County. Currently, farmers and other land owners contact the RCDs on a voluntary basis for assistance in developing individual erosion and sediment control programs which conform to the BMPs.

In order to assure that all farmers and other land owners operate under the Resource Conservation Districts BMP guidelines, and to better address the existing and potential water pollution problems caused by agriculture and other land uses, the RCDs have adopted sediment control ordinances and policies (e.g., *Elsinore-Murrieta-Anza Resource Conservation District Sediment Control Ordinance* and the *Resource Conservation Districts of San Diego County Erosion and Sediment Control Policy*). These documents formally adopt the Soil Conservation Service's BMPs and define the existing and expanded functions and responsibilities of the RCDs. These documents also suggest means by which the California Regional Water Quality Control Board, San Diego Region, can assist the RCDs in implementation of the policy.

The Resource Conservation District Sediment Control Ordinance, and the Erosion and Sediment

Control Policy establish the duties of the Regional Board and the RCD's as outlined below. The Resource Conservation Districts will implement these documents as follows:

(1) Continue to assist farmers and other land owners in establishing management programs which comply with BMPs.

(2) Authorize any of its directors to file a formal complaint against any person who is causing or permitting any accelerated erosion and sediment damage.

(3) Take action against any person causing or permitting any accelerated erosion and sediment damage.

   (a) Receive complaints from RCD directors, land occupiers, or city, state and county officials responsible for the maintenance of water quality in the jurisdictions.

   (b) Conduct hearings of the Resource Conservation District Board of Directors on complaints. If the complaint is valid, the "*land disturber*" is allowed two months to develop and implement a voluntary conservation plan.

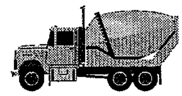
   (c) Request action by the Regional Board if compliance schedules are not followed or if further noncompliance occurs, when such noncompliance results in the intentional or negligent discharge or deposition of any waste where it is, or probably will be discharged into the waters of the state or creates or threatens to create a condition of pollution or nuisance.

The Regional Board will assist the Resource Conservation Districts in implementing the Erosion and Sediment Control Policy by doing the following:

(1) Inform the appropriate RCD of instances when the staff of the Regional Board finds that accelerated erosion damage has occurred or is likely to occur as a result of violations of the BMP guidelines.

(2) Receive requests for action on complaints from the RCDs when compliance schedules have not been met or when further noncompliance has occurred, and consider appropriate enforcement action pursuant to Section 13304 (a) of the Porter-Cologne Water Quality Control Act.

RESOURCE EXTRACTION



SAND, GRAVEL AND RELATED OPERATIONS

The sand and gravel related processing industry represents one of the largest single classes of industry in the San Diego Region. Construction activities in the Region will require a continuing need for sand and gravel products. The industry can generally be classified as follows:

- Sand and gravel processing (including rock crushing);
- Concrete batching;
- Asphalt batching;
- Asphalt product manufacturing;
- Concrete product manufacturing; and
- Clay and clay product processing.

The largest volume of waste from sand and gravel processing operations results from product washing. Many of the sedimentary deposits mined for sand and gravel in the San Diego Region contain a high percentage of silt and clay. Extensive washing is required to remove the fine material. Other waste includes cement truck wash water, sediment separated from the wash water, and rejected product (broken brick, block, pipe etc).

Recycled wash waters are discharged to storage ponds and can contain high concentrations of total dissolved solids because of evaporation and leaching from product materials. The percolation of these recycled waters can adversely affect ground water quality. It is recognized that the permeability of the ponds receiving the wash waters is low because of the sealing effects of silts and clay sediments in the wash water. Sediment and wash water discharged to surface waters can adversely affect aquatic life through sediment deposition and increases in turbidity.

Many sand and gravel operations are regulated with waste discharge requirements (WDR). The waste discharge requirements prohibit the discharge of sand and gravel wash water to surface waters. The requirements also require that waste holding ponds have 100-year frequency flood protection. Resolution No. 83-21 entitled, "*A Resolution*

Conditionally Waiving Adoption of Waste Discharge Requirements for Certain Specific Types of Discharges" conditionally waives WDRs for sand and gravel mining operations not conducted in flowing streams. Sand and gravel mining operations are subject to regulation under Section 404 of the Clean Water Act. Before a Section 404 permit can be obtained, the discharger must obtain water quality certification pursuant to Section 401 of the Clean Water Act. See previous discussion of Water Quality Certification (Section 401).

Many mining operations are subject to California's Surface Mining and Reclamation Act (SMARA) of 1975 and the federal Surface Mining Control and Reclamation Act (SMCRA) of 1977. These laws, which have similar provisions, require reclamation of mined lands in order to protect public health and safety and to prevent or minimize adverse environmental effects such as water quality degradation, flooding, erosion, and sedimentation. Additionally, SMCRA requires mine operators to establish baseline hydrologic conditions; in the event that adjacent waters are contaminated, diminished, or interrupted, SMCRA further requires mine operators to replace the water supply.

Under SMARA regulations (California Public Resources Code (Section 3505, Article 1), mining operators must:

- Control soil erosion by minimizing removal of vegetation and overburden, managing stockpiles, and constructing erosion control facilities;

- Control water quality by constructing settling ponds and basins and conducting operations in such a way as to prevent siltation of ground water recharge areas;

- Protect fish and wildlife habitat by taking "*reasonable measures*"'

- Protect natural drainage ways by proper placement and control of mine waste rock and overburden piles or dumps; and

- Control erosion and drainage by grading and revegetation, and construction of basins to impound surface runoff, and protection of spillways from erosion.

FLOOD CONTROL

In a natural setting, the dynamic nature of water creates an ever changing stream channel within the floodplain. In the San Diego Region, where rainfall is extremely variable, flood plains which appear to be dry one year, may contain tremendous torrents the following year. Sometimes the dry appearance of the flood plain has made people mistakenly think flood waters do not occur there. The dry appearance of a portion of the flood plain is deceptive. Floods are a natural part of any flood plain. Flood plains cannot be fully protected against floods.

In the past, developments clustered near or within the flood plain. Flood control channels were constructed to protect these properties. Flood control channels were built to constrict the flood plain and to allow maximum development on adjacent lands. These developments increased the amount of impervious area (roads, buildings, parking lots and other structures) and increased local storm runoff. Storm water, which prior to development would have been absorbed into the soil, instead filled local storm drains. Thus, the precipitation which might at one time have caused local flooding caused intensified downstream flooding.

Today, many flood plains have been channelized to protect property. There are a variety of channel designs which have been built. Channel designs vary in range from completely natural to entirely concrete lined with concrete bottoms. Other channel types include natural channels modified to contain a low-flow channel with or without side filling or riprap or concrete; and with or without encroachment by agriculture and/or urban areas.

IMPACTS OF CHANNELIZATION

To the degree that a natural watercourse is channelized, the negative impacts to the watershed are increased. The following impacts occur with channelization:

(1) Channel modification and channelization of streams induces changes in land use practices. The resulting change in land use practices often results in detrimental changes to surface water quality.

(2) With future increases in the urbanization of an area, the impervious area increases, contributing additional storm water runoff. Flood channels were built to contain a certain design flow and the design flow can be exceeded by additional storm water runoff.

(3) As the flood plain is constricted and confined within a channel, the potential damage from storm runoff is increased.

(4) Channelization reduces ground water recharge.

(5) Impervious channels designed to remove the runoff quickly also transport pollutants down the flood control system just as quickly. Most of the surface water runoff from urban areas flows into flood control channels without any mechanism to control the input of toxics.

(6) Channelization results in the direct loss of instream habitat. Fish and other aquatic life are totally dependent upon the surface waters within floodplains.

(7) Channelization results in the loss of riparian habitat.

(8) Channelization causes an increase in ambient stream temperatures within and downstream from the channelized section. The rise in stream temperature may degrade the habitat for aquatic life.

(9) The loss of riparian areas through channelization results in the loss of wildlife. Riparian areas are the most important habitat for the majority of western wildlife species, and are essential for many wildlife species.

(10) Loss of riparian areas results in a loss of the buffering capacity of the riparian vegetation to moderate flows.

(11) Loss of the riparian areas results in a loss of the natural filtering capacity that these areas provide. The natural filtering capacity of riparian areas reduces the concentration of potentially toxic constituents in storm water runoff. Riparian areas provide an improvement in the quality of water produced from the watershed.

(12) Stream and riparian habitats are needed to provide corridors for fish and wildlife resources. A highly modified concrete channel may not allow for fish or wildlife passage. Even a limited section of concrete channel can disconnect habitats. The separation of habitats reduces the viability of fish and wildlife populations.

CONCLUSION

Channel modifications need to be evaluated for their ultimate consequences for the watershed. In California's past there was inadequate consideration towards the retention of wetlands, riparian systems, and natural flood plains. The economic assessment of flood control alternatives should consider any proposed project in its entirety. Wetlands, riparian systems and natural flood plains accommodate natural stream meandering, aggradation, degradation and overbank flow better than those lands directly encroached upon by development.

Consideration and utilization of methods to reduce storm water runoff and allow infiltration and percolation of storm waters are needed. Methods should include minimizing the further construction of flood control channels, particularly concrete channels, and the retention of riparian areas within floodplains. Riparian areas within flood plains need to be protected in order to allow the natural filtering capacity of the riparian area to improve the quality of storm water produced from the watershed; and to preserve alluvial percolation capacity and aquatic habitat values. When possible riparian areas need to be restored.

Riparian and stream habitats provide natural beauty which is appreciated and valued by people. Riparian and stream habitats, especially in urban areas, are vital to enhancing our quality of life. People are far more likely to respect and be stewards of "*natural*" reaches of streams than channelized or artificially modified reaches. Riparian lands represent a significant value to society.

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 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 that the water resources community look at a more integrated approach which considers impacts from both point and nonpoint sources of pollutants.

The Watershed Protection Approach is built on the following three main principles:

- The target watersheds should be those where pollution poses the greatest risk to human health, ecological resources, desirable uses of the water, or a combination of these;

- All parties with a stake in the specific local situation should participate in the analysis of the problems and the creation of solutions; and

- The actions undertaken should draw on the full range of methods and tools available, integrating them into a coordinated, multi-organizational attack on the 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, US EPA guidance, and various legislative proposals clearly state the need to consider the implications of land use on water quality. US EPA 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.

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 the total water quality problem. Some of these programs have different, overlapping, or conflicting priorities. Moving from the more facility-specific controls of the past to management of water quality on a watershed basis, will entail some growing pains. Many of the programs at our disposal will need to be reshaped and integrated at the watershed level. Some programs will need to be reoriented and integrated, while other programs may not be amenable to the watershed approach. Nonetheless, public agencies and private organizations concerned with water resources have come to recognize that a comprehensive evaluation of pollutant contributions on a watershed scale is the only way to realistically assess cumulative impacts and formulate workable strategies to truly protect our water resources. Both water pollution and habitat degradation problems can best be solved by following a basin-wide approach.

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 Program including the Local Oversight Program;

- Spills, Leaks, Investigation and Cleanup Program (SLIC);

- Aboveground Petroleum Storage Tank Program; and

- Department of Defense Site Investigations;

The Regional Board sets cleanup goals based on the State's *Antidegradation Policy* set forth in State Board Resolution No. 68-16 and Resolution No. 92-49 *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304* and the Cleanup and Abatement Policy discussed later in this chapter. Under these policies, whenever the existing quality of water is better than that needed to protect present and potential beneficial uses, such existing quality will be maintained, with certain exceptions (as described in Chapter 5, *Plans and Policies*). Accordingly, the Regional Board prescribes cleanup goals that are based upon background concentrations. For those cases where dischargers have demonstrated that cleanup goals based on background concentrations cannot be attained due to technological and economic limitations, the Antidegradation Policy sets forth policy for cleanup and abatement based on the protection of beneficial uses. The Regional Board can, on a case-by-case basis, set cleanup goals as close to background as technologically and economically feasible. Such goals must at a minimum, restore and protect all designated beneficial uses of the waters.

Furthermore, such cleanup levels cannot result in water quality less than that prescribed in the Basin Plan and policies adopted by the State and Regional Board, and must be consistent with maximum benefit to the people of the State.

UNDERGROUND STORAGE TANKS

The Underground Storage Tank Program was enacted in 1983 and took effect January 1, 1984. The authority for the program is found in the Health and Safety Code, Division 20, Chapter 6.7, and the regulations for the program are found in the California Code of Regulations, Title 23, Division 3, Chapter 16. The regulations are designed to ensure the integrity of all underground storage tanks (UST), and to detect any leaks.

There are approximately 2,000 known cases of leaking underground storage tanks in the Region. Approximately 35 percent of the cases involve instances where only soil contamination is present, 35 percent involve instances where ground water contamination has been confirmed, and the remaining 30 percent are cases which have been closed. The majority of the releases from these underground storage tanks are gasoline and the constituent of most concern is benzene, a known carcinogen. A smaller percentage of the underground storage tank releases involve chlorinated industrial solvents, which are suspected carcinogens. As anticipated, the majority of the sites where these releases have occurred are automotive service stations. Tanks from industrial facilities contribute a smaller but significant minority. To date, these ground water impacts have affected only a few drinking water supply wells. The Regional Board maintains and regularly updates the Leaking Underground Storage Tank Information System (LUSTIS) database, which identifies all known underground storage tank release sites in the Region.

Implementation of the underground storage tank program includes direct Regional Board oversight of leaking underground storage tank cleanups. It also involves coordination of oversight activities with local agencies under contract with the State Board through the Local Oversight Program. Local agencies have the authority, pursuant to Section 25297.1 of the Health and Safety Code to act on behalf of the Regional Board in requiring investigations and cleanup of underground tank cases. The local agencies also implement the permitting, construction, inspections and monitoring portion of the Underground Tank Regulations. The Orange County Health Care Agency, the County of Riverside Department of Environmental Health and San Diego County Department of Health Services, Environmental Health Services handle the vast majority of the active cases in the Region.

Title 23, Division 3, Chapter 16, Article 11 provides that corrective action of releases from underground storage tanks includes one or more of the following phases:

- ***Preliminary Site Assessment Phase:*** This includes, at a minimum, initial site investigation, initial abatement actions and initial site characterization.

- ***Soil and Water Investigation Phase:*** This includes the collection and analysis of data necessary to assess the nature and vertical and lateral extent of the unauthorized release to determine a cost-effective method of cleanup.

- ***Corrective Action Plan Implementation Phase:*** This consists of carrying out the cost-effective alternative selected during the Soil and Water Investigation Phase for remediation or mitigation of the actual or potential adverse effects of the unauthorized release.

- ***Verification Monitoring Phase:*** This includes all activities required to verify implementation of the Corrective Action Plan and evaluate its effectiveness.

Cleanup levels for soil and ground water pollution resulting from leaking underground storage tanks will be established based on the Cleanup and Abatement Policy described later in this chapter.

UNDERGROUND STORAGE TANK CLEANUP FUND

The State Board, Division of Clean Water Programs, administers the Underground Storage Tank Cleanup Fund. The Cleanup Fund can be used as a mechanism to satisfy federal financial responsibility requirements and pay for corrective action and third party liability costs resulting from a leaking petroleum underground storage tank. The Fund can also pay for direct cleanup (by local agency or regional board) of underground storage tank sites requiring emergency and prompt action on abandoned or recalcitrant sites. This Fund, collected by the Board of Equalization, is supported by a 0.6 cent per gallon fee for gasoline. The Fund has been established to provide reimbursement to tank owners or operators for costs of cleanup of the effects of unauthorized releases of petroleum. Up to one million dollars ($1,000,000) can be provided per site, with the first ten thousand dollars ($10,000) being provided by the claimant. With certain qualifications, expenditures made to remediate an unauthorized petroleum release since January 1, 1988 can be reimbursed and letters of credit can be issued for the funding of ongoing remediation activities.

Owners/ operators of petroleum USTs as defined in Section 25281(x) of the California Health and Safety Code and owners of petroleum USTs located on residential property who meet the following requirements are eligible for the fund:

- There has been an unauthorized release of petroleum from the UST reported to and confirmed by the regulatory agency.
- As a result of this unauthorized release, the owner/ operator must take corrective action as required by a regulatory agency.
- The owner/ operator must be in compliance with any applicable financial responsibility requirements and any UST requirements.

Regional boards provide technical support to both applicants who file claims against the underground storage tank Cleanup Fund and State Board staff members who verify the corrective action work that the claims cover. For claims that involve future work, the Regional Board will oversee site investigation and cleanup on cases for which they are the lead agency.

SPILLS, LEAKS, INVESTIGATION AND CLEANUP (SLIC)

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 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 as amended on April 21, 1994 entitled "*Policies and Procedures For Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*".

Cleanup levels for soil and ground water pollution resulting from sites investigated through the SLIC Program will be established based on the Cleanup and Abatement Policy described later in this chapter.

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 state's Aboveground Petroleum Storage Act was enacted in 1989 and amended in 1991. The Act became effective on January 1, 1990 (Health and Safety Code, Chapter 6.67, §25270 et. seq.) The Act 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 tanks containing crude oil or its fractions, the installation of secondary containment for all tanks with sufficient capacity to hold the contents of the largest tank at the facility plus sufficient volume for rainfall to avoid the overflow, and development of a "*Spill Prevention Control and Countermeasure Plan.*" In the event of an unauthorized release, the owner or operator must notify the Regional Board officials and undertake appropriate monitoring and corrective action. Additionally, annual fees are levied on tank owners. The Regional Board uses these fees to fund aboveground petroleum tank inspections and enforcement.

DEPARTMENT OF DEFENSE FACILITIES

There are twenty-two major Department of Defense (DoD) facilities in the San Diego Region. The following is a list of DoD facilities and the corresponding lead agency for the facility in the Region.

Department of Defense Facility	*Lead Agency*
United States Marine Corps Base, Camp Pendleton	US EPA
Coronado Navy Amphibious Base (NAVPHIBASE)	DTSC
Imperial Beach Auxiliary Landing Field	DTSC
Naval Air Station Miramar	DTSC
North Island Naval Aviation Depot	DTSC
Naval Air Station North Island	DTSC
San Diego Fleet Anti-Submarine Warfare Training Center (FASWTC PAC)	DTSC
San Diego Fleet Combat Training Center (FCTC PAC)	DTSC
Marine Corp Recruit Depot, San Diego	DTSC
Naval Command, Control and Ocean Surveillance Center (NCCOSC)	DTSC
San Diego Naval Computer and Telecommunications Station (NCTS)	DTSC
San Diego Naval Electronics Systems Engineering Center (NESEC)	DTSC
San Diego Naval Hospital	DTSC
32 Street Naval Station, San Diego	DTSC
Naval Submarine Base, San Diego	DTSC
Fleet Industrial Supply Center	DTSC
San Diego Naval Training Center	DTSC
San Diego Public Works Center	DTSC
San Diego Shore Intermediate Maintenance Activity	DTSC
Air Force Plant #19, San Diego	DTSC
Fallbrook Naval Weapons Station	DTSC
Search, Evade, Resist, Escape (SERE) Camp, Warner Springs	DTSC

Significant ground water contamination has been detected at a number of these facilities. Contamination is severe enough at one of these facilities to have it placed on US EPA's National Priorities List (NPL) for remediation under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, commonly referred to as Superfund).

For the National Priority List facility (Camp Pendleton), the US EPA is the lead environmental regulatory agency for oversight of investigation and cleanup. CERCLA requires US EPA to consider applicable or relevant and appropriate state laws and regulations when establishing cleanup standards for remedial activities. To ensure that the state's concerns are properly addressed, two Cal/EPA agencies, the Regional Board and the Department of Toxic Substances Control (DTSC), also perform a significant oversight role in the investigations and cleanup of these facilities.

The US EPA, DoD, DTSC and the Regional Board have signed Federal Facility Agreements (FFA) for the National Priorities List facility. The intent of the FFA is to ensure that: (1) environmental impacts are investigated; (2) remedial actions are defined; (3) procedural framework or schedules are established; (4) cooperation among agencies is facilitated; (5) adequate assessment is performed; and (6) compromise is reached.

The US EPA is not involved in the investigation and cleanup of DoD facilities that are not on the National Priority List (DoD facilities other than Camp Pendleton). However, many of the facilities potentially have significant contamination. In these cases, the Regional Board and DTSC enter into Federal Facility Site Remediation Agreements (FFSRA) with DoD. Federal Facility Site Remediation Agreements are very similar to the above-mentioned Federal Facility Agreements, with the exception that US EPA is not a party.

In the table above showing the Department of Defense Facilities in the San Diego Region, the DTSC has been identified as the "*lead*" agency, and the Regional Board is the "*support*" agency. A Memorandum of Understanding has been signed by the State Board and DTSC which describes the roles of each agency. The Regional Board's oversight role is with regard to the investigation and cleanup of water resources that have been impacted, or are threatened, by waste discharges from the facilities. The Regional Board's responsibility also extends to source areas (landfills, contaminated soil, etc.) that currently, or may in the future, pose a threat to water quality. DTSC's role is to address all other environmental aspects including health risk assessment, air emissions, community relations, etc.

The State Board and DTSC have entered into a two-year cooperative agreement with the Department of Defense for cleanup and oversight reimbursement. All work performed by the State agencies with regard to the investigation and cleanup of environmental problems at these facilities is fully reimbursed by DoD.

Cleanup levels for soil and ground water pollution resulting from Department of Defense facilities will be established based on the Cleanup and Abatement Policy described later in this chapter.

CLEANUP AND ABATEMENT POLICY

I. CONTAMINATED SOIL AND GROUND WATER

The Regional Board has identified numerous sites where unauthorized waste discharges have resulted in soil and ground water pollution. The majority of these sites have been identified as a result of the Regional Board's implementation of the remediation programs described previously in this Chapter. The unauthorized waste discharges at many of these sites have resulted in adverse effects on water quality and beneficial uses. In some cases the polluted sites pose a threat to the public health. It is the responsibility of the Regional Board to establish cleanup and abatement goals and objectives for the protection of water quality and the beneficial uses of waters of the state in this Region which are consistent with applicable state and federal statutes and regulations.

Water Code Section 13304 authorizes the Regional Board to require cleanup and abatement of soil and ground water pollution. The Cleanup and Abatement Policy described below shall apply to all types of discharges subject to Water Code Section 13304.

II. PURPOSE OF POLICY

The purpose of this Cleanup and Abatement Policy is to provide:

A. Guidance to dischargers involved in the investigation, cleanup and abatement of soil and ground water pollution sites to ensure these activities are in conformance with applicable state and federal laws, regulations and policies;

B. Guidance to dischargers on Regional Board methodology for determining cleanup levels at soil and ground water pollution sites; and

C. Consistency and uniformity in Regional Board requirements for investigation, cleanup and abatement of analogous discharges that involve similar wastes, site characteristics, and water quality considerations.

III. CLEANUP AND ABATEMENT PRINCIPLES

A. The Cleanup and Abatement Policy is guided on the following principles, which are based on Water Code Sections 13000 and 13304, California Code of Regulations (CCR), Title 23, Division 3, Chapter 15 (hereinafter Chapter 15), CCR, Title 23, Division 3, Chapter 16 (hereinafter Chapter 16), and applicable State Water Resources Control Board (State Board) policies. The Regional Board shall require:

1. Cleanup and abatement actions to conform with the provisions of State Board Resolution No. 68-16 (*Statement of Policy with Respect to Maintaining High Quality Waters in California*) provided that under no circumstances shall these provisions be interpreted to require cleanup and abatement which achieves water quality conditions that are better than "*natural*" background conditions.

2. Cleanup and abatement actions to conform with the provisions of State Board Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304*;

3. Cleanup and abatement actions to conform with applicable or relevant provisions of Chapter 15 to the extent feasible;

4. Cleanup and abatement actions to implement the applicable provisions of Chapter 16 for investigations and cleanup of hazardous substances from underground storage tanks; and

5. Dischargers to cleanup and abate the effects of discharges in a manner that promotes attainment of either background water quality, or the best water quality which is reasonable if background levels of water quality cannot be restored, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible. Any alternative cleanup

levels less stringent than background shall apply Section 2550.4 of Chapter 15, or, for cleanup and abatement associated with underground storage tanks, apply Section 2725 of Chapter 16, provided that the Regional Board considers the conditions set forth in Section 2550.4 of Chapter 15 in setting alternative cleanup levels pursuant to Section 2725 of Chapter 16. Any such alternative cleanup level shall:

a. Be consistent with maximum benefit to the people of the State;

b. Not unreasonably affect present and anticipated beneficial use of such water; and

c. Not result in water quality less than prescribed in the Water Quality Control Plans and Policies adopted by the State and this Regional Board.

IV. *CLEANUP AND ABATEMENT INVESTIGATIONS*

A. The Regional Board shall apply the guidelines described in IV.B. below in overseeing investigations to determine the nature and extent of a discharge and appropriate cleanup and abatement measures. The level and complexity of the investigations, assessments, and feasibility studies of cleanup and abatement alternatives required below shall be determined by the discharge type, the extent of pollution, and any other applicable site-specific characteristic(s).

B. The Regional Board shall require dischargers to:

1. Investigate the nature and extent of the discharge or threatened discharge to ensure that adequate cleanup plans are proposed. The goal of the investigation shall be to adequately characterize the pollutants in the discharge and determine the vertical and horizontal extent of pollution in soil and ground water. The investigation shall determine where concentrations of pollutants reach background levels. The investigation shall extend off-site to any location necessary to determine the source and assess the vertical and horizontal extent of the discharge.

2. Take immediate action to remove, treat, or contain pollution source(s) to the maximum extent practicable. Sources of pollution may include:

   a. Ongoing sources of discharge from storage or distribution systems for wastes or hazardous materials;

   b. Soils or ground water which are polluted with mobile or immobile concentrations of non-aqueous phase liquids (NAPLs);

   c. Soils which are polluted with leachable concentrations of soluble pollutants;

   d. Polluted soils which are eroded and transported to storm drains, abandoned or active wells, surface waters, or lands beyond the control of the discharger.

3. Submit the following information for consideration in establishing cleanup levels in accordance with the conditions set forth in Chapter 15, Section 2550.4:

   a. An assessment of the adverse effects on ground water quality and beneficial uses;

   b. A risk assessment to determine impacts and threats to human health and the environment; and

   c. A feasibility study of cleanup alternatives which compares effectiveness, relative cost, and time to attain the following alternative cleanup levels;

      (1) background levels;

      (2) levels which meet all applicable water quality objectives and which do not pose significant risks to health or the environment, and

      (3) an alternate cleanup level in between the cleanup levels described in (1) and (2) above

which meets the requirements as specified in Section III.A.5. of this Cleanup and Abatement Policy.

4. Provide documentation that plans and reports are prepared by professionals qualified to prepare such reports, and that all investigative, and cleanup and abatement activities are conducted under the direction of appropriately qualified professionals. Professionals should be qualified, licensed where applicable, and competent and proficient in the fields pertinent to the required activities. A statement of qualifications of the responsible lead professionals shall be included in all plans and reports submitted by the discharger.

V. *APPROVAL of CLEANUP LEVELS*

A. The Regional Board shall approve soil and ground water cleanup levels through the adoption or affirmation of cleanup and abatement orders; or

B. The Executive Officer or a local agency may approve cleanup levels as appropriately delegated by the Regional Board.

VI. *GROUND WATER CLEANUP LEVELS*

A. Ground water cleanup levels shall be based on:

1. The provisions of State Board Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California*, State Board Resolution No. 88-63, *Sources of Drinking Water*, and State Board Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304*;

2. Applicable narrative and numerical water quality objectives and beneficial uses described in Chapters 2 and 3 of this Basin Plan;

3. Pollutant concentrations which do not pose a significant threat to human health or the environment. Threat to human health and the environment shall be determined through a risk assessment.

   a. The Regional Board is not the lead agency for specifying risk assessment procedures. The risk assessment shall be conducted using the most current procedures authorized by the California Department of Toxic Substances Control, Office of Environmental Health Hazard Assessment or the United States Environmental Protection Agency. The Regional Board will assist the discharger, as necessary, in obtaining the appropriate, most current, procedures from these agencies.

   b. In the absence of scientifically valid data to the contrary, theoretical risks from chemical constituents shall be considered additive across all media of exposure, and shall be considered additive for all chemicals having similar toxicological effects or having carcinogenic effects;

   c. The Regional Board is not the lead agency for reviewing risk assessments. The Regional Board will rely on the California Department of Toxic Substances Control, Office of Environmental Health Hazard Assessment, or appropriately designated regulatory local health agencies to review and evaluate the adequacy of risk assessments.

   d. The discharger shall submit the risk assessment to the Regional Board in accordance with Section IV.B.3.b. of this policy. The Regional Board will coordinate the review of the risk assessment in accordance with the following hierarchy:

      (1) The Regional Board will first seek the assistance of any appropriate supporting health agency currently involved with the cleanup of the site.

      (2) If unsuccessful, the Regional Board will seek the assistance of

previously uninvolved appropriate health agencies.

(3) If unsuccessful, the Regional Board will seek the assistance of the California Department of Toxic Substances Control in accordance with the terms and conditions of the MEMORANDUM OF UNDERSTANDING BETWEEN THE DEPARTMENT OF HEALTH SERVICES AND THE STATE WATER RESOURCES CONTROL BOARD, THE REGIONAL WATER QUALITY CONTROL BOARDS FOR THE CLEANUP OF HAZARDOUS WASTE SITES. AUGUST 1, 1990.

4. Applicable state and federal statutes and regulations;

5. Relevant standards, criteria, and advisories adopted by other state and federal agencies;

6. Technical and economic feasibility of attaining background concentrations and of attaining concentrations lower than defined by 2 and 3 above. Technical and economic feasibility shall be determined in accordance with the following criteria:

   a. Technical feasibility shall be determined by assessing the availability of technologies which have been shown to be effective in reducing the pollutant concentrations to the established cleanup levels. Bench-scale and/or pilot-scale studies may be necessary to make this feasibility assessment.

   b. Economic feasibility refers to the objective balancing of the incremental benefit of attaining more stringent cleanup levels compared with the incremental cost of achieving those levels. Economic feasibility does not refer to the subjective measurement of the discharger's ability to pay the costs of cleanup.

   c. Applicable factors to be considered in the establishment of cleanup levels greater than background are listed in Chapter 15, Section 2550.4.

   d. The discharger's ability to pay is one factor to be considered in determining whether the cleanup level is reasonable. However, availability of economic resources to the discharger is primarily considered in establishing reasonable schedules for compliance with cleanup levels.

B. The Regional Board shall set ground water cleanup levels to attain background water quality, unless the discharger demonstrates that it is either technically or economically infeasible to attain background water quality. If the discharger makes such a demonstration to the satisfaction of the Regional Board, cleanup levels are set between background water quality concentrations and concentrations that meet all criteria in items A.2 and A.3 above. Within this concentration range, cleanup levels will be set at the lowest concentrations that are technically and economically feasible to achieve. In no case will cleanup levels be established below natural background conditions.

C. Compliance with cleanup levels must occur at all points throughout the plume or area of contamination to protect potential beneficial uses of water resources as required by California Water Code Sections 13000 and 13244 and Health and Safety Code Section 25356.1 (c).

D. The Regional Board may consider relaxing ground water cleanup levels that were previously established at levels more stringent than applicable water quality objectives, only when a final remedial action plan has been pursued in good faith and all of the following conditions are met:

   1. Modified cleanup levels meet the conditions listed in VI.A.1., VI.A.2., and VI.A.3. above; and

   2. An approved cleanup program has been fully implemented and operated for a period of time which is adequate to understand the hydrogeology of the site,

pollutant dynamics, and the effectiveness of available cleanup technologies; and

3. Adequate source removal and/or isolation is undertaken to eliminate or significantly reduce future migration of pollutants to ground water; and

4. The discharger has demonstrated that no significant pollutant migration will occur to other underlying or adjacent aquifers; and

5. Ground water pollutant concentrations have reached asymptotic levels (i.e., pollutant concentration reductions are no longer significant) using appropriate technology; and

6. Alternative remediation techniques for achieving cleanup levels have been evaluated and are inappropriate or not economically feasible.

VII. SOIL CLEANUP LEVELS

A. Soil pollution can present a health risk and a threat to water quality. The Regional Board designates soil cleanup levels for the unsaturated zone based upon threat to water quality and risk to human health or the environment. Guidance from the US EPA, Department of Toxic Substances Control, or the Office of Health Hazard Assessment is considered in determining health and environmental risks. Cleanup levels for contaminated soils which threaten water quality, shall be established in accordance with the following criteria:

   1. Concentrations of the residual leachable/mobile pollutants shall be equal to background concentrations unless background levels are technically or economically infeasible to achieve.

   2. Where background levels are technically or economically infeasible to achieve, soil cleanup levels shall be established to ensure that residual leachable/mobile pollutants will not cause, or threaten to cause, exceedances of applicable ground water cleanup levels or water quality objectives, and do not pose significant risks to health or the environment.

   3. Soil cleanup levels less stringent than background may be based on site specific technical evaluations of pollutant fate and transport processes, human health and environmental risk assessment methods as long as such methods are based on site specific field data, technically sound principles, and the criteria described in VII.A.2. above.

B. Where residual leachable/mobile soil pollutants which threaten water quality remain on site the discharger shall:

   1. Implement measures as necessary to ensure that soils with residual pollutants are covered or otherwise managed to minimize pollution of surface waters or exposure to the public; and

   2. Implement the applicable provisions of Chapter 15 to the extent that it is technologically or economically feasible to do so as described in State Board Resolution No. 92 - 49. This may include, but is not limited to, subsurface barriers or other containment systems, pollutant immobilization, toxicity reduction, and financial assurances.

C. The Regional Board shall generally require sampling to verify soil cleanup and may also require follow-up ground water monitoring. The degree of monitoring will reflect the amount of uncertainty associated with the soil cleanup level selection process. Follow-up ground water monitoring may be limited where residual concentrations of leachable/mobile pollutants in soils are not expected to adversely affect ground water quality.

VIII. TIME SCHEDULES

The Regional Board shall determine schedules for investigation, and cleanup and abatement, taking into account the following factors:

A. The degree of threat or impact of the discharge on water quality and beneficial uses;

B. The obligation to achieve timely compliance with cleanup and abatement goals and objectives that implement the applicable

Water Quality Control Plans and Policies adopted by the State and Regional Board;

C. The financial and technical resources available to the discharger; and

D. Minimizing the likelihood of imposing a burden on the people of the state with the expense of cleanup and abatement, where feasible.

OTHER PROGRAMS

CALIFORNIA WATER QUALITY ASSESSMENT (WQA)

The Water Quality Assessment (WQA) is a catalog of the State's major waterbodies and their water quality condition. Each Regional Board prepares and adopts a Regional WQA identifying and categorizing the major water bodies in each region. The California WQA is a compilation of the nine Regional WQAs which is adopted by the State Board. The WQA is updated as necessary every two years.

Water bodies are categorized as Good Quality Waters, Intermediate Quality Waters, Impaired Waters or Unknown Quality Waters. The definition of each of these categories is explained below:

Good Quality Waters: <u>are waters that support and enhance the designated beneficial uses.</u> Water bodies classified as good may be designated as a high priority by the Regional Board if a threat to water quality is present.

Intermediate Quality Waters: <u>are waters that support designated beneficial uses while there is occasional degradation of water quality.</u> For example, biological data may show minor changes in population densities and distribution; however, direct observation of the water shows the uses are supported. Intermediate quality waters also include those water bodies where there is an indication of suspected impairment but available data is inadequate to reach a definitive conclusion on the condition.

Impaired Waters: <u>are water bodies that cannot reasonably be expected to attain or maintain applicable water quality standards.</u> A water quality standard includes both State and Regional Board numeric and narrative water quality objectives and the beneficial use(s) the objectives are meant to protect. The interpretation that a water body is "*impaired*" may be clear when data indicate that adopted objectives are continually exceeded or that beneficial uses are not protected (e.g., health warnings are in effect). In many cases this determination will involve evaluating many sources of data to arrive at a best professional judgement by the Regional Board staff. A more detailed description of impairment for various classes of pollutants can be found in the criteria for the Clean Water Strategy.

Unknown Quality Waters: <u>are water bodies with unknown water quality where limited or no direct observations are available.</u>

The Water Quality Assessment serves several different purposes. The WQA provides the foundation of the State Board's Clean Water Strategy (CWS). The CWS is a management tool used to identify waterbodies of high concern and is used by the State Board to allocate resources to the highest priority water quality problems.

The WQA also satisfies several federal Clean Water Act requirements for lists and reports including those for Section 131.11, Section 303(d), Section 304(m), Section 304(s), Section 304(l), Section 314 and Section 319 lists. These federal lists are described below:

- ***Section 131.11:*** The 131.11 list describes segments which may be affected by toxic pollutants, or segments with concentrations of toxic pollutants that warrant concern.

- ***Section 303(d):*** The 303(d) list identifies those waters that do not meet water quality standards after application of technology based controls. Applicable water quality standards include the designated beneficial uses and the adopted water quality objectives.

- ***Section 304(m):*** The 304(m) list is a "*mini-list*" of waters not meeting State adopted numeric water quality objectives due to toxic sources after implementation of BAT/BCT.

- ***Section 304(s):*** The 304(s) list is a "*short-list*" of waters not achieving water quality standards due to point source discharges of toxic pollutants after implementation of BAT/BCT.

- ***Section 304(l):*** The 304(l) long list describes waters that are not meeting standards, objectives, or goals of the Clean Water Act due to point and nonpoint source discharges of any pollutants.

- ***Section 314:*** The 314 list describes lake priorities for restoration.

- ***Section 319:*** The 319 list describes impaired surface waters from nonpoint source problems due to both toxic and nontoxic pollutants.

The WQA reports to the public on the condition of the state's waterbodies in a highly summarized tabular format. It is organized by region by waterbody type. In some cases an entire watershed is included under one water quality classification. In other cases, segments of waterbodies are listed separately because of their unique differences or problems. Water quality problems for each waterbody are briefly described when known or suspected. As explained above, waterbodies are classified as good, intermediate, impaired and unknown. The size of each water body is also shown and is used to denote the extent of the waterbody listed under each water quality classification. For example, the WQA indicates that in Central Mission Bay, 1030 acres are good water quality and 10 acres are impaired. For waterbodies with water quality problems, the source is listed as point, nonpoint, or both. The WQA also indicates if a fact sheet has been prepared to further identify water quality problems and locations.

CALIFORNIA'S 303(d) PROCESS

The Clean Water Act, Section 303(d), requires the State to identify those waters that do not meet water quality standards after application of technology based controls. Applicable water quality standards include the designated beneficial uses and the adopted water quality objectives.

Waters identified under Section 303(d) are designated as Water Quality Limited Segments (WQLSs). Section 303(d) requires the establishment of a priority ranking of these WQLSs for purposes of developing Total Maximum Daily Loads (TMDLs), and establishing Waste Load Allocations (WLAs), and Load Allocations (LAs). The Total Maximum Daily Load (TMDL) is the amount of a pollutant that can be discharged into a water body and still maintain water quality standards. Pollutant loadings above the TMDL are expected to adversely affect water quality by causing receiving waters to exceed applicable water quality standards. The TMDL is the sum of waste load allocations (WLAs) for point sources of pollution, load allocations (LAs) for nonpoint sources of pollution and natural background sources, and a margin of safety. Allocations of pollutant loadings to point and nonpoint sources must be calculated to ensure that applicable water quality standards are not exceeded in the receiving water. After development of a 303(d) list and TMDLs, WLA, and LA, states are required to submit them to USEPA for review and approval.

The process that the State Board has for establishing and implementing the TMDLs as required by Section 303(d) is described in the "*California Report on Impaired Surface Waters*", dated July, 1992 [California 303(d) report]. The US EPA has endorsed the California TMDL process. The Regional Board will implement the California TMDL process as approved by US EPA to comply with Section 303(d) of the Clean Water Act.

In the California 303(d) report, the State Board identified the following four major activities needed to comply with Section 303(d): (1) the Water Quality Assessment (WQA); (2) identification of highest priority waters; (3) preparation of action plans (TMDL worksheets); and (4) a periodic review and update. The Clean Water Act dictates that appropriate revisions to Section 303(d) list be considered every 2 years.

The 303(d) list of WQLS is based on the WQA adopted by the Regional Board and State Board. The WQA is a catalog of the State's major waterbodies. The WQA process includes identifying the general condition of each waterbody and which federal lists including 303(d) list may apply. The Regional Board staff prepares the WQA based upon review of current information and public and agency input. Each Regional Board adopts its regional WQA at public meetings. These regional WQA are then compiled into the statewide WQA which is adopted by the State Board.

Action Plans (TMDL Worksheets) were requested to be prepared for three water bodies per region. The TMDL Worksheet requires a minimum of specific information which is required to address a 303(d) listed water body. The information in the TMDL Worksheet provides a summary of the problem, the location, the water quality target, and the activities intended to meet the target. The TMDL Worksheet is not intended to be a comprehensive watershed management plan. Instead the Worksheet is intended to identify projects that are on-going and actions which are required in order to reach the quantifiable target.

The TMDL Worksheets have three major sections which describe the waterbody of concern, the water quality target, and the actions required to meet the target.

The first major section of the TMDL Worksheet describes the location, areal extent, pollutants, sources, etc. This information is derived from the WQA database. The problem description provides a brief narrative to assist the reader in understanding the magnitude of the problem.

The "*Quantifiable Target*" is the second major section of the Worksheet and is the focal point for all of the actions. The term quantifiable target is intended to provide a more understandable goal instead of the Clean Water Act's use of the term Total Maximum Daily Load (TMDL). Put simply, the State's use of quantifiable target is to be considered a TMDL or a phased TMDL. The purpose of the target must be to improve, restore or protect the beneficial use identified as adversely affected. Measurable changes in the beneficial use may take years to accomplish after all of the measures are implemented.

The third major section of the TMDL Worksheet describes the implementation and monitoring strategy. The Clean Water Act uses the terms Waste Load Allocation (WLA) and Load Allocation (LA). WLAs are designated for point sources and LAs for nonpoint sources. These terms simply imply that one means to protect beneficial uses is to decide the maximum amount of a pollutant that can be added to a water body without affecting the use. Once a load has been determined these terms imply that the State simply allocates maximum loadings to various sources. This simplistic approach is not workable for most, if not all, of the water quality problems on California's 303(d) list.

The great majority of California's water quality problems are caused by nonpoint sources. Measuring, allocating, and regulating nonpoint source loads as if they were point sources is not practical. The measures that need to be implemented are more complex and require coordination of numerous activities over long periods of time. For these reasons the California 303(d) Report replaced the use of the terms WLA and LA with Implementation Strategy. The Implementation Strategy includes studies, monitoring, basin planning, permits and demonstration projects.

As noted above, this TMDL process is developmental and will be subjected to periodic review and modification every 2 years as needed. The update will include an assessment of progress made on the scheduled actions identified in the TMDL worksheets. The update will be conducted by State and Regional Board staff, as well as by US EPA representatives. The update will address the following:

(1) Water body listing and targeting procedures, criteria, and results.

(2) Minimum requirements for establishing "*Quantifiable Targets*", and Implementation Measures and how these terms meet the requirements of the Act for establishing TMDLs, WLAs, and LAs.

(3) Progress in establishing Quantifiable Targets for targeted water bodies.

(4) Adequacy of public participation.

(5) Progress in targeting US EPA funds and programs toward actions required on targeted water bodies.

(6) Ability of the State and US EPA to integrate the TMDL process into other programs such as the Coastal Nonpoint Control Program.

(7) How to integrate threatened and unknown waters into the process.

(8) How this program can assist the State in managing water quality problems on a watershed basis.

SAN DIEGO BAY TOTAL MAXIMUM DAILY LOAD (TMDL) WORKSHEETS

The first TMDL worksheets in the San Diego Region are for San Diego Bay. These worksheets describe the water quality limited segments in San Diego Bay and the sources of contaminants. They also contain an Implementation Strategy which includes a number of projects with interim deadlines. The Regional Board is committed to achieving these interim deadlines, as time and resources allow. The TMDL worksheet for San Diego Bay contains the following quantifiable targets which the Regional Board plans to achieve by January 1, 1997.

(1) Compliance with the following numerical quantifiable water quality targets for water quality limited segments in San Diego Bay:

Pollutant	Objective	Time Frame
PCBs	30 ng/l	daily average
PCBs	70 pg/l	30-day average
Copper	2.9 ug/l	1-hour average
Mercury	2.1 ug/l	1-hour average
Mercury	25 ng/l	30-day average
TBT	5.0 ng/l	30-day average

(2) Termination of all illicit waste discharges to San Diego Bay.

(3) Cleanup of sediment in Convair Lagoon by Teledyne Ryan Aeronautical to less than an action level of 10 mg/kg PCB (dry weight) as required by Cleanup and Abatement Order No. 86-92.

(4) Cleanup of contaminated sediment caused by illicit boatyard waste discharge within Commercial Basin to less than 530 mg/kg copper (dry weight) and 4.8 mg/kg mercury (dry weight) as required by Cleanup and Abatement Order Nos. 88-79, 89-31, 88-78, 89-32, and 88-86. TBT concentrations in Commercial Basin water and sediments have been greatly reduced due to natural degradation processes and recent changes in regulations mandating reduction in the use of TBT in antifouling paint for small boats. The water column TBT concentration in Commercial Basin is expected to continue to decrease to below the water quality objective.

(5) Termination of all copper ore discharges to San Diego Bay from the 24th Street Marine Terminal in accordance with Cleanup and Abatement Order 85-91.

(6) Cleanup of bay sediment adjacent to the 24th Street Marine Terminal to less than 1,000 mg/kg copper (dry weight) by in accordance with Cleanup and Abatement Order 85-91.

(7) Improvement of the assessment of water quality in San Diego Bay by establishing a bay wide sediment and water column monitoring program to determine the overall water quality of San Diego Bay.

(8) Review each year, as staff resources allow, of available water quality data and general progress towards achieving the quantifiable targets and adjustment of actions as necessary.

(9) Removal of Convair Lagoon, Commercial Basin, Shelter Island Yacht Basin, and the 24th Street Marine Terminal portions of San Diego Bay from the Clean Water Act Section 303(d) list of impaired waterbodies.

GROUND WATER MANAGEMENT

Ground water management programs can both enhance water quality and protect beneficial uses of ground water in the larger basins of the San Diego Region. These management programs consist of measures for the periodic monitoring and assessment of ground water levels and quality; the planned extraction and export of poor quality ground water with recharge of better quality water from an outside source; controls established on the use of ground water within the basin; and controls on inflow of poor quality water from outside the basin.

Because of the limited amount of natural recharge, the use of reclaimed water for ground water recharge must be considered in any effective ground water management program in the San Diego Region. For this reason, agencies involved in wastewater disposal play a vital role in the development of these programs. Several local and state agencies, as well as some private consultants have been studying ways to encourage this approach for protecting the Region's ground water basins. Proponents have noted that there are many advantages in storing water and reclaimed water in ground water aquifers as opposed to surface water reservoirs. Underground facilities are less costly than surface storage facilities and they are less land intensive than surface water reservoirs. Also, the ground water aquifers can serve as distribution systems, minimizing the need for surface water transport facilities. In addition, reclaimed water stored in ground water aquifers are not subject to evaporative losses.

Filtration through the soils in the basin can provide additional treatment of the reclaimed water, and injection of reclaimed water along the coastal strip can be used to help combat seawater intrusion.

Ninety percent of the potable water supply for the San Diego Region comes from two major sources of imported water. Water from the Colorado River is imported through the Colorado River Aqueduct and water from northern California is imported through the State Water Project. Both sources are blended to form San Diego Region's water supply. Additionally, approximately ten percent of the water supply comes from local reservoirs. The quality of the imported water has been showing increases in mineral content, particularly boron, percent sodium and total dissolved solids (TDS). Direct use of this supply reflects the mineral content of Colorado River water. Each additional use of the water (reclaimed from this supply) for irrigation and ground water recharge incrementally increases the dissolved mineral content.

Water reclamation activities should, then, be focused on local benefits and impacts on ground water quality. Proposed projects should be examined in terms of:

- Areas with high reclaimed water demands;
- Constituent concentrations in relation to basin plan objectives;
- Assimilative capacity of receiving basins; and
- Potential for improving ground water quality in near-surface and deep aquifers.

The major basins in San Diego County that have been studied for the implementation of a ground water management plan are the San Pasqual Valley, the Lower San Luis Rey Valley, Lower San Dieguito River Valley, Santee Basin, Lower Sweetwater River Basin, Lower Tijuana River Basin, Upper Santa Margarita River Basin, and the San Juan Creek Basin. A goal of these management plans is to rejuvenate the quality of the ground water in these basins to meet basin objectives. The general plan is to pump the poor quality ground water from these basins to the ocean, and recharge the basins with reclaimed and natural run off waters, which will then be extracted for beneficial use when water quality objectives are met. The following is a description of the proposed programs.

SAN PASQUAL VALLEY

The San Pasqual ground water management plan would utilize between 5000 and 8000 acre-feet per year of reclaimed water for agricultural irrigation and ground water recharge, thus reducing the need for this amount of imported water. The reclaimed water is available from the City of Escondido Hale Avenue Wastewater treatment plant, which presently discharges directly to the ocean. The City of San Diego owns 7,436 acres of land in the San Pasqual Valley which has been set aside as an agricultural preserve. There is 38,000 acre-feet of usable ground water in the valley. The western portion of the valley has degraded ground water quality, and has been designated as the reclamation basin. There is a plan to pump this poor quality ground water to the ocean and recharge the basin with reclaimed water of higher quality, to provide a positive salt balance. When the ground water quality improves, it will be used for irrigation of parks and golf courses, the Wild Animal Park and for landscape and freeway irrigation. There is a large and continued demand for irrigation water in the area. The eastern portion of the basin is designated as potable, and efforts will be made to keep the quality of the ground water from degrading. A third part of the basin, called the Narrows, is located between the San Pasqual reclamation basin and the Hodges basin. It has a very small capacity and will be used to prevent surface and ground water flows of reclaimed water from entering Lake Hodges Reservoir, a potable storage reservoir for the City of San Diego.

LOWER SAN LUIS REY VALLEY

Imported water comprises almost the entire supply for this basin. Ground water use is limited due to deteriorated water quality. There are four operating wastewater treatment facilities in this basin that could supply over 12,000 acre-feet per year of treated wastewater that could be used for ground water recharge or other beneficial uses. At the present time reclaimed water is only being used for freeway landscape irrigation. Many springs and wells that used to be ephemeral, now flow all year long with imported irrigation return water. In many areas of this basin, reclaimed water is of higher quality than the existing ground water quality. Use of reclaimed water can be utilized to improve the conditions of the ground water quality.

LOWER SAN DIEGUITO RIVER VALLEY

The San Dieguito ground water management plan includes the utilization of approximately 2000 to 4000 acre-feet per year of recharge of reclaimed water. The reclaimed water will initially be used for irrigation, rejuvenation of non-potable ground water resources and for creating a fresh water barrier near Interstate 5. Water from the City of Escondido's Hale Avenue Reclamation Facility will be treated to tertiary treatment standards and pumped to the reclamation area in the San Dieguito Valley, where it will undergo recharge to replace poor quality water pumped to the ocean or desalted and treated to potable water standards. This reclaimed water will be used for agriculture and landscape irrigation. As the ground water quality improves, this basin could supply water to areas outside the basin, such as La

Jolla Valley and North City West for landscape irrigation. The San Dieguito Basin lacks a centralized wastewater collection system. Water services are provided by four different governmental agencies, and sewer service is provided by eight governmental agencies. There are plans to interconnect the existing and proposed treatment facilities into an integrated system which can supply reclaimed water throughout the basin. The benefits of a ground water management plan in this basin include inexpensive storage and distribution of excess reclaimed water flows available during low irrigation months. This ground water management plan will result in improved ground water quality and will provide an efficient use of available water resources.

SANTEE

The Padre Dam Municipal Water District is reviewing the feasibility of a comprehensive ground water management plan for Santee Basin. Ground water from the eastern part of the basin is used for domestic, agricultural and stock watering purposes, and generally has TDS concentrations of 260-1310 mg/l. The ground water in the main portion of the Santee basin has TDS concentrations of up to 2,990 mg/l. In times of drought, this water could supplement imported water supplies. At the present time, reclaimed water is used only for recreational purposes at Santee Lakes Campground, and Park. The Padre Dam Municipal Water Districts 1.0 MGD tertiary and 2.0 MGD secondary capacity treatment facility provides 1,200 acre feet per year of reclaimed water which is used for the Santee Lakes. Water from Lake No. 1 is used to irrigate the landscaping of the surrounding the lakes. Currently only 1 MGD of the plant's capacity is being utilized. All flows over 1 MGD are sent to the Metropolitan Sewer System. Future water reuse projects include another 1,200 acre-feet per year projected need for the Santee Town Center and city park and approximately 1,400 acre-feet per year for industrial use. High quality reclaimed water could provide a potential source for recharging the ground water basin and improve existing water quality. Careful management of the basin could mitigate impacts of a high water table to prevent resurfacing of reclaimed water.

LOWER SWEETWATER RIVER BASIN

The Sweetwater Authority completed initial ground water basin studies of the Lower Sweetwater River Basin in June, 1993. As part of the agency's water resources program, the Sweetwater Authority is reviewing the feasibility of using ground water from the Lower Sweetwater Basin to augment its potable water supply.

The Lower Sweetwater Basin extends along the Sweetwater River from the Sweetwater Reservoir Dam approximately eight miles to San Diego Bay. It consists of an alluvial aquifer and the underlying San Diego Formation aquifer. Current use of ground water within the basin is limited, with turf irrigation the predominate use. The Basin is recharged from natural runoff and water from the upstream urban runoff diversion system which, in part, surrounds the Sweetwater Reservoir and spills over the Sweetwater Dam. Water quality data indicate that the ground water is moderately saline with total dissolved solids concentrations averaging 1400 mg/l.

The Sweetwater Authority is currently evaluating the feasibility of constructing ground water extraction wells, a water treatment facility, a brackish water pipeline from each well to the treatment facility, a product water delivery pipeline and pump station, and a brine disposal pipeline. Preliminary findings indicate that extraction and treatment (to potable water standards) of 1600 to 3600 acre-feet per year of ground water from the Lower Sweetwater River Basin is feasible. Some additional production and/or ground water storage may be available in the San Diego Formation aquifer. San Diego Formation hydrogeological studies are ongoing; however preliminary findings indicate that the managed storage potential in the aquifer may be significant.

LOWER TIJUANA RIVER BASIN

The Tijuana Valley County Water District adopted a Resolution of Intention to prepare a Ground Water Management Plan in accordance with California Water Code Sections 10750 - 10755 in February, 1993. The stated goals of the District are summarized as follows:

- Protect ground water quality and quantity in the Tijuana River Basin for existing and future property owners, agricultural and recreational users;
- Develop the ground water basin into a sub-regional water supply reservoir;
- Provide water to Valley customers and sell excess ground water to customers outside the Basin;
- Implement measures for ground water recharge with surface floodwater containment and runoff

control facilities, and reclaimed water, if available; and

- Work with the City and County of San Diego and appropriate state and federal agencies, to propose a workable international floodwater and wastewater control solution for the Valley.

The District's current plans include development of ground water management alternatives for the production and treatment of approximately 2,500 acre- feet per year of potable ground water.

UPPER SANTA MARGARITA RIVER BASIN

In Riverside County, the upper Santa Margarita River Basin contains several million acre-feet of high quality ground water in the Pauba/ Temecula aquifer system. The Rancho California Water District is considering a plan that will implement the use of reclaimed water for beneficial uses and for ground water recharge. Some changes in basin plan water quality objectives are needed to develop this project. The Santa Rosa SBR Water Reclamation Facility, near Temecula, percolates reclaimed waters through highly permeable alluvium, which recharge and mix with ground water in an upper aquifer. A tentative projection calls for 5 MGD of reclaimed water production by the year 2000.

SAN JUAN CREEK

In Orange County, a management plan is underway in the San Juan Creek Basin. Ground water supplies are limited in this basin due to low recharge and poor quality. The capacity of the San Juan Creek Basin is approximately 90,000 acre-feet. With proper management of the ground water basin, approximately 50,000 acre-feet per year (AF/Y) could be utilized. The basin currently provides approximately 5,000 AF/Y of usable ground water - less than 2,000 AF/Y is used for urban supply and approximately 3,000 AF/Y is used for agricultural and irrigation purposes. The only ground water that meets drinking water standards and most agricultural requirements is found in the highlands of the northeasternmost portion of the basin. Ground water quality data indicate that the TDS concentration ranges from 300 mg/l (in the northeasternmost portion of the basin) to 1850 mg/l (in the lower and western portion of the basin). Approximately 3.0 million gallons per day (MGD) of treated wastewater is being reclaimed for irrigation of a golf course, park, greenbelt and landscaping. In addition, reuse is proposed for effluent from Moulton-Niguel Water District's Water Reclamation Plant 3A, which has been expanded from a capacity of 0.5 million gallons per day to 2.4 MGD, and for effluent from Trabuco Canyon Water District's Robinson Ranch Wastewater Reclamation Plant, which has a capacity of 0.25 MGD. The TDS concentration in secondary effluent in the basin ranges from 500 to 900 mg/l. Reclaimed water could be used to enhance surface water flows and quality or to improve ground water quality in the lower and western parts of the basin. The use of reclaimed water for urban or agricultural irrigation could help reduce demands for ground and imported water. A ground water monitoring plan for the San Juan Creek Basin has been proposed by the Department of Water Resources which would identify any basinwide changes that may occur in water quality that could affect current and potential beneficial uses. This program would provide an early warning that ground water supplies may be endangered.

SALT BALANCE

Salt balance is a theoretical concept where the total mass of dissolved minerals entering a ground water basin system from all sources is equal to the total mass of dissolved minerals leaving the system, either through extraction or natural outflow. It is preferable to have a balance of the salt inflows and outflows to maintain water quality in a basin.

Utilizing the following management measures would enhance the prospects for salt balance for ground water basins in the Region. These measures include:

- Limiting ground water extractions from basins to perennial-yield levels;
- Increasing the efficiency of irrigation practices;
- Reducing fertilizer application;
- Improving the quality of imported water used for irrigation;
- Use storm water runoff for ground water recharge, since storm water is low in total dissolved solids.
- Extract and demineralize poor quality ground water when this option becomes economically feasible.

- Utilize intrusion barriers and regulate ground water pumpage to prevent and reverse problems of salt water intrusion.

SOLE SOURCE AQUIFER PROGRAM

The Safe Drinking Water Act of 1974 provides for a sole source aquifer program. Under this program, US EPA may designate an aquifer as a sole source if it provides more than half of the drinking water for a given area, and no other affordable sources of drinking water exist. The Act provides that, when certain criteria are met, a group may petition the US EPA to designate a sole source aquifer. Thus, in May of 1993, a local citizens' group, Backcountry Against Dumps petitioned the US EPA to designate the Campo/ Cottonwood Creek aquifer as the sole source of drinking water in a 400 square-mile area. The Campo/Cottonwood aquifer is bordered by Mexico to the south, and includes within its borders reservations for the Campo, La Posta, Manzanita, and Cuyapaipe Indian tribes. The aquifer lies about 20 miles east of El Cajon, California. This designation means the US EPA may review proposed projects in the aquifer area which receive partial federal funding and which could contaminate the aquifer or endanger public health. Examples of projects potentially subject to review include construction or renovation of housing projects, airports, and highways. Projects that do not receive some federal funds would not be reviewed.

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CHAPTER 5
PLANS AND POLICIES

5. PLANS AND POLICIES

INTRODUCTION

The State Board has adopted several statewide Water Quality Control Plans that are incorporated by reference into the Regional Board Basin Plan. Additionally, both the State and Regional Boards adopt policies, separate from the plans, that provide detailed direction on the implementation of certain plan provisions. In the event that inconsistencies exist among various plans and policies, the more stringent provisions apply.

This update of the San Diego Region's Basin Plan has been revised to be consistent with all State and Regional Board plans and policies adopted to date. All of the Regional Board plans and policies which implement, interpret, or make specific the Basin Plan and which are listed later in this chapter have been incorporated in this Basin Plan and are superseded. Following are summaries of these plans and policies.

STATE BOARD PLANS AND POLICIES

ANTIDEGRADATION POLICY (STATE BOARD RESOLUTION NO. 68-16)

One of the most significant water quality control policies with respect to the protection of water quality is the *Statement of Policy with Respect to Maintaining High Quality of Waters in California* (State Board Resolution No. 68-16), also known as the State Antidegradation Policy. This policy was adopted on October 28, 1968. It satisfies the federal Clean Water Act antidegradation policy requirement (40 CFR 131.12). The State Antidegradation Policy requires that high quality waters of the state are maintained to the maximum extent possible, even where that quality is better than needed to protect beneficial uses. Specific findings must be made in order to allow any changes in water quality. Changes in water quality are allowed only if the change is consistent with maximum benefit to the people of the State, does not unreasonably affect present and anticipated beneficial uses, and does not result in water quality less than that prescribed in water quality control plans or policies.

Actions which may adversely affect surface water quality must satisfy both Resolution No. 68-16 and the federal antidegradation policy (40 CFR 131.12). The requirements of the two policies are similar: the federal policy requires that existing instream uses and the level of water quality necessary to protect them must be maintained and protected. In addition, a reduction in water quality can be allowed only if there is a demonstration that such a reduction is necessary to accommodate important economic or social development.

STATE POLICY FOR WATER QUALITY CONTROL

The *State Policy for Water Quality Control* serves as the general basis for water quality control policies and was adopted by the State Board on July 6, 1972. The policy declares the State Board's intent to protect water quality through the implementation of water resources management programs.

The policy provides that water quality control plans adopted by the State Board will include minimum requirements for effluent quality. Water quality control plans will also specifically define the maximum constituent levels acceptable for discharge to various waters of the State. However, the policy allows discretion in the application of the latest available technology for the design and operation of wastewater treatment systems. The policy states that secondary treatment systems are the minimum acceptable level of treatment and that advanced treatment systems will be required where necessary to meet water quality objectives.

The policy contains twelve general principles to implement the provisions and intent of the Porter-Cologne Act. These principles are listed below:

(1) Water rights and quality control decisions must assure protection of available fresh water and marine water resources for maximum beneficial use.

(2) Municipal, agricultural, and industrial wastewaters must be considered as a potential integral part of the total available fresh water resource.

(3) Coordinated management of water supplies and wastewaters on a regional basis must be promoted to achieve efficient utilization of water.

(4) 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 effluents and residuals.

(5) 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 which 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.

(6) Wastewater treatment systems must provide sufficient removal of environmentally hazardous substances which cannot be controlled at the source to assure against adverse effects on beneficial uses and aquatic communities.

(7) Wastewater collection and treatment facilities must be consolidated in all cases where feasible and desirable to implement sound water quality management programs based upon long-range economic and water quality benefits to an entire basin.

(8) Institutional and financial programs for implementation of consolidated wastewater management systems must be tailored to serve each particular area in an equitable manner.

(9) Wastewater reclamation and reuse systems which assure 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 resource needs of an area and incorporate provisions for salinity control and disposal of nonreclaimable residues.

(10) Wastewater management systems must be designed and operated to achieve maximum long-term benefit from the funds expended.

(11) Water quality control must be based on the latest scientific findings. Criteria must be continually refined as additional knowledge becomes available.

(12) 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.

AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE (RESOLUTION NO. 74-28)

The Regional Boards were required to select areas in coastal waters which contain "*biological communities of such extraordinary, even though unquantifiable, value that no acceptable risk of change in their environments as a result of man's activities can be entertained.*" In the San Diego Region, Areas of Special Biological Significance (ASBS) include the following:

- ***San Diego - La Jolla Ecological Reserve, San Diego County:*** Ocean waters within the boundaries of the City of San Diego, County of San Diego, State of California, as follows: beginning at the most northerly point of Goldfish Point as shown on La Jolla Park Map No. 352 filed in the office of the County Recorder of said county, thence in a northerly direction to a point being the intersection of longitude 117° 16' 15" west with the easterly prolongation of the southerly line of Pueblo Lot 1298 as shown on the map of Pueblo Lands of San Diego made by James Pascoe known as miscellaneous map No. 36 filed in the office of the County Recorder as said county, thence easterly along said prolongation of the southerly line of Pueblo Lot 1298 to the intersection with the mean high tide line, thence in a generally southerly direction along said mean high tide line to the point of beginning.

- ***Heisler Park Ecological Reserve, Orange County:*** Ocean waters within a line beginning at the intersection of the line of mean high tide with the westerly boundary line of Heisler Park, as described in a deed to the City of Laguna Beach, recorded in book 1666, page 144, Official

Records Orange County, California; thence south 16° 21' west 800 feet more or less to the line of the Laguna Beach Marine Life Refuge, as per Division 7, Chapter 1, Article 2, Section 10904, State of California Fish and Game Code; thence along said marine life refuge south 73° 39' east, 2,400 feet more or less to the easterly boundary of said refuge; thence along said easterly boundary north 14° 58' west, 700 feet more or less to the line of mean high tide in a westerly direction to the point of beginning.

- ***San Diego Marine Life Refuge, San Diego County:*** Ocean waters within that portion of Fish and Game District 19 consisting of that certain strip of land lying between the westerly edge of Pueblo Lot No. 1298 of the Pueblo Lands of the City of San Diego, according to the official map of said pueblo lands as made by James Pascoe, and filed in the office of the County Recorder of said County of San Diego, and the mean high tide line opposite to and west of said pueblo lot, which said strip of land is bounded on the north by the northerly boundary line of said pueblo lot extended westerly and on the south by the southerly boundary line of said pueblo lot extended westerly; together with the state waters of the State of California adjacent thereto, being those state waters which lie between said extended northerly and southerly boundaries of said pueblo lot and extend westerly from said mean high tide line for a distance of 1,000 feet.

The impact of the adoption of "*Areas of Special Biological Significance*" on the Basin Plan is that discharges of wastewaters and/or heat must be sufficiently removed spatially from these areas to assure the maintenance of natural water quality in the area. Existing wastewater and/or heat discharges which influence the natural water quality in the designated areas must be phased out as promptly as possible. Both the Thermal and Ocean Plans recognize and refer to "*Areas of Special Biological Significance*" in coastal waters of the state.

ENCLOSED BAYS AND ESTUARIES POLICY (RESOLUTION NO. 74-43)

The *Water Quality Control Policy for Enclosed Bays and Estuaries of California* (Enclosed Bays and Estuaries Policy) was adopted by State Board Resolution No. 74-43 on May 16, 1974. This policy is designed to prevent water quality degradation and protect beneficial uses in enclosed bays and estuaries. The policy outlines water quality principles and guidelines to achieve these objectives. Decisions by the Regional Board must be consistent with the provisions designed to prevent water quality degradation.

The policy lists principles of management that include the State Board's desire to phase out all discharges of municipal wastewaters and industrial process waters (exclusive of cooling waters) to enclosed bays and estuaries as soon as practicable. Exceptions to this provision may be granted by a Regional Board only when the Regional Board finds that the wastewater in question would consistently be treated and discharged in such a manner that it would enhance the quality of the receiving waters above that which would occur in the absence of the discharge. Discharge prohibitions are placed on the following:

- New discharges of municipal wastewaters and industrial process waters (exclusive of cooling water, treated ballast water and innocuous nonmunicipal wastewater discharges, such as clear brines, wash water and pool drains) which are not consistently treated and discharged in a manner that would enhance the quality of the receiving waters as defined in the Policy;

- 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;

- Silt, sand, soil, clay, or other earthen materials from onshore operations including mining, construction, and lumbering in quantities which unreasonably affect or threaten to affect beneficial uses;

- Materials of petroleum origin in sufficient quantities to be visible or in violation of waste discharge requirements (except for scientific purposes);

- Radiological, chemical, or biological warfare agent or high-level radioactive waste; and

- Discharge or by-pass of untreated waste.

POLICY ON THE USE AND DISPOSAL OF INLAND WATERS USED FOR POWERPLANT COOLING (RESOLUTION NO. 75-58)

The *Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling* (Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling) was adopted by State Board Resolution No. 75-58 on June 19, 1975. The purpose of the policy is to provide consistent statewide water quality principles and guidance for adoption of discharge requirements, and implementation actions for powerplants which depend upon inland waters for cooling. In addition, this policy is intended to protect the beneficial uses of the State's water resources by keeping the consumptive use of freshwater for powerplant cooling to a minimum. The Regional Board is responsible for the enforcement of this policy.

The policy is based on the seven principles listed below:

(1) It is the State Board's position that from a water quantity and quality standpoint the source of powerplant cooling water should come from the following sources in this order of priority depending on site specifics such as environmental, technical, and economic feasibility consideration:

- Wastewater being discharged to the ocean;

- Ocean;

- Brackish water from natural sources or irrigation return flow;

- Inland wastewaters of low TDS; and

- Other inland waters.

(2) Where the State Board has jurisdiction, use of fresh inland waters for powerplant cooling will be approved by the Board 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.

(3) In considering issuance of a permit or license to appropriate water for powerplant cooling, the Board will consider the reasonableness of the proposed water use when compared with other present and future needs for the water source and when viewed in the context of alternative water sources that could be used for the purpose. The Board will give great weight to the results of studies made pursuant to the Warren-Alquist State Energy Resources Conservation and Development Act and carefully evaluate studies by the Department of Water Resources made pursuant to Sections 237 and 462, Division 1 of the California Water Code.

(4) The discharge of blowdown water from cooling towers or return flows from once-through cooling shall not cause a violation of water quality objectives or waste discharge requirements established by the Regional Boards.

(5) The use of unlined evaporation ponds to concentrate salts from blowdown waters will be permitted only at salt sinks approved by the Regional and State Boards. Proposals to utilize unlined evaporation ponds for final disposal of blowdown waters must include studies of alternative methods of disposal. These studies must show that the geologic strata underlying the proposed ponds or salt sink will protect usable groundwater.

(6) Studies of availability of inland waters for use in powerplant cooling facilities to be constructed in Central Valley basins, the South Coastal Basins or other areas which receive supplemental water from Central Valley streams as for all major new uses must include an analysis of the impact of such use on Delta outflow and Delta water quality objectives. The studies associated with powerplants should include an analysis of the cost and water use associated with the use of alternative cooling facilities employing dry, or wet/dry modes of operation.

(7) The State Board encourages water supply agencies and power generating utilities and agencies to study the feasibility of using wastewater for powerplant cooling. The State

Board encourages the use of wastewater for powerplant cooling where it is appropriate. Furthermore, Section 25601(d) of the Warren-Alquist Energy Resources Conservation and Development Act directs the water and other advances in powerplant cooling and Section 462 of the Waste Water Reuse Law directs the Department of Water Resources to "*...conduct studies and investigations on the availability and quality of waste water and uses of reclaimed waste water for beneficial purposes including, but not limited to ... and cooling for thermal electric powerplants.*"

In addition, the policy contains three discharge prohibitions. The prohibitions are listed below:

(1) The discharge to land disposal sites of blowdown waters from inland powerplant cooling facilities shall be prohibited except to salt sinks or to lined facilities approved by the Regional and State Boards for the reception of such wastes.

(2) The discharge of wastewaters from once-through inland powerplant cooling facilities shall be prohibited unless the discharger can show that such a practice will maintain the existing water quality and aquatic environments of the State's water resources.

(3) The Regional Boards may grant exceptions to these discharge prohibitions on a case-by-case basis in accordance with exception procedures included in the *Water Quality Control Plan for Control of Temperature In the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California*.

THERMAL PLAN (RESOLUTION NO. 75-89)

The *Water Quality Control Plan for the Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan) was adopted by the State Board in 1971, revised in 1972 and revised again on September 18, 1975. The Thermal Plan specifies water quality objectives and general water quality provisions for new and existing discharges into enclosed bays, estuaries, cold interstate waters, warm interstate waters and coastal waters. The State and Regional Boards administer the plan by establishing waste discharge requirements for elevated temperature wastes. Existing and future dischargers of thermal waste are required to conduct studies to define the effect of the discharge on beneficial uses and, for existing discharges, determine design and operating changes which would be necessary to achieve compliance with the provisions of the Thermal Plan.

Existing waste discharge requirements are required to be reviewed to determine any necessary revisions, changes in monitoring programs and the need for studies of the effect of the thermal discharge on beneficial uses. Proposed thermal dischargers may be required to submit studies prior to the establishment of WDRs. Appropriate post discharge studies are also required by the Regional Board. The Thermal Plan specifies that the Regional Board shall outline the scope and design of any necessary studies to include the following as applicable:

(1) Existing conditions in the aquatic environment;

(2) Effects of the existing discharge on beneficial uses;

(3) Predicted conditions in the aquatic environment with waste discharge facilities designed and operated in compliance with the provisions of the plan;

(4) Predicted effects of the proposed discharge on beneficial uses;

(5) An analysis of costs and benefits of various design alternatives; and

(6) The extent to which intake and outfall structures are located and designed so that the intake of planktonic organisms is at a minimum, waste plumes are prevented from touching the ocean substrate or shorelines, and the waste is dispersed into an area of pronounced along-shore or offshore currents.

The Thermal Plan further specifies that WDRs adopted for discharges of thermal wastes shall be monitored in order to determine compliance with effluent or receiving water temperature requirements. For significant thermal discharges, the State or Regional Boards shall require expanded monitoring programs to assess whether the thermal discharge continues to provide adequate protection to the beneficial uses of the water. The State or Regional Board may require the discharger(s) to pay a public agency or other appropriate person an amount sufficient to carry out the expanded monitoring program if:

(1) The discharger has previously failed to carry out a monitoring program satisfactory to the State or Regional Board; or

(2) More than a single facility, under separate ownerships, may significantly affect the thermal characteristics of the body of water, and the owners of such facilities are unable to reach agreement on a cooperative program within a reasonable time period specified by the State or Regional Board.

POLICY WITH RESPECT TO WATER RECLAMATION IN CALIFORNIA (RESOLUTION NO. 77-1)

The *Policy with Respect to Water Reclamation in California* (Reclamation Policy) was adopted by the State Board on January 6, 1977. The Reclamation Policy provides that the water resources of the State be put to beneficial use to the fullest extent of which they are capable. The policy provides that water resources shall not be wasted, nor be put to an unreasonable use, nor be used in an unreasonable method.

This policy commits both the State and Regional Board to support reclamation and to undertake all possible steps to encourage the development of water reclamation facilities to reclaim water to supplement existing surface and ground water supplies. It requires the Regional Board to conduct reclamation surveys and specifies actions to be implemented by the State and Regional Board and other agencies.

The State Board adopted the four following principles in order to implement the Reclamation Policy. These principles are listed below:

(1) The State and Regional Boards shall encourage, and consider or recommend for funding, water reclamation projects which meet the conditions below and which do not adversely impact vested water rights or unreasonably impair instream beneficial uses or place a unreasonable burden on present water supply systems:

  (A) Beneficial use will be made of wastewaters that would otherwise be discharged to marine or brackish receiving waters or evaporation ponds,

  (B) Reclaimed water will replace or supplement the use of fresh water or better quality water,

  (C) 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.

(2) The State and Regional Boards shall encourage reclamation and reuse of water in water-short areas of the State, encourage water conservation measures which further extend the water resources of the State, and encourage other agencies, in particular the Department of Water Resources, to assist in implementing this policy.

(3) The State and Regional Boards recognize the need to protect the public health including potential vector problems and the environment in the implementation of reclamation projects.

(4) In implementing these principles, the State and/or Regional Board shall take appropriate actions, recommend legislation, and recommend actions by other agencies in the areas of planning, project funding, water rights, regulation and enforcement, research and demonstration, and public involvement and information.

This resolution has been reprinted at the end of this Chapter.

POLICY ON THE DISPOSAL OF SHREDDER WASTE (RESOLUTION NO. 87-22)

The *Policy on the Disposal of Shredder Wastes* (Shredder Waste Disposal Policy) was adopted on March 19, 1987. This policy permits the disposal of shredded 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 Boards. Hazardous and nonhazardous shredder waste may be disposed of in appropriate Class III landfills where doing so would not cause water quality impairment. The policy specifies the shredder waste must not exceed PCB levels of 50 mg/kg. Also, the shredder waste must be disposed on the last and highest lift in a closed disposal cell or in an isolated cell solely designated for the disposal of shredder waste.

SOURCES OF DRINKING WATER POLICY (RESOLUTION NO. 88-63)

The *Sources of Drinking Water Policy* was adopted by the State Board on May 19, 1988. The policy provides that all surface and ground waters of the State are considered to be suitable or potentially suitable for municipal or domestic water supply and should be so designated by the Regional Boards. Those waters excepted under the policy include the following:

(1) Surface or ground waters where the total dissolved solids exceed 3,000 mg/l and it is not reasonably expected by the Regional Boards to supply a public water system;

(2) Surface or ground waters which have been contaminated and can not be reasonably treated for domestic use using either Best Management Practices or best economically achievable treatment practices;

(3) Surface or ground waters which do not provide sufficient water for extraction of 200 gallons per day;

(4) Surface waters which are in systems designed or modified to carry municipal, industrial, agricultural or mining wastewaters, or storm water runoff.

(5) Surface waters in systems designed or modified for the primary purpose of conveying or holding agricultural drainage waters, provided that the discharge from such systems is monitored to assure compliance with all relevant water quality objectives as required by the Regional Boards.

(6) Ground waters where the aquifer is regulated as a geothermal energy producing source or has been exempted administratively pursuant to 40 Code of Federal Regulations, Section 146.4 for the purpose of underground injection of fluids associated with the production of hydrocarbon or geothermal energy, provided that these fluids do not constitute a hazardous waste under 40 CFR, Section 261.3. This resolution has been reprinted at the end of this Chapter.

NONPOINT SOURCE MANAGEMENT PLAN (RESOLUTION NO. 88-123)

The *Nonpoint Source Management Plan* was adopted by the State Board on November 15, 1988, pursuant to Section 319 of the federal Clean Water Act. Section 319 requires each state to prepare a Nonpoint Source Management Plan and to conduct an assessment of the impact nonpoint sources have on the state's waterbodies. In response to these requirements, the State Board adopted the Nonpoint Source Management Plan (NPSMP) in 1988 and the Water Quality Assessment in 1990. The NPSMP established a statewide policy for managing polluted runoff in California. The plan identifies three management approaches which are used by the State and Regional Boards to address nonpoint source problems:

(1) Voluntary implementation of best management practices;

(2) Regulatory-based encouragement of best management practices; and

(3) Effluent requirements.

The primary goal of the program is to measurably improve water quality and/or implementation of Best Management Practices by meeting several objectives specified in the plan.

The Nonpoint Source Management Plan outlines steps to initiate systematic management of nonpoint sources in California. These steps include:

(1) An explicit long-term commitment by the State and Regional Board;

(2) More effective coordination of existing State and Regional Board nonpoint-source related programs;

(3) Greater use of Regional Board regulatory authorities coupled with non-regulatory programs;

(4) Stronger links between the local, State and Federal agencies which have powers that can be used to manage nonpoint sources;

(5) Development of new funding sources; and

(6) Implementation of the requirements of the 1990 Reauthorization of the Coastal Zone Management Act (CZMA) which requires the State Board and the California Coastal Commission to develop and implement an enforceable nonpoint source program in the coastal zone.

The reauthorization of the CZMA, together with specific guidance from the US EPA and the National Oceanic & Atmospheric Administration (NOAA), requires coastal states to develop coastal nonpoint pollution control programs. These programs are to implement management measures for the control of land uses which contribute nonpoint source pollution to coastal waters. Management measures, which include specific measures for mitigating water quality impacts, are specified for the following land uses: agriculture; grazing; confined animal facilities; forestry; urban development; roads; marinas and recreational boating; hydromodification; and mines. The state's coastal program is to be considered for approval by the US EPA and NOAA in July 1995.

Revision of the State Nonpoint Source Management Plan (NPSMP) has been initiated. The State Board intends to consider the requirements of the Coastal Zone Act Reauthorization Amendments (CZARA) during the review and revision of the NPSMP. There will also be more of an emphasis placed on watershed based nonpoint source controls in the revised NPSMP. To develop these management measures, the State Board is forming Task Force Committees composed of experts in the various nonpoint source categories. The management measures developed by the Task Force Committees will be reviewed by an Oversight Committee made up of State and Regional Board staff prior to inclusion in the revised NPSMP. The anticipated date of completion of the revised NPSMP is in 1995.

The plan describes an implementation project entitled the "*Southern California Coastal Lagoon Urban Runoff Management*." This project requires land developers to incorporate low flow sand filters into project designs and to implement street sweeping programs. The performance of the filters and programs are monitored to incorporate design modifications as needed to improve performance.

Other implementation actions specified in the plan for Region 9 include the following regulatory and non-regulatory program(s):

Regulatory Programs

- ***Dairies:*** The Regional Board issues Waste Discharge Requirements which limit the amount of manure that can be applied per acre to agricultural land.

- ***Erosion Control:*** The Regional Board implements policies requiring cities and counties to adopt erosion control ordinances. Thus, the Regional Board adopted Resolution No. 92-21, *A Resolution Concerning the Agreement Between the California Regional Water Quality Control Board, San Diego Region, and the Resource Conservation Districts of San Diego County Regarding the Erosion and Sediment Control Policy* (Resource Conservation Districts of San Diego County Erosion and Sediment Control Policy). In addition, staff reviews ordinances and assists with enforcement.

- ***Subsurface Disposal Policy:*** Regional Board staff will develop criteria for minimum lot sizes for septic systems.

Non-regulatory program

- ***San Diego Bay Study:*** The Regional Board will continue a five year study to identify the sources and extent of water quality pollution in San Diego Bay. Possible nonpoint sources such as storm water runoff and past point source pollutants now bound to bottom sediments will be investigated.

CALIFORNIA OCEAN PLAN (RESOLUTION NO. 90-27)

The *Water Quality Control Plan for Ocean Waters of California* (California Ocean Plan) was adopted by the State Board in 1972, and later revised in 1978, 1983, 1988 and 1990. The revision in effect at the time of this writing is Resolution No. 90-27, which was adopted by the State Board on March 22, 1990. The California Ocean Plan is applicable to all point source discharges to the ocean.

The California Ocean Plan is designed to protect the quality of the ocean waters for use and enjoyment by the people through the control of waste discharges to the ocean. The plan sets forth water quality objectives for ocean waters which impose limits on bacteriological, physical, chemical, biological, toxic, and radioactive characteristics for ocean waters in numerical and descriptive terms to ensure the reasonable protection of beneficial uses and the prevention of nuisance. Also, the plan describes requirements for management and design of systems discharging wastewaters to the ocean and effluent quality requirements for discharges. Systems must be designed and operated in a manner that will maintain the indigenous marine life and a healthy and diverse marine community. In addition, discharge prohibitions are placed on hazardous substances, warfare agents and high level radioactive wastes, sludge and digester supernatant, and bypassed untreated waste discharges. Furthermore, the plan states that "*Areas of Special Biological Significance*" shall be designated by the State Board. In these areas the maintenance of natural water quality conditions must be assured. Waste discharges to ASBS are prohibited unless the State Board finds that there would be no adverse impact to beneficial uses. Lastly, discharge requirements within the California Ocean Plan include the maximum allowable monthly mass emission rates for each effluent quality constituent included therein.

The California Ocean Plan declares the State Board's intent to require continual monitoring of the marine environment to assure that the California Ocean Plan reflects the latest available data and that the water quality objectives are adequate to fully protect indigenous marine species and to protect human health.

CALIFORNIA WETLANDS CONSERVATION POLICY

The California Wetlands Conservation Policy was established by the Governor on August 23, 1993. The goal of the California Wetlands Conservation Policy is to establish a policy framework and strategy that will:

- Ensure no overall net loss and achieve a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property;

- Reduce procedural complexity in the administration of State and Federal wetlands conservation programs; and

- Encourage partnerships to make landowner incentive programs and cooperative planning efforts the primary focus of wetlands conservation and restoration.

Three measures are identified to achieve these objectives, these include: (1) statewide policy initiatives; (2) regional strategies; and an (3) interagency wetlands task force.

Statewide policy initiatives: These policy initiatives include a statewide wetlands inventory, support for wetlands planning, improved administration of existing wetland's regulatory programs, development and adoption of a consistent wetlands definition for state regulatory programs, development and adoption of a state policy regarding Army Corps of Engineers nationwide permits, development and adoption of consistent wetlands standards and guidelines, enhancing efficiency of and coordination in the wetland permitting process, encouragement of regulatory flexibility in situations in which wetlands are created unintentionally or incidentally to other activities, encouragement of regulatory flexibility to allow public agencies and water districts to create wetlands but later remove them if the wetlands are found to conflict with the primary purpose to which the property is devoted, strengthened landowner incentives to protect wetlands, support for mitigation banking, development and expansion of other wetlands programs, and integration of wetlands policy and planning with other environmental and land use processes.

Regional strategies: These include three geographically based regional strategies in which wetlands programs can be implemented, refined, and combined in unique ways to achieve the goals and objectives of the wetlands policy. These three strategies are to be implemented in the Central Valley, the San Francisco Bay area, and Southern California. For Southern California, the regional strategy is to initiate better coordination and communication among diverse interests in southern California by establishing a "*Southern California Wetlands Joint Venture*." This group would set long-term goals and priorities for the conservation of wetlands and develop a policy to achieve those goals, and would encourage a variety of demonstration projects designed to enhance the State's ability to constructively address regional wetlands issues.

Interagency wetlands task force: This task force is to be created to direct and coordinate administration and implementation of the Wetlands Policy. This task force will be advisory to the Governor and help resolve inter-agency conflicts on wetlands. The task force will appoint an advisory committee of stakeholders and may seek additional technical advice as necessary.

CLEANUP AND ABATEMENT POLICIES AND PROCEDURES (RESOLUTION NO. 92-49)

The *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304* (Cleanup and Abatement Policies and Procedures)(the Policy) was adopted by State Board Resolution No. 92-49 on June 18, 1992, and amended on April 21, 1994. The Policy describes the procedures the State Board and the Regional Board follow in making decisions on investigations to determine the vertical and horizontal extent of a discharge, and the appropriate cleanup and abatement methods. The Policy applies to all investigations and cleanup and abatement activities, for all types of discharges subject to Water Code Section 13304.

Section 13304 applies to any person who discharges or who has discharged waste into waters of the State in violation of any waste discharge requirement or other order or prohibition issued by a Regional Board or the State Board, or who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the State and creates, or threatens to create, a condition of pollution or nuisance. Section 13304 authorizes the Regional Board to require complete cleanup of all waste discharged and to require restoration of affected water to background conditions (i.e., the water quality that existed before the discharge). The Policy requires dischargers to clean up and abate the effects of discharges in a manner that promotes attainment of either background water quality, or the best water quality which is reasonable, if background levels of water quality cannot be restored. Cleanup levels prescribed by the State Board or Regional Boards must:

- Be consistent with maximum benefit to the people of the State; and
- Be established in a manner consistent with California Code of Regulations, Title 23, Chapter 15 regulations.

Dischargers are required to carry out a phased investigation to determine the nature and extent of soil and ground water pollution at a site. The Policy describes various procedures to ensure that dischargers have the opportunity to select cost-effective methods, for detecting discharges, and for cleanup and abatement. The Policy also contains criteria for development of reasonable schedules for investigation and cleanup and abatement, or other remedial action at a site.

For further details about the Policy, the reader should refer to State Board Resolution No. 92-49.

REGIONAL BOARD RESOLUTIONS

The San Diego Regional Board has adopted many resolutions which, in addition to the State Board Resolutions described previously, are important to the Regional Board's implementation of the Basin Plan. All of the Regional Board Resolutions which implement, interpret, or make specific the Basin Plan and which are listed below have been incorporated in this Basin Plan and are therefore superseded by this Basin Plan.

Resolution No. 78-6. Adopted February 27, 1978. *A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region.* This resolution deleted water quality objectives and beneficial uses for certain portions of basins 1.10, 1.20, 1.30, 1.40, 1.50, 2.10, 3.10, 4.10, 4.20, 4.30, 4.40, 4.50, 4.60, 5.10, 6.10, 7.10, and 11.10.

Resolution No. 79-25. Adopted March 26, 1979. *A Resolution Concerning the 'Agreement Between the California Regional Water Quality Control Board, San Diego Region and the Elsinore-Murrietta-Anza Resource Conservation District Regarding the Sediment Control Ordinance.'*

Resolution No. 79-44. Adopted June 25, 1979. *A Resolution Concerning 'Guidelines for New Community and Individual Sewerage Facilities.'*

Resolution No. 80-48. Adopted September 22, 1980. *A Resolution Concerning the San Diego County Department of Health Services Minimum Criteria for the Design and Construction of Evapotranspiration and Evapotranspiration-Infiltration Systems.*

Resolution No. 81-16. Adopted March 23, 1981. *A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region.* This resolution amended the beneficial uses and water quality objectives for the Aliso, Carlsbad, Agua Hedionda, Batiquitos and Telegraph hydrographic subareas.

Resolution No. 83-04. Adopted January 24, 1983. A Resolution Adopting an Amendment to the Comprehensive Water Quality Control Plan for the San Diego Region. This resolution amended the water quality objectives for nutrients in coastal lagoons.

Resolution No. 83-21. Adopted July 18, 1983. *A Resolution Conditionally Waiving Adoption of Waste Discharge Requirements for Certain Specific Types of Discharges.*

Resolution No. 83-21, Addendum No 1. Adopted November 15, 1993. *An Addendum Conditionally Waiving Adoption of Waste Discharge Requirements for Temporary Discharge of Specified Contaminated Soils.*

Resolution No. 83-21, Addendum No 2. Adopted November 15, 1993. *An Addendum Conditionally Waiving Adoption of Waste Discharge Requirements for Disposal / Reuse of Dredge Spoils in Industrial or Commercial Applications.*

Resolution No. 83-21, Addendum No 3. Adopted November 15, 1993. *An Addendum Conditionally Waiving Adoption of Waste Discharge Requirements for Green Waste Composting Facilities.*

Resolution No. 83-27. Adopted October 3, 1983. *A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region, San Elijo Hydrographic Subarea.*

Resolution No. 83-28. Adopted August 29, 1983. *A Resolution Supporting the County of San Diego's Moratorium on Subsurface Disposal Systems in the Valley Center Area.*

Resolution No. 84-20. Adopted August 27, 1984. *A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region, Mission San Diego Hydrographic Subarea.*

Resolution No. 85-89. Adopted December 16, 1985. *A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region, Mission San Diego Hydrographic Subarea and Sycamore Canyon Subarea, and a portion of the Santee Hydrographic Subarea.*

Resolution No. 85-92. Adopted December 16, 1985. *Designation of Class III Landfills Within the San Diego Region to Accept Shredder Wastes as Required by Section 25143.6 of the Health and Safety Code.*

Resolution No. 86-06. Adopted March 24, 1986. *A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region.* This resolution established a goal and action plan for encouraging and promoting water reclamation.

Resolution No. 87-71. Adopted November 16, 1987. *A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region.* This resolution established a policy on dairy waste management.

Resolution No. 87-91. Adopted December 21, 1987. *A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region.* This resolution established a policy on erosion and sediment control.

Resolution No. 88-25. Adopted March 14, 1988. *A Resolution Regarding the Proposed State Water Resources Control Board Policy for Water Quality Control Defining 'Sources of Drinking Water' for the Purposes of Discharge Prohibitions.*

Resolution No. 88-49. Adopted April 25, 1988. *A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region for a Portion of the Otay Hydrographic Subunit.*

Resolution No. 88-97. Adopted October 3, 1988. *A Resolution Supporting the Proposed Interim Solution to the Tijuana Sewage Problem Consisting of a Sewage Treatment Plant Within the United States and an Ocean Outfall.*

Resolution No. 89-33. Adopted April 10, 1989. *Incorporation of 'Sources of Drinking Water' Policy into the Water Quality Control Plan (Basin Plan) of the San Diego Region.*

Resolution No. 89-53. Adopted July 10, 1989. *Addition of Portions of the Otay Valley Hydrologic Area to the List of Waters Excepted From the 'Sources of Drinking Water' Policy.*

Resolution No. 90-27. Adopted April 23, 1990. *A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region, for the Mission San Diego and a Portion of the Santee Hydrologic Subareas.* This resolution establishes a biostimulatory substances water quality compliance methodology for part of the San Diego River.

Resolution No. 90-28. Adopted March 12, 1990 April 23, 1990. *A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region, for a Portion of the San Clemente Hydrologic Subunit.*

Resolution No. 90-53. Adopted September 24, 1990. *A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for Portions of the Santa Margarita Hydrologic Unit (2.00), San Diego Region.* This resolution establishes a biostimulatory substances water quality compliance methodology for part of the Santa Margarita River.

Resolution No. 90-61. Adopted November 5, 1990. *A Resolution Amending Resolution No. 90-40, A Regionwide Groundwater Amendment to the Comprehensive Water quality Control Plan for the San Diego Region.'* This resolution revised the language regarding use of reclaimed water contained in Resolution No. 90-40, *A Resolution Reconsidering and Amending Resolution No. 90-26, 'A Regionwide Groundwater Amendment to the Comprehensive Water Quality control Plan for the San Diego Region,'* and Resolution No. 90-26, *A Resolution Adopting A Regionwide Groundwater Amendment to the Comprehensive Water Quality Control Plan for the San Diego Region.*

Resolution No. 91-23. Adopted March 11, 1991. *A Resolution Amending Resolution No. 90-27, 'A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region, for the Mission San Diego and a Portion of the Santee Hydrologic Subareas.'*

Resolution No. 91-46. Adopted May 20, 1991. *A Resolution Rescinding and Replacing Resolution No. 88-91 and Addenda, and Establishing a Regional Board Drought Policy.*

Resolution No. 91-79. Adopted December 9, 1991. *A Resolution Amending Resolution No. 90-55, 'Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region.'* This resolution establishes revised Basin Plan chapters for beneficial uses and water quality objectives.

Resolution No. 92-21. Adopted April 6, 1992. *A Resolution Concerning the Agreement Between the California Regional Water Quality Control Board, San Diego Region, and the Resource Conservation Districts of San Diego County Regarding the Erosion and Sediment Control Policy.*

Resolution No. 93-02. Adopted February 1, 1993. *A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region for the Escondido Hydrologic Subarea (4.62).*

Resolution No. 94-09. Adopted February 10, 1994. *A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region, Portions of the Pauba (2.51) and Wolf (2.52) Hydrologic Subareas.*

Resolution No. 94-25. Adopted February 10, 1994. *A Resolution Adopting Amendments to the Comprehensive Water Quality Control Plan for the San Diego Region for the Laguna (1.10), Mission Viejo (1.20), and San Clemente (1.30) Hydrologic Areas.*

Resolution No. 94-139. Adopted October 13, 1994. *A Resolution Adopting Amendments to the Water Quality Control Plan for a portion of the Poway Hydrologic Area (6.20).*

Regional Board Water Quality Management Policy. This policy consists of five general water quality policy statements and is described in Chapter 1 of this Basin Plan.

NEW REGIONAL BOARD RESOLUTIONS

The following Basin Plan amendments have been adopted since the September 8, 1994 update.

Resolution No. 95-48. Adopted May 16, 1995. *A Resolution Adopting Amendments to the Water Quality Control Plan for the Alluvial Aquifer of the Moosa (903.13) and the Valley Center (903.14) Hydrologic Subareas.*

Resolution No. 95-95. Adopted October 12, 1995. *A Resolution Adopting An Amendment to the Water Quality Control Plan, San Diego Region. Types of Discharges Identified for Conditional Waiver of Waste Discharge Requirements.* (See pages 4-11, 4-35.01, 4-35.02, D-1.01 and D-6).

Resolution No. 95-115. Adopted October 12, 1995. *A Resolution Adopting Amendments to the Water Quality Control Plan for the San Diego Basin (9), Table 4-4. Types of Discharges Identified for Conditional Waiver of Waste Discharge Requirements.* (See pages 4-11, D-1.02 and D-2).

Resolution No. 96-30. Adopted May 9, 1996. *A Resolution Adopting an Amendment to the Water Quality Control Plan for the San Diego Region Providing an Exception to the Prohibition of Discharges of Recycled Wastewater to Surface Water Bodies Used for Municipal Water Supply.* (See page 4-15).

Resolution No. 96-34. Adopted August 8, 1996. *A Resolution Adopting an Amendment to the Water Quality Control Plan for the San Diego Region, Table 4-4, Item 26, Composting and Processing, Mulching, or Grinding Waste Management Units* (See page 4-11).

Resolution No. 97-04. Adopted March 12, 1997. *A Resolution Adopting Amendments to the Water Quality Control Plan for the San Diego Region for the Designation of COLD and SPWN Beneficial Uses.* (See pages 2-8, 2-8.1, and 2-11 thru 2-47).

REPRINT OF RESOLUTION NO. 77-1

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 77-1
POLICY WITH RESPECT TO WATER RECLAMATION IN CALIFORNIA

WHEREAS:

1. The California Constitution provides that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that waste or unreasonable use or unreasonable method of use of water be prevented, and that conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare;

2. The California Legislature has declared that the State Water Resources Control Board and each Regional Water Quality Control Board shall be the principal state agencies with primary responsibility for the coordination and control of water quality;

3. The California Legislature has declared that the people of the State have a primary interest in the development of facilities to reclaim water containing waste to supplement existing surface and underground water supplies;

4. The California Legislature has declared that the State shall undertake all possible steps to encourage the development of water reclamation facilities so that reclaimed water may be made available to help meet the growing water requirements of the State;

5. The Board has reviewed the document entitled "*Policy and Action Plan for Water Reclamation in California*," dated December 1976. This document recommends a variety of actions to encourage the development of water reclamation facilities and the use of reclaimed water. Some of these actions require direct implementation by the Board; others require implementation by the Executive Officer and the Regional Boards. In addition, this document recognizes that action by many other state, local, and federal agencies and the California State Legislature would also encourage construction of water reclamation facilities and the use of reclaimed water. Accordingly, the Board recommends for its consideration a number of actions intended to coordinate with the program of this Board;

6. The Board must concentrate its efforts to encourage and promote reclamation in water-short areas of the State where reclaimed water can supplement or replace other water supplies without interfering with water rights or instream beneficial uses or placing an unreasonable burden on present water supply systems; and

7. In order to coordinate the development of reclamation potential in California, the Board must develop a data collection, research, planning, and implementation Program for water reclamation and reclaimed water uses.

THEREFORE, BE IT RESOLVED:

1. That the State Board adopt the following Principles:
   I. The State Board and the Regional Boards shall encourage, and consider or recommend for funding, water reclamation projects which meet Condition 1, 2, or 3 below and which do not adversely impact vested water rights or unreasonably impair instream beneficial uses or place an unreasonable burden on present water supply systems;
      (1) Beneficial use will be made of wastewaters that would otherwise be discharged to marine or brackish receiving waters or evaporation ponds,
      (2) Reclaimed water will replace or supplement the use of fresh water or better quality water,
      (3) Reclaimed water will be used to preserve, restore, or enhance instream beneficial uses which include, but are not limited to, fish, wildlife, recreation and esthetics associated with any surface water or wetlands.

II. The State Board and the Regional Boards shall (1) encourage reclamation and reuse of water in water-short areas of the State, (2) encourage water conservation measures which further extend the water resources of the State, and (3) encourage other agencies, in particular the Department of Water Resources, to assist in implementing this policy.

III. The State Board and the Regional Boards recognize the need to protect the public health including potential vector problems and the environment in the implementation of reclamation projects.

IV. In implementing the foregoing Principles, the State Board or the Regional Boards, as the case may be, shall take appropriate actions, recommend legislation, and recommend actions by other agencies in the areas of (1) planning, (2) project funding, (3) water rights, (4) regulation and enforcement, (5) research and demonstration, and (6) public involvement and information.

2. That, in order to implement the foregoing Principles, the State Board:
   (a) Approves Planning Program Guidance Memorandum No. 9, "*PLANNING FOR WASTEWATER Reclamation*,"

   (b) Adopts amendments and additions to Title 23, California Administrative Code Sections 654.4, 761, 764.9, 783, 2101, 2102, 2107, 2109, 2109.1, 2109.2, 2119, 2121, 2133(b)(2), and 2133(b)(3),

   (c) Approves Grants Management Memorandum No. 9.01, "*WASTEWATER RECLAMATION*,"

   (d) Approves the Division of Planning and Research, Procedures and Criteria for the Selection of Wastewater Reclamation Research and Demonstration Project,

   (e) Approves "*GUIDELINES FOR REGULATION OF WATER RECLAMATION*,"

   (f) Approves the Plan of Action contained in Part III of the document identified in Finding Five above,

   (g) Directs the Executive Officer to establish an Interagency Water Reclamation Policy Advisory Committee. Such Committee shall examine trends, analyze implementation problems, and report annually to the Board the results of the implementation of this policy, and

   (h) Authorizes the Chairperson of the Board and directs the Executive Officer to implement the foregoing Principles and the Plan of Action contained in Part III of the document identified in Finding Five above, as appropriate.

3. That not later than July 1, 1978, the Board shall review this policy and actions taken to implement it, along with the report prepared by the Interagency Water Reclamation Policy Advisory Committee, to determine whether modifications to this policy are appropriate to more effectively encourage water reclamation in California.

4. That the Chairperson of the Board shall transmit to the California Legislature a complete copy of the "*Policy and Action Plan for Water Reclamation in California*."

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 special meeting of the State Water Resources Control Board held on January 6, 1977.

Original signed by
Bill B. Dendy
Executive Officer
State Water Resources Control Board

REPRINT OF RESOLUTION NO. 88-63

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 88-63
ADOPTION OF POLICY ENTITLED "*SOURCES OF DRINKING WATER*"

WHEREAS:

1. California Water Code Section 13140 provides that the State Board shall formulate and adopt State Policy for Water Quality Control; and,

2. California Water Code Section 13240 provides that Water Quality Control Plans "*shall conform*" to any State Policy for Water Quality Control; and,

3. The Regional Boards can conform the Water Quality Control Plans to this policy by amending the plans to incorporate the policy; and,

4. The State Board must approve any conforming amendments pursuant to Water Code Section 13245; and,

5. "*Sources of drinking water*" shall be defined in Water Quality Control Plans as those water bodies with beneficial uses designated as suitable, or potentially suitable, for municipal or domestic water supply (MUN); and,

6. The Water Quality Control Plans do not provide sufficient detail in the description of water bodies designated MUN to judge clearly what is, or is not, a source of drinking water for various purposes.

THEREFORE BE IT RESOLVED:
All surface and ground waters of the state are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards [1] with the exception of:

1. <u>Surface and ground waters where:</u>
   a. The total dissolved solids (TDS) exceed 3,000 mg/L (5,000 uS/cm, electrical conductivity) and it is not reasonably expected by Regional Boards to supply a public water system, or

   b. There is contamination, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or

   c. The water source does not provide sufficient water to supply a single well capable of producing an average sustained yield of 200 gallons per day.

2. <u>Surface waters where</u>:
   a. The water is in systems designed or modified to collect or treat municipal or industrial wastewaters, process waters, mining wastewaters, or storm water runoff, provided that the discharge from such systems is monitored to assure compliance with all relevant water quality objectives as required by the Regional Boards; or,

   b. The water is in systems designed or modified for the primary purpose of conveying or holding agricultural drainage waters, provided that the discharge from such systems is monitored to assure compliance with all relevant water quality objectives as required by the Regional Boards.

3. Ground water where:
The aquifer is regulated as a geothermal energy producing source or has been exempted administratively pursuant to 40 Code of Federal Regulations, Section 146.4 for the purpose of underground injection of fluids associated with the production of hydrocarbon or geothermal energy, provided that these fluids do not constitute a hazardous waste under 40 CFR, Section 261.3.

4. Regional Board Authority to Amend Use Designations:
Any body of water which has a current specific designation previously assigned to it by a Regional Board in Water Quality Control Plans may retain that designation at the Regional Board's discretion. Where a body of water is not currently designated as MUN but, in the opinion of a Regional Board, is presently or potentially suitable for MUN, the Regional Board shall include MUN in the beneficial use designation.

The Regional Boards shall also assure that the beneficial uses of municipal and domestic supply are designated for protection wherever those uses are presently being attained, and assure that any changes in beneficial use designations for waters of the State are consistent with all applicable regulations adopted by the Environmental Protection Agency.

The Regional Boards shall review and revise the Water Quality Control Plans to incorporate this policy.

CERTIFICATION

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a policy duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 19, 1988.

Original signed by
Maureen Marche
Administrative Assistant to the Board

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[1] This policy does not affect any determination of what is a potential source of drinking water for the limited purposes of maintaining a surface impoundment after June 30, 1988, pursuant to Section 25208.4 of the Health and Safety Code.

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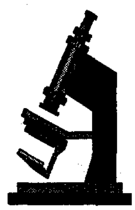
CHAPTER 6
SURVEILLANCE, MONITORING AND ASSESSMENT

6. SURVEILLANCE, MONITORING AND ASSESSMENT



INTRODUCTION

California's well-being is linked to the health of its water. To protect and preserve this basic resource, the State Board and the Regional Board closely monitor water quality throughout the state. A comprehensive surveillance and monitoring program provides basic information needed to evaluate the effectiveness of California's water quality control program.

Historically, a wide variety of interested state, federal, and local agencies have sampled, analyzed, and tracked water quality. The State Board monitoring program coordinates existing information, and supplements it where necessary to meet data needs.

The Porter-Cologne Water Quality Control Act delegates primary responsibility for coordination and control of water quality in California to the State Board. Section 13163 of the Act states that in conducting this mission, the State Board shall coordinate water quality investigations, recognizing that other state agencies may have primary statutory responsibility for such investigations, and shall consult with the concerned Regional Boards in implementing this section.

Pursuant to these mandates, the State Board in 1976 established a coordinated Primary Water Quality Monitoring Network for California. Participants in the coordinated Primary Network included the California Departments of Fish and Game (DFG), Water Resources (DWR), and Health Services (DOHS) as well as the Federal Bureau of Reclamation, United States Geologic Survey (USGS), and the United States Environmental Protection Agency (US EPA).

The goal of the Primary Network has been to provide an overall, continuous assessment of water quality in the State. This goal is to be achieved by statewide monitoring of water quality parameters that can affect beneficial uses of state waters.

This chapter contains a discussion of the objectives and various elements of the State and Regional Board's surveillance and monitoring programs. Not all of these programs are currently active in the San Diego Region, as many are unfunded at this time.

STATE SURVEILLANCE AND MONITORING PROGRAMS

The State's surveillance and monitoring programs are designed to assure the collection of data necessary to:

- Establish and review water quality standards, goals, and objectives;
- Determine maximum daily loadings, waste load allocations, and effluent limitations;
- Perform segment classifications and ranking; and
- Establish the relationship between water quality and individual point and nonpoint sources of pollutants.

These data must be verified and properly interpreted to evaluate water quality trends and to make the necessary changes in the enforcement and/or planning programs to carry out program objectives. Output based upon data obtained from this program is used to prepare reports satisfying the requirements of federal Clean Water Act, Sections 104, 106, 208, 301, 303, 304, 305, 307, 308, 314, 402, and the applicable portions of the State's Porter-Cologne Water Quality Control Act.

The overall objectives of the State's surveillance and monitoring program are:

- To measure the achievement of water quality goals and objectives specified in the Basin Plan;
- To measure specific effects of water quality changes on the established beneficial uses;
- To measure background conditions of water quality and determine long-term trends in water quality;
- To locate and identify sources of water pollution that pose an acute, accumulative, and/or chronic threat to the environment;

- To provide information needed to relate receiving water quality to mass emissions of pollutants by waste dischargers;

- To provide data for determining compliance with permit conditions;

- To provide the documentation necessary to support the enforcement of permit conditions and waste discharge requirements;

- To measure waste loads discharged to receiving waters and to identify the limits of their effects, and in water quality limited segments, to prepare waste load allocations necessary to achieve water quality control;

- To provide data needed to carry on the continuing planning process;

- To provide a clearinghouse for the collection and dissemination of water quality data gathered by other agencies and private parties cooperating in the program;

- To measure the effects of water rights decisions on water quality and to guide the State Board in its responsibility to regulate unappropriated water for the control of quality; and

- To prepare reports on water quality conditions as required by federal and state regulations and other users requesting water quality data.

The surveillance and monitoring program is designed to meet the objectives set forth above. An optimum surveillance and monitoring program requires flexibility and must be able to respond to needs specified in the Basin Plan as it is implemented and revised. To ensure that the surveillance and monitoring program is flexible and adapts to change, statewide water quality assessments are performed every two years to provide a timely cycle to evaluate the program's effectiveness and make appropriate changes.

The surveillance and monitoring program provides for collection and analysis of samples and the reporting of water quality data. It includes laboratory support and quality assurance, storage of data for rapid and systematic retrieval, and preparation of reports and data summaries. Most importantly, it includes interpretation and evaluation of data leading to recommendations for action.

Surveillance and monitoring at the State level is made up of three programs. These are the Toxic Substance Monitoring, State Mussel Watch and Bay Protection and Toxic Cleanup Programs.

TOXIC SUBSTANCE MONITORING PROGRAM

One method of monitoring for toxic substances (toxic elements and organic compounds) is to collect and analyze water samples. A major problem with this approach is that toxic discharges are likely to occur in an intermittent fashion and thus are likely to be missed with "*grab*" sampling of the water. Another limitation to analyzing water samples is that generally, harmful toxicants are present in low concentrations in the water. Toxicants are concentrated through the aquatic food chain through the process of bioaccumulation. Thus, in the Toxic Substances Monitoring Program, the flesh of fish and other aquatic organisms is analyzed for toxic metals and synthetic organic compounds.

Streams and lakes in the region are sampled according to their importance to the State in terms of water quality. Priority is given to waters where contaminants are suspected and/or to waters where no other source of water quality information is available. Routine chemical and biological water monitoring is performed by the Department of Water Resources and/or USGS; and toxic substances monitoring of resident organisms is performed by the Department of Fish and Game.

The objectives of the Toxic Substance Monitoring program are:

- To develop statewide baseline data and to demonstrate trends in the occurrence of toxic elements and organic substances in the aquatic biota;

- To assess impacts of accumulated toxicant upon the usability of State waters by man;

- To assess impacts of accumulated toxicant upon the aquatic biota; and

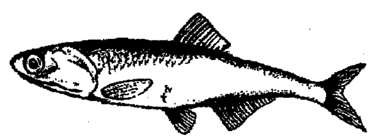
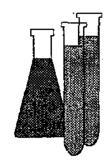
- Where problem concentrations of toxicant are detected, to attempt to identify sources of toxicant and to relate concentrations found in the biota to concentrations found in the water.

The samples collected in the Toxic Substance Monitoring program are benthic invertebrates and fish. The flesh of bivalve mollusks or crayfish tailflesh and fish livers are analyzed for important

TABLE 6 - 1. SYNTHETIC ORGANIC COMPOUNDS ANALYZED IN THE STATE MUSSEL WATCH AND TOXIC SUBSTANCES MONITORING PROGRAMS

Aldrin	P,P'- DDMU	delta Lindane
Chlorbenside	O,P'- DDT	Total Lindane[2]
alpha Chlordane	P,P'- DDT	Methoxychlor
gamma Chlordane	Total DDT	Methyl Parathion
cis Chlordane	Diazinon	Oxadiazon[2]
trans Chlordane	Dieldrin	PCB 1248
Oxychlordane	Endrin	PCB 1254
Total Chlordane	Endosulfan 1	PCB 1260
cis Nonachlor	Endosulfan 2	Total PCB
trans Nonachlor	Endosulfan Sulfate	Pentachlorophenol[1]
Chlorpyrifos	Total Endosulfan	Phenol[1]
Dacthal	Ethyl Parathion	Ronnel[1]
Dicofol[2]	Heptachlor	Tetrachlorphenol[1]
P,P'- DDE	Heptachlor Epoxide	Tetradifon[1]
O,P'- DDE	Heptachlorobenzene	Toxaphene
P,P'- DDD	alpha Lindane	Tributylin[1]
O,P'- DDD	beta Lindane	
P,P'-DDMS	gamma Lindane	

[1] These constituents only sampled in the State Mussel Watch Program.
[2] These constituents only sampled in the Toxic Substances Monitoring Program.

metals, including arsenic, cadmium, chromium, copper, lead, nickel, silver, and zinc; fish flesh is analyzed for mercury. In addition, both invertebrate and fish flesh samples are analyzed for 55 synthetic organic compounds, most of which are pesticides. Toxic Substance Monitoring reports have been published annually since 1977.

STATE MUSSEL WATCH PROGRAM

The State Mussel Watch (Mussel Watch) program provides documentation of the quality of coastal marine and estuarine waters. The Mussel Watch program fulfills the goal of providing the state with long-term trends in the quality of these waters.

Mussels were chosen as the indicator organism for trace metals and synthetic organic compounds in the coastal and estuarine waters. Although the mussel populations of bays and estuaries are of a different species than those found in the open coast; their suitability as sentinels for monitoring the presence of toxic pollutants stems from several factors including: (1) their ubiquity along the California coast; (2) their ability to concentrate pollutants above ambient sea water levels and to provide a time-averaged sample; and (3) their non-motile nature which permits a localized measurement of water quality. The trace metals analyzed for in mussel tissues include aluminum, cadmium, chromium, copper, lead, manganese, mercury, nickel, silver, and zinc. Synthetic organic compounds analyzed for are summarized in Table 6-1. When compared with alternative sampling designs such as seawater and sediment sampling, the Mussel Watch program is a more cost effective program. Mussel Watch reports have been published annually since 1978.

During the 1977 and 1978 sampling periods, the focus of the Mussel Watch program was, for the most part, on open coast monitoring of sites outside the vicinity of known pollutant sources. Monitoring of water quality in the State Board's designated Areas of Special Biological Significance (ASBS), to establish baseline conditions relating to the range of typical conditions in water, sediment and biota, was given prime importance in the early years of the program.

Based on the identification of "*hot spot*" areas during 1977 and 1978, intensive sampling of these areas was implemented in 1979. Such a sampling strategy was intended to confirm previous findings, establish the magnitude of the potential problem and identify pollutant sources. The program has since evolved to include transplanting *Mytilus californianus* mussels into select California bays and estuaries at selected sites to confirm potential toxic substance pollution (i.e., in the vicinity of dischargers).

BAY PROTECTION AND TOXIC CLEANUP PROGRAM

California Water Code, Division 7, Chapter 5.6 established a comprehensive program within the State Board to protect the existing and future beneficial uses of California's bays and estuaries. The Bay Protection and Toxic Cleanup Program (BPTCP) provides focus on the State Board and regional boards efforts to control pollution of the State's bays and estuaries. The BPTCP also establishes a program to identify toxic hot spots and plan for their cleanup. Chapter 5.6, Sections 13390 through 13396.5 were added to Division 7 of the California Water Code by SB 475 (Stats. 1989, Chapter 269), SB 1845 (Stats. 1990, Chapter 1294), and AB 41 (Stats. 1989, Chapter 1032). New legislation (SB 1084 Calderon; Stats. 1993, Chapter 1157) extends program funding through 1998. The BPTCP is a statewide program which is coordinated with the California Department of Fish and Game and Cal-EPA's Office of Environmental Health Hazard Assessment. The program was established: (1) to provide protection for existing and future beneficial uses of bay and estuarine waters; (2) to provide a plan for remedial action at toxic hot spots; (3) to further compliance with federal law pertaining to the identification of waters where the protection and propagation of shellfish, fish, and wildlife are threatened by toxic pollutants and contribute to the development of effective strategies to control these pollutants; and (4) to allow these programs to be structured and maintained in a manner which allows the State and Regional Boards to make maximum use of any federal funds which may be available for the program. To attain the goals of the program, the State and Regional Boards are required to do the following:

- Develop and maintain a program to identify toxic hot spots, plan for their cleanup or mitigation, and amend water quality control plans and policies to abate toxic hot spots;
- Formulate and adopt a water quality control plan for enclosed bays and estuaries;
- Review and, if necessary, revise waste discharge requirements to conform to the plan;
- Develop a database of toxic hot spots;
- Develop an ongoing monitoring and surveillance program;
- Develop sediment quality objectives;
- Develop criteria for the assessment and priority ranking of toxic hot spots; and
- Fund the program through fees on point and nonpoint dischargers (Title 17 California Code of Regulations Section 2236).

Program accomplishments include:

- Adoption of an approach for establishing sediment quality objectives;
- Installation of a computer system for a consolidated database of information being collected to identify toxic hot spots;
- Implementation of regional monitoring program;
- Development of draft site ranking criteria to be used for priority ranking of toxic hot spots; and
- Implementation of a fee system supporting the program.

The development of regional and statewide cleanup plans is ongoing. For the period July, 1992 through June, 1994 there are two main sediment sampling and analysis efforts for the BPTCP. The first includes toxicity screening where the primary goal is to determine bioassay protocols, establish reference sites and a consolidated database. The second is measurement of the bioeffects associated with toxicants. This includes a survey of sediment contamination and toxicity; two independent toxicity tests including ten-day solid phase amphipod survival, and pore-water test of sea urchin egg fertilization; chemical analyses of sediment samples including trace metals, pesticides, hydrocarbons, tributyltin, acid volatile sulfides and selected normalizers (such as grain size and total organics). Surveillance and monitoring sites in this region are located in the Pacific Ocean, Tijuana River, San Diego Bay, and Mission Bay.

In addition, the San Diego Region BPTCP includes an Underwater Hull Cleaning (UHC) study and a water circulation study for San Diego Bay. The components of the UHC study includes surveys, water sampling and recommendations. The results of the UHC study should assist the Regional Board to determine appropriate regulations for underwater hull cleaners.

REGIONAL SURVEILLANCE AND MONITORING PROGRAMS

The Regional Board participates in the implementation of the following surveillance and monitoring programs:

- Compliance Inspections and Monitoring;
- Complaint Investigation
- Intensive Surveys;
- Municipal Storm Water Monitoring;
- Water Quality Assessment Activities; and
- Quality Assurance and Quality Control.

COMPLIANCE INSPECTIONS AND MONITORING

The Regional Board ensures compliance with the Water Quality Control Plan, NPDES permits and waste discharge requirements through implementation of a comprehensive self monitoring program and compliance inspection program.

COMPLIANCE MONITORING

Compliance monitoring provides data which is used to determine compliance with discharge requirements and receiving water standards and to support enforcement actions. Data are collected from self monitoring reports generated by waste dischargers.

Self monitoring reports submitted to the Regional Board are reviewed, and if violations are noted, appropriate action is taken, ranging from administrative enforcement to judicial abatement depending on the circumstances. Self monitoring data have also been used to develop pollutant loadings and to indicate the general improvement noted in the receiving water.

Self monitoring report requirements are dependent on the type and quantity of effluent discharged. For example, the City of San Diego, Water Utilities Department, conducts an Ocean Monitoring Program as part of the environmental monitoring requirements for the Point Loma Sewage Outfall. The program includes chemical and biological testing of ocean waters, sediments, fish, and benthic infauna. Most of the monitoring stations are in close vicinity to the Point Loma Sewage Outfall; however, stations range geographically from the shoreline to six miles offshore and from La Jolla to the Mexican border.

COMPLIANCE INSPECTIONS

Regional Board staff periodically conducts inspections of all dischargers regulated under an NPDES permit or waste discharge requirements. Treatment, storage, and discharge facilities are inspected to determine compliance with the permit. Compliance inspection reports are written based on staff inspections of a particular site and include observations made by staff and/or results of analyses performed on samples collected by staff. During the inspections facts and information are gathered to assess the degree of compliance with the following NPDES permit or waste discharge requirement provisions:

- Effluent and receiving water limitations;
- Self-monitoring reports;
- Record keeping and reporting;
- Compliance time schedules, if applicable;
- Best management plans, if applicable; and
- Other conditions, provisions and prohibitions.

During some inspections, samples are collected to further determine compliance. Inspections can be either announced or unannounced. Announced inspections facilitate direct communication with the discharger to review procedures and operations. Unannounced inspections have the advantage that staff can witness normal day-to-day operations without giving the discharger the opportunity to prepare for the visit. Upon discovery of a noncompliance the procedures discussed in the enforcement section of Chapter 4 are followed to gain correction.

COMPLAINT INVESTIGATIONS

This task involves investigation of complaints of citizens and public or governmental agencies on the discharge of pollutants or creation of nuisance conditions. It is a Regional Board responsibility to prepare reports or letters and follow-up actions to document observed conditions and to institute appropriate corrective actions. In instances where the Regional Board cannot respond to a complaint because of resource limitations, the Regional Board notifies other agencies if it falls within their jurisdiction.

The Regional Board strives to ensure that responses to complaints involving threats to water quality be made in an expedient manner, as resources allow. For the purpose of this policy, response includes the following three components: (1) Thorough documentation of complaints; (2) Appropriate follow-up including site inspections, referral to, or notification of, other regulatory agencies, corrective actions, enforcement actions, etc.; and (3) Notification to complainant, as appropriate, of findings and subsequent actions.

DEFINITION OF ACTIVITIES

Complaint activities include all activities necessary to respond to a complaint or incident including the following: (1) Receiving and documenting complaints/incidents (e.g., spills); (2) Any follow-up activities to gather additional information (e.g., research, telephone contacts, coordination with other agencies, etc.); (3) Preparation for any field inspections necessary to investigate a complaint/incident; (4) Field inspections, including travel; (5) Sampling of spill and/or receiving waters for documentation, if appropriate; and (6) Documenting findings and responding to complainant.

NOTIFICATION TO OTHER AGENCIES

The Regional Board notifies other responsible regulatory agencies (e.g., Public Health, Department of Health Services, Department of Fish and Game, Department of Food and Agriculture, Integrated Solid Waste Management Board) of the content of a complaint if it falls within said agency's jurisdiction.

Except for a discharge in compliance with waste discharge requirements, any person who causes or permits any reportable quantity of 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 possible, notify the Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State toxic disaster contingency plan. The person shall also immediately notify the State Board or appropriate Regional Board of the discharge (Water Code Section 13271).

Similarly, any person who discharges any oil or petroleum product under the above-stated conditions shall, as soon as possible, notify the Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State oil spill contingency plan. Immediate notification of an appropriate agency of the federal government, or of the appropriate Regional Board (in accordance with the reporting requirements set under Water Code Section 13267 or 13383) shall satisfy the oil spill notification requirements of this paragraph (Water Code Section 13272).

REPORTABLE QUANTITIES OF HAZARDOUS WASTE AND SEWAGE DISCHARGES

Water Code Section 13271 requires that the State Board and the Department of Health Services adopt regulations establishing reportable quantities for substances listed as hazardous wastes or hazardous materials pursuant to section 25140 of the Health and Safety Code. Reportable quantities are those which should be reported because they may pose a risk to public health or the environment if discharged to ground or surface water.

Similarly, the State Board was required to adopt regulations establishing reportable quantities for sewage. These regulations for sewage and hazardous materials discharge do not supercede waste discharge requirements or water quality objectives.

The State Board adopted regulations for reportable quantities are included in subchapter 9.2 of the California Code of Regulations.

INSPECTION IN RESPONSE TO COMPLAINTS

The Regional or State Board may inspect the facilities of any discharger at any time pursuant to Water Code, Section 13267. Such inspections should normally be conducted with consent of the occupant and/or owner of the facilities. If an inspection request is refused by any occupant of the premises, an effort to gain access should be made with the owner of the premises. The Clean Water Act and California Water Code provide that a credentialed inspector must be allowed entry to the facilities subject to regulation under these laws. Regional Board staff do not inspect sites which pose a threat to their health or safety. For sites which could involve toxic and hazardous materials field work, a Health Evaluation Plan (HEP) is completed.

If all attempts to obtain consent fail, the inspection may be made pursuant to a warrant in accordance with the procedure set forth in Title 13, Section 13267(c). In all cases where an inspection warrant is required, staff of the State Board's Office of Chief Counsel is consulted relative to procedures.

An inspection is permitted without consent and without a warrant when there is an emergency which affects the public health or safety. Advice from the State Board's Office of Chief Counsel is sought before making such an inspection.

When an inspection is done in response to a complaint, and the inspector may be entering an "*unknown*" situation, every safety precaution is taken. Again, in no instance does staff make an inspection of a site which may pose a threat to their health and safety. Thorough notes and documentation are made during the inspection, including photographs, if appropriate. After an inspection is completed, an inspection report is prepared describing what was found.

FINDINGS OF NONCOMPLIANCE

If during the course of a complaint investigation, a noncompliance is discovered, procedures as outlined in the enforcement section of Chapter 4 (Implementation chapter) are followed.

INTENSIVE SURVEYS

Intensive monitoring surveys provide detailed water quality data to locate and evaluate violations of receiving water standards, to develop waste load allocations and to assess the water quality condition. They usually involve localized, intermittent sampling at a higher than normal frequency. Intensive surveys should be repeated at appropriate intervals depending on the parameters involved, the variability of conditions, and changes in hydrologic or effluent regimes.

MUNICIPAL STORM WATER MONITORING

The storm water permitting program has been established to protect water quality of the water bodies which receive storm water runoff. (For a complete description of this program, refer to Chapter 4, Implementation Chapter). Sampling of storm water runoff has indicated that storm water discharges contain significant amounts of pollutants. Therefore, the Region's municipal storm water permits requires the permittee to develop comprehensive management and monitoring programs. Because each permit generally covers a large number of water bodies, the required monitoring program is in two phases.

Phase I requires the discharger to sample storm water discharges and to sample those receiving waters where the beneficial uses are threatened or impaired due to runoff of storm water and urban nuisance water. Phase I requires both a dry and wet weather monitoring program. San Diego copermittees are required to sample two major types of runoff stations: (1) mass loading; and (2) land use stations. The dry weather monitoring program requires periodic colormetric field tests and visual inspections of the storm water conveyance system to detect non-storm water flows. Under Phase II the dischargers will be required to develop storm water management and monitoring programs for the remaining water bodies included under the permit.

Storm water discharges from urbanized areas consist mainly of surface runoff emanating from residential, commercial, and industrial areas. In addition, there are storm water discharges from agricultural and other land uses. The constituents of concern in these discharges include: total and fecal coliform, enterococcus, total suspended solids, biochemical oxygen demand, chemical oxygen demand, total organic carbon, oil and grease, heavy metals, nutrients, base/neutral and acid extractables, pesticides, herbicides, petroleum hydrocarbon products, and/or those causing extremely high or low pH.

The objectives of the storm water monitoring program are to: (1) define the type, magnitude, and sources of pollutants in the storm water discharges within the permittee's jurisdiction so that appropriate pollution prevention and correction measures can be identified; (2) evaluate the effectiveness of pollution prevention and correction measures; and (3) evaluate compliance with water quality objectives established for the storm water system or its components.

BIENNIAL WATER QUALITY INVENTORY / WATER QUALITY ASSESSMENT REPORT

Section 305(b) of the federal Clean Water Act requires all states to prepare and submit a biennial Water Quality Inventory Report, (commonly referred to as a "*305(b) Report*"). In California, this report is used by the State Board and the US EPA to prioritize funding for water quality programs. As required by the Clean Water Act, Section 305(b), the report must contain:

- A description of the water quality of the major navigable water bodies in the state;
- An analysis of the extent to which significant navigable waters provide for the protection and propagation of a balanced population of shellfish, fish, and wildlife and allow recreational activities in and on the water;
- An analysis of the extent to which elimination of the discharge of pollutants has been achieved;
- An estimate of the environmental impact, the economic, and social costs necessary to achieve the objective of the Clean Water Act, the economic and social benefits of the achievement, and the date of such achievement; and
- A description of the nature and the extent of nonpoint sources of pollutants and recommendations as to the programs which must be taken to control them, with estimates of cost.

Each Regional Board prepares a biennial Water Quality Assessment (WQA) Report for its Region, using data collected by regional planning, permitting, surveillance, and enforcement programs. The regional reports contain inventories of the major water bodies in the region, including rivers and streams, lakes and reservoirs, bays and harbors, estuaries, coastal waters, wetlands, and ground water. For each water body, the report identifies the total size and the extent of the water body classified as having "*good*", "*intermediate*", "*impaired*", or "*unknown*" water quality. The report describes general problems and sources of water quality impairment. Additionally, the data base also indicates if the water body is included on any of the federal "*lists*". These lists indicate specific types of water quality impairments and are organized by the appropriate sections of the Clean Water Act as follows:

Section 131.11: Segments which may be affected by toxic pollutants, or segments with concentrations of toxic pollutants that warrant concern.

Section 303(d): List of Water Quality Limited Segments where objectives or goals of the Clean Water Act are not attainable with the Best Available Treatment/Best Control Technology (BAT/BCT).

Section 304(m): So-called "*mini-list*" of waters not meeting State adopted numeric water quality objectives due to toxic point sources after implementation of BAT/BCT.

Section 304(s): So-called "*short list*" of waters not achieving water quality standards due to point source discharges of toxic pollutants after implementation of BAT/BCT.

Section 304(l): So-called "*long list*" of waters not meeting the water quality goals of the Clean Water Act after implementation of BAT/BCT.

Section 314: A list of lake priorities for restoration.

Section 319: A list of impaired surface water bodies from nonpoint source problems due to both toxic and nontoxic pollutants.

Upon adoption of the Regional WQA Reports by respective Regional Boards, the reports are compiled into a statewide report entitled California Water Quality Assessment Report. Upon adoption of this statewide report by the State board, the report is submitted to the US EPA to satisfy Section 305(b) reporting requirements of the Clean Water Act.

CLEAN WATER STRATEGY

The Clean Water Strategy (CWS) is a process that the State Board implemented to assure that staff and fiscal resources are directed at the highest priority water quality issues throughout California. The primary objective of the CWS is to more effectively define and respond to priorities as revealed by the best available water quality information.

The CWS relies on the Water Quality Assessment condition ratings to provide the technical information necessary to identify water bodies needing protection or prevention actions, additional assessment, or cleanup activities. In addition to the Water Quality Assessment, the regions determined the relative resource value of their water bodies to recognize the relative importance of individual waters when compared to each other. The regions developed priority water body lists which are based upon the severity of their water quality problems or needs and relative resource values, from which the State Board assembled a statewide priority list based upon the same criteria.

There are six phases involved in implementing the Clean Water Strategy. As of this date, phase 1 and 2 have been completed. The State Board has begun a pilot study to determine the feasibility of phases 3 through 6.

Phase 1: Obtain the best information;
Phase 2: Compare and prioritize water body concerns;
Phase 3: Prioritize actions to address concerns;
Phase 4: Allocate new resources;
Phase 5: Implement strategy goals; and
Phase 6: Review results.

QUALITY ASSURANCE AND QUALITY CONTROL

The statewide Quality Assurance (QA) program was developed to ensure that data generated from environmental studies are technically sound, scientifically valid, and legally defensible. A federal regulation (US EPA Order 5360.1) requiring the State to develop and implement a Quality Assurance Program Plan (QAPP) was adopted in April 1993. The program mandate is identified in 40 CFR 30.503 (July 1, 1987).

The State Board has appointed a QA Program manager to direct, coordinate, and administer the State QAPP. Independently, each Regional Board has appointed a QA officer to administer its Regional responsibilities. The State and Regional Boards jointly administer the program, however the State Board has lead responsibility for managing the overall program and reporting to the US EPA. The duties of the Regional Board QA officer include overseeing and implementing QA procedures conducted in the Regional Board laboratory, interacting with project managers on the required preparation of QA Project Plans, and evaluating compliance inspection data on all major dischargers.

OTHER MONITORING PROGRAMS

In addition to the State's surveillance and monitoring program, several other agencies monitor water quality, complementing the State's efforts. These agencies are usually local health departments or water supply agencies.

REFERENCES

California Water Resources Control Board. 1992. Water Quality Assessment. State Board Resolution No. 92-4, State Water Resources Control Board, Sacramento.

California Water Resources Control Board, Division of Water Quality. 1988. California State Mussel Watch: Ten Year Data Summary (1977-1987). State Water Resources Control Board, Sacramento. Water Quality Monitoring Report No. 87-3. 313pp + appendices.

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APPENDICES

APPENDIX A
GLOSSARY

Basin Plan - The plan for the protection of water quality prepared by the Regional Water Quality Control Board in response to the Porter-Cologne Water Quality Control Act. The Basin Plan for the San Diego Region is also known as the Water Quality Control Plan for the San Diego Basin (9) and contains Water Quality Standards for the federal Clean Water Act.

Beneficial Uses - The uses of water necessary for the survival or well being of man, plants, and wildlife. These uses of water serve to promote the tangible and intangible economic, social, and environmental goals "Beneficial Uses" of the waters of the State that may be protected against include, but are not limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves. Existing beneficial uses are uses that were attained in the surface or ground water on or after November 28, 1975; and potential beneficial uses are uses that would probably develop in future years through the implementation of various control measures. "Beneficial Uses" are equivalent to "Designated Uses" under federal law. [California Water Code Section 13050(f)].

Best Management Practices (BMPs) - The practice or combination of practices that are determined to be the most effective, practicable means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals (including technological, economic, and institutional considerations).

Bioaccumulation - The accumulation of contaminants in the tissues of organisms through any route, including respiration, ingestion, or direct contact with contaminated water, sediment, food, or dredged material.

California Water Code, Division 7 - a.k.a. Porter Cologne Water Quality Control Act

Capping - The controlled, accurate placement of contaminated material at an open-water site, followed by a covering or cap of clean isolating material.

CEQA - California Environmental Quality Act of 1970

Clean Water Act - a.k.a. Federal Water Pollution Control Act

Confined disposal - Placement of dredged material within dikes nearshore or upland confined disposal facilities that enclose the disposal area above any adjacent water surface, isolating the dredged material from adjacent waters during placement. Confined disposal does not refer to subaqueous capping or contained aquatic disposal.

Contaminant - A chemical or biological substance in a form that can be incorporated into, onto, or be ingested by and that harms aquatic organisms, consumers of aquatic organisms, or users of the aquatic environment.

Contaminated sediment or contaminated dredged material - Contaminated sediments or contaminated dredged materials are defined as those that have been demonstrated to cause an unacceptable adverse effect on human health or the environment.

Contamination - means an impairment of the quality of the waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease. "Contamination" includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.

Dredged material - Material excavated from waters of the United States or ocean waters. The term dredged material refers to material which has been dredged from a water body, while the term sediment refers to material in a water body prior to the dredging process.

Dredged material discharge - The term dredged material discharge means any addition of dredged material into waters of the United States or ocean waters. The term includes open- water discharges; discharges resulting from unconfined disposal operations (such as beach nourishment or other beneficial uses); discharges from confined disposal facilities that enter waters of the United States (such as effluent, surface runoff, or leachate); and overflow from dredge hoppers, scows, or other transport vessels.

Effluent Limitations - Limitations on the volume of each waste discharge, and the quantity and concentrations of pollutants in the discharge. The limitations are designed to ensure that the discharge does not cause water quality objectives to be exceeded in the receiving water and does not adversely affect beneficial uses.

Ephemeral - Water bodies, or segments thereof, that contain water only for a short period following precipitation events.

Hydrologic Area - A major logical subdivision of a hydrologic unit which includes both water-bearing and nonwater-bearing formations. It is best typified by a major tributary of a stream, a major valley, or a plain along a stream containing one or more ground water basins and having closely related geologic, hydrologic, and topographic characteristics. Area boundaries are based primarily on surface drainage boundaries. However, where strong subsurface evidence indicates that a division of ground water exists, the area boundary may be based on subsurface characteristics.

Hydrologic Subarea - A major logical subdivision of a hydrologic area which includes both water-bearing and nonwater-bearing formations.

Hydrologic Unit - A classification embracing one of the following features which are defined by surface drainage divides: (1) in general, the total watershed area, including water-bearing and nonwater-bearing formations, such as the total drainage area of the San Diego River Valley; and (2) in coastal areas, two or more small contiguous watersheds having similar hydrologic characteristics, each watershed being directly tributary to the ocean and all watersheds emanating from one mountain body located immediately adjacent to the ocean.

Implementation Plan - Basin Plan chapter which describes the actions by the Regional Board and others that are necessary to achieve and maintain the designated beneficial uses and water quality objectives of the Region's waters.

Intermittent - Water bodies, or segments thereof, that contain water for extended periods during the year, but not at all times.

Interrupted - Water bodies or streams that contain perennial segments or pools, with intervening intermittent or ephemeral segments.

Leachate - Water or any other liquid that may contain dissolved (leached) soluble materials, such as organic salts and mineral salts, derived from a solid material. For example, rainwater that percolates through a confined disposal facility and picks up dissolved contaminants is considered leachate.

Major federal action - Includes actions with effects that may be major and that are potentially subject to federal control and responsibility. Major refers to the context (meaning that the action must be analyzed in several contexts, such as the effects on the environment, society, regions, interests, and locality) and intensity (meaning the severity of the impact). It can include (a) new and continuing activities, projects, and programs entirely or partly financed, assisted, conducted, regulated, or approved by federal agencies; (b) new or revised agency rules, regulations, plans, policies, or procedures; and (c) legislative proposals. Action does not include funding assistance solely in the form of general revenue-sharing funds where there is no federal agency control over the subsequent use of such funds. Action does not include judicial or administrative civil or criminal enforcement action.

National Pollution Discharge Elimination System (NPDES) - These permits pertain to the discharge of waste to surface waters only. All State and Federal NPDES permits are also WDRs.

Nonpoint Sources - This refers to pollutants from diffuse sources that reach water through means other than a discernable, confined, and discrete conveyance.

Non-storm Water Discharge - Any discharge to a storm water conveyance system that is not composed entirely of storm water.

Nuisance - means anything which meets all of the following requirements: (1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property; (2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal; and (3) Occurs during or as a result of the treatment or disposal of waste.

Open-water disposal - Placement of dredged material in rivers, lakes, estuaries, or oceans via pipeline or surface release from hopper dredges or barges.

Person - Also includes any city, county, district, the state or any department or agency thereof. "Person" includes the United States, to the extent authorized by federal law.

pH - Term used to refer to the hydrogen ion concentration of water. The acidity or alkalinity of water is measured by the pH factor.

Point Sources - This refers to pollutants discharged to water through any discernable, confined, and discrete conveyance.

Pollution - means an alteration of the quality of the waters of the state by wastes to a degree which unreasonably affects either of the following: (1) The waters for beneficial uses, or (2) Facilities which serve those beneficial uses. "Pollution" may include "contamination."

Porter-Cologne Water Quality Control Act (Porter-Cologne Act) - This is also known as the California Water Code.

Quality of the Water - or "quality of the waters" refers to chemical, physical, biological, bacteriological, radiological, and other properties and characteristics of water which affect its use.

Reclaimed water - or "recycled water" means water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefor considered a valuable resource.

Regional Board - a.k.a. California Regional Water Quality Control Board

Region - a.k.a. San Diego Basin (9)

Sewage, Domestic - Waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works. [40 CFR 503.9(g)]

Sewage Sludge - A solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works. [40 CFR 503.9(w)]

State Board - a.k.a. State Water Resources Control Board

Statewide Plan - A water quality control plan adopted by the State Water Resources Control Board in accordance with the provisions of Water Code Sections 13240 through 13244, for waters where water quality standards are required by the Federal Water Pollution Control Act. Such plans supersede regional water quality control plans for the same waters to the extent of a conflict. [California Water Code Section 13170].

Triennial Review - Review of the Basin Plan which is required to be done every three years by the federal Clean Water Act [Section 303(c)(1)].

Waste - Includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation of whatever nature, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.

Waste Discharge Requirements (WDRs) - The name of permits issued by the Regional Board for the discharge of waste to land. The discharge of waste to land may potentially may impact ground water quality. These permits require that waste not be discharged in a manner that would cause an exceedance of applicable water quality objectives or adversely affect beneficial uses designated in the Basin Plan.

Water Quality Criteria - Numerical or narrative limits for constituents or characteristics of water designed to protect specific designated uses of the water. When criteria are met, water quality will generally protect the designated use [40 CFR Section 131.3(b)]. This term is also used to describe scientific information on the relationship that the effect of a constituent concentration has on human health, aquatic life, or other uses of water, such as the criteria in the USEPA "Gold Book". California's water quality criteria are called "water quality objectives". See "water quality standard".

Water Quality Control - means the regulation of any activity or factor which may affect the quality of the water of the state and includes the prevention and correction of water pollution and nuisance.

Water Quality Goal - The most stringent, applicable, numerical water quality limit for a constituent or parameter of concern in a specific body of ground or surface water at a specific site that is chosen to protect either (1) existing water quality or (2) beneficial uses of water. In the first case, the water quality goal is set equal to the background level in the body of water. In the second case, the water quality goal is set at the less stringent of either (a) the numerical limit which implements all applicable water quality objectives or (b) the background level.

Water Quality Objectives - Numerical or narrative limits on constituents or characteristics of water designed to protect designated beneficial uses of the water. [California Water Code Section 13050(h)]. California's water quality objectives are established by the State and Regional Water Boards in the *Water Quality Control Plans*. See "water quality standards".

Water Quality Standards - Provisions of State or federal law which consist of a designated use or uses for waters of the United States and water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the Act [40 CFR Section 131.3(i)]. A water quality standard under the Federal Clean Water Act is equivalent to a beneficial use designation plus a water quality objective. In California, water quality standards are promulgated by the State and Regional Water Boards in *Water Quality Control Plans*. Water quality standards are enforceable limits for the bodies of surface or ground waters for which they are established.

Water Quality Control Plans - There are two types of water quality control plans - Basin Plans and Statewide Plans. Regional Boards adopt Basin Plans for each region based upon surface water hydrologic basin boundaries. The Regional Basin Plans designates or describes (1) existing and potential beneficial uses of ground and surface water; (2) water quality objectives to protect the beneficial uses; (3) implementation programs to achieve these objectives; and (4) surveillance and monitoring activities to evaluate the effectiveness of the water quality control plan. The Statewide Plans address water quality concerns for surface waters that overlap Regional Board boundaries, are statewide in scope, or are otherwise considered significant and contain the same four elements. Statewide Water Quality Control Plans include the Ocean Plan, the Enclosed Bays and Estuaries Plan, the Inland Surface Waters Plan, and the Thermal Plan. A water quality control plan consists of a designation or establishment for the waters within a specified area of (1) beneficial uses to be protected, (2) water quality objectives, and (3) a program of implementation needed for achieving water quality objectives. [California Water Code Section 13050(j)].

Waters of the State - Any water, surface or underground, including saline waters within the boundaries of the State [California Water Code Section 13050(e)].

ACRONYMS

ACL . . . . Aministrative Civil Liability
Adj. SAR . . . . Adjusted Sodium Adsorption Ratio
AF . . . . Acre-foot (Acre-feet)
af/y . . . . acre-foot (acre-feet) per year
AGR . . . . beneficial use of agricultural supply
AQUA . . . . beneficial use of aquaculture
ASBS . beneficial use of Area of Special Biological Significance
BAT . . . . Best Available Technology
BCT . . . . Best Control Technology
BEP . . . . Bays and Estuaries Plan
BIOL . . . . beneficial use of preservation of biological habitats of special significance
BMP . . . . Best Management Practice
BOD . . . . Biological Oxygen Demand
BPTCP . . . . Bay Protection and Toxic Cleanup Program
°C . . . . degrees Centigrade
Ca . . . . Calcium
Cal-EPA's . . . . California Environmental Protection Agency
CBOD . . . . Carbonaceous Biochemical Oxygen Demand
CCR . . . . California Code of Regulations
CEQA . . . . California Environmental Quality Act of 1970
CERCLA . . . . Comprehensive, Environmental Response, Compensation, and Liability Act, commonly referred to as Superfund
CFR . . . . Code of Federal Regulations
CIWMB . . . . California Integrated Waste Management Board
COLD . . . . beneficial use of cold freshwater habitat
COMM . . . . beneficial use ofcommercial and sport fishing
CWA . . . . federal Clean Water Act
CWC . . . . California Water Code
CWS . . . . Clean Water Strategy
CZARA . . . . Coastal Zone Act Reauthorization Amendments
DDE . . . . Dichlorodiphenyldichloroethylene
DDT . . . . Dichlorodiphenyltrichloroethane
DFG . . . . Department of Fish and Game
DoD . . . . Department of Defense
DOHS . . . . Department of Health Services
DPR . . . . Department of Pesticide Regulation
DTSC . . . . Department of Toxic Substance Control
DWR . . . . Department of Water Resources
E. Coli . . . . *Escherichia coli*
EIR . . . . Environmental Impact Report
EIS . . . . Environmental Impact Statement
EST . . . . beneficial use of estuarine habitat
ET . . . . Evapotranspiration
ETI . . . . Evapotranspiration-Infiltration
°F . . . . degrees Fahrenheit
FFA . . . . Federal Facility Agreement
FRSH . . . . beneficial use of freshwater replenishment
ft . . . . foot (feet)
Gold Book . . . . Quality Criteria for Water, 1986
GWR . . . . beneficial use of ground water recharge
HA . . . . Hydrologic Area
HEP . . . . Health Evaluation Plan
HSA . . . . Hydrologic Subarea
HU . . . . Hydrologic Unit
IND . . . . beneficial use of industrial service supply
ISWP . . . . Inland Surface Waters Plan
K . . . . Potassium
l . . . . liter
LA . . . . Load Allocation
m . . . . meter(s)
MAA . . . . Management Agency Agreement
MAR . . . . beneficial use of marine habitat
MBAS . . . . Methylene Blue-Activated Substances
MEP . . . . Maximum Extent Practicable
mg . . . . milligram(s)
Mg . . . . Magnesium
mg/l . . . . milligram(s) per liter
MGD . . . . Million Gallons per Day
MIGR . . . . beneficial use of migration of aquatic organisms
MPRSA . . . . Marine Protection, Research and Sanctuaries Act of 1972
ml . . . . milliliter(s)
MLLW . . . . Mean Lower Low Water
MOU . . . . Memorandum of Understanding
MSD . . . . Marine Sanitation Device
MUN . . . . beneficial use of municipal and domestic supply
Mussel Watch . . . . State Mussel Watch
MWD . . . . Metropolitan Water Districtof Southern California
NASSCO . . . . National Steel and Shipbuilding Company
Na . . . . Sodium
NAV . . . . beneficial use of navigation
ND . . . . Negative Declaration
NEPA . . . . National Environmental Policy Act of 1969
ng/l . . . . nannograms per liter
No . . . . number(s)
NPDES . . . . National Pollutant Discharge Elimination System
NPSMP . . . . Nonpoint Source Management Plan
NTU . . . . turbidity unit
O,P'-DDD . . . . O,P'-Dichlorodiphenyldichloroethane
O,P'-DDE . . . . O,P'-Dichlorodiphenyldichloroethylene
P,P'-DDD . . . . P,P'-Dichlorodiphenyldichloroethane
P,P'-DDE . . . . P,P'-Dichlorodiphenyldichloroethylene
P,P'-DDMS . . P,P'-Dichloro-diphenylmonochlorosaturatedethan
PAH . . . . polyaromatic hydrocarbon
PCB . . . . polychlorinated biphenyl
pH . . . . hydrogen ion concentration
POTW . . . . Publicly Owned Treatment Works
POW . . . . beneficial use of hydropower generation
ppb . . . . part(s) per billion (ng/g)
ppm . . . . part(s) per million (ug/g)
Primary Network . . Primary Water Quality Monitoring Network
PROC . . . . beneficial use of industrial process supply
QA . . . . Quality Assurance
QAPP . . . . Quality Assurance Program Plan
RARE . beneficial use of rare, threatened,or endangered species
RCD . . . . Resource Conservation District
RCRA . . . . Resource Conservation and Recovery Act of 1976
REC-1 . . . . beneficial use of contact water recreation
REC-2 . . . . beneficial use of non-contact water recreation
ROWD . . . . Report of Waste Discharge
RV . . . . Recreational Vehicle
SAL . . . . beneficial use of inland saline water habitat
SAR . . . . sodium adsorbtion ratio
SCE . . . . Southern California Edison
SDG&E . . . . San Diego Gas and Electric Company
SHELL . . . . beneficial use of shellfish harvesting
SONGS . . . . San Onofre Nuclear Generating Station
SPWN . . . . beneficial use of spawning, reproduction, and/or early development
SRF . . . . State Revolving Fund
SWAT . . . . Solid Waste Assessment Test
SWP . . . . State Water Project
SWRCB . . . . California State Water Resources Control Board
TBT . . . . Tributyl tin
TDS . . . . Total Dissolved Solids
TMDL . . . . Total Maximum Daily Load
TSM . . . . Toxic Substances Monitoring
TSS . . . . Total Suspended Solids

ug .... microgram(s)
ug/l .... micrograms per liter
UHC .... Underwater Hull Cleaning
USCG .... United States Coast Guard
US EPA ..... United States Environmental Protection Agency
USGS .... United States Geologic Survey
UST .... Underground Storage Tank
WARM .... beneficial use of warm freshwater habitat
WDR .... Waste Discharge Requirement
WILD .... beneficial use of wildlife habitat
WLA .... Waste Load Allocation
WQA .... Water Quality Assessment
WQLS .... Water Quality Limited Segment
WQLZ .... Water Quality Limited Zone
WRR .... Water Reclamation Requirement

APPENDIX B - 1. **Summary of the Regional Growth Forecast for Various Land Uses Within the San Diego Association of Governments' Sphere of Influence.**

HU 901 - 911	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	1,895,749	1,895,749	1,895,749	1,895,749
Developed Acres	395,746	428,622	539,895	660,646
Low Density Single Family	52,556	61,663	127,357	227,763
Single Family	141,512	159,132	194,286	207,021
Multiple Family	24,068	26,288	31,139	33,564
Mobile Homes	5,344	5,127	4,774	4,468
Other Residential	1,095	1,095	1,095	1,095
Industrial	35,043	36,167	38,790	40,034
Retail	24,850	25,733	27,238	28,084
Office	2,642	2,756	3,135	3,327
Schools	10,309	10,624	11,130	11,359
Agriculture	3,544	3,546	3,546	3,546
Parks	83,119	83,119	83,119	83,119
Roads & Freeways	11,665	13,372	14,288	17,267

APPENDIX B - 2. **Summary of the Regional Growth Forecast for Various Land Uses Within the Southern California Association of Governments' Sphere of Influence.**

HU 901 - 911	Year 1994
TOTAL ACRES	460,572
Developed Acres	121,766
Low Density Single Family	3,793
Single Family	24,395
Multiple Family	6,388
Mobile Homes	1,045
Other Residential	9,484
Industrial	3,087
Retail	20,060
Office	1,262
Schools	1,291
Agriculture	46,887
Parks	2,523
Roads & Freeways	1,551

APPENDIX B - 3. Regional Growth Forecast for Various Land Uses Within SANDAG's Sphere of Influence for the San Juan Hydrologic Unit (Hydrologic Unit Basin 901).*

HU 901	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	100,823	100,823	100,823	100,823
Developed Acres	6,137	6,137	6,137	6,137
Low Density Single Family	0	0	0	0
Single Family	152	152	152	152
Multiple Family	100	100	100	100
Mobile Homes	142	142	142	142
Other Residential	27	27	27	27
Industrial	2816	2816	2816	2816
Retail	0	0	0	0
Office	0	0	0	0
Schools	8	8	8	8
Agriculture	0	0	0	0
Parks	2487	2487	2487	2487
Roads & Freeways	405	405	405	405

Regional Growth Forecast for Various Land Uses Within SANDAG's Sphere of Influence for the Santa Margarita Hydrologic Unit (Hydrologic Unit Basin 902).*

HU 902	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	122,902	122,902	122,902	122,902
Developed Acres	8,600	9,011	11,957	13,362
Low Density Single Family	2,090	2,340	5,137	5,965
Single Family	727	879	1,013	1,548
Multiple Family	459	460	464	470
Mobile Homes	61	61	61	61
Other Residential	11	11	11	11
Industrial	4,573	4,580	4,585	4,588
Retail	330	332	337	340
Office	0	0	0	0
Schools	50	50	50	50
Agriculture	0	0	0	0
Parks	148	148	148	148
Roads & Freeways	151	151	151	182

* This is the Regional Growth Forecast for the area within SANDAG's Sphere of Influence only; that portion covered within SCAG's Sphere of Influence is not shown.

APPENDIX B - 3 (continued). Regional Growth Forecast for the Period 1990 through 2015 for the San Luis Rey Hydrologic Unit (Hydrologic Unit Basin 903).

HU 903	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	351,640	351,640	351,640	351,640
Developed Acres	37,262	42,289	60,999	79,877
Low Density Single Family	14,985	16,599	29,134	44,539
Single Family	5,019	8,196	13,963	17,066
Multiple Family	1,722	1,889	2,057	2,077
Mobile Homes	620	392	391	391
Other Residential	86	86	86	86
Industrial	1,531	1,543	1,634	1,653
Retail	1,068	1,144	1,295	1,364
Office	60	66	78	75
Schools	360	369	374	384
Agriculture	161	161	161	161
Parks	11,005	11,005	11,005	11,005
Roads & Freeways	646	786	825	1,052

Regional Growth Forecast for the Period 1990 through 2015 for the Carlsbad Hydrologic Unit (Hydrologic Unit Basin 904).

HU 904	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	132,554	132,554	132,554	132,554
Developed Acres	56,749	64,927	79,666	92,898
Low Density Single Family	6,834	8,348	12,617	19,299
Single Family	27,365	32,713	40,582	46,007
Multiple Family	5,385	5,863	7,097	7,181
Mobile Homes	1,715	1,715	1,448	1,389
Other Residential	103	103	103	103
Industrial	4,133	4,330	5,059	5,483
Retail	4,274	4,496	4,944	5,183
Office	376	420	556	612
Schools	1,517	1,568	1,759	1,841
Agriculture	274	274	274	274
Parks	3,387	3,387	3,387	3,387
Roads & Freeways	1,386	1,710	1,840	2,140

APPENDIX B - 3 (continued). Regional Growth Forecast for the Period 1990 through 2015 for the San Dieguito Hydrologic Unit (Hydrologic Unit Basin 905).

HU 905	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	217,586	217,586	217,586	217,586
Developed Acres	38,210	42,855	62,662	83,105
Low Density Single Family	9,559	12,482	24,900	42,295
Single Family	14,271	15,802	22,695	24,991
Multiple Family	1,146	1,220	1,379	1,492
Mobile Homes	140	140	140	140
Other Residential	8	8	8	8
Industrial	904	941	1,066	1,098
Retail	2,385	2,413	2,468	2,493
Office	142	147	218	269
Schools	442	466	481	488
Agriculture	770	772	772	772
Parks	8,011	8,011	8,011	8,011
Roads & Freeways	432	453	526	1,049

Regional Growth Forecast for the Period 1990 through 2015 for the Penasquitos Hydrologic Unit (Hydrologic Unit Basin 906).

HU 906	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	92,823	92,823	92,823	92,823
Developed Acres	47,609	50,663	56,484	61,032
Low Density Single Family	988	1,071	2,110	4,910
Single Family	20,740	22,441	25,240	25,484
Multiple Family	4,081	4,532	5,313	5,786
Mobile Homes	322	333	273	210
Other Residential	67	67	67	67
Industrial	4,736	4,954	5,701	6,051
Retail	3,641	3,882	4,107	4,243
Office	714	726	766	783
Schools	2,628	2,715	2,835	2,888
Agriculture	745	745	745	745
Parks	7,353	7,353	7,353	7,353
Roads & Freeways	1,595	1,844	1,974	2,515

APPENDIX B - 3 (continued). **Regional Growth Forecast for the Period 1990 through 2015 for the San Diego Hydrologic Unit (Hydrologic Unit Basin 907).**

HU 907	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	289,243	289,243	289,243	289,243
Developed Acres	82,095	84,372	99,269	118,659
Low Density Single Family	8,802	9,399	18,364	36,328
Single Family	27,121	26,068	33,000	33,468
Multiple Family	4,187	4,342	4,688	4,959
Mobile Homes	1,178	1,178	1,178	1,170
Other Residential	96	96	96	96
Industrial	5,524	5,524	5,823	6,001
Retail	5,079	5,168	5,347	5,408
Office	713	749	831	877
Schools	2,098	2,124	2,157	2,188
Agriculture	216	216	216	216
Parks	24,521	24,521	24,521	24,521
Roads & Freeways	2,590	2,936	3,049	3,427

Regional Growth Forecast for the Period 1990 through 2015 for the Pueblo San Diego Hydrologic Unit (Hydrologic Unit Basin 908).

HU 908	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	44,368	44,368	44,368	44,368
Developed Acres	33,226	33,402	34,177	34,374
Low Density Single Family	0	0	0	0
Single Family	15,950	15,902	15,780	15,548
Multiple Family	3,817	3,967	4,797	5,233
Mobile Homes	151	151	133	102
Other Residential	162	162	162	162
Industrial	4,340	4,373	4,394	4,399
Retail	4,235	4,251	4,289	4,296
Office	415	416	419	421
Schools	1,178	1,179	1,194	1,196
Agriculture	0	0	0	0
Parks	1,641	1,641	1,641	1,641
Roads & Freeways	1,337	1,361	1,368	1,376

APPENDIX B - 3 (continued). **Regional Growth Forecast for the Period 1990 through 2015 for the Sweetwater Hydrologic Unit (Hydrologic Unit Basin 909).**

HU 909	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	147,593	147,593	147,593	147,593
Developed Acres	56,400	59,870	73,470	90,120
Low Density Single Family	5,686	6,262	16,882	32,718
Single Family	22,859	25,084	27,149	27,329
Multiple Family	2,004	2,273	2,686	2,962
Mobile Homes	443	443	436	436
Other Residential	90	90	90	90
Industrial	1,229	1,302	1,364	1,380
Retail	2,380	2,500	2,644	2,712
Office	141	152	174	182
Schools	1,262	1,278	1,356	1,388
Agriculture	164	164	164	164
Parks	19,036	19,036	19,036	19,036
Roads & Freeways	1,104	1,285	1,490	1,723

Regional Growth Forecast for the Period 1990 through 2015 for the Otay Hydrologic Unit (Hydrologic Unit Basin 910).

HU 910	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	100,465	100,465	100,465	100,465
Developed Acres	15,762	19,416	30,411	45,290
Low Density Single Family	2,198	2,818	8,514	21,814
Single Family	4,729	6,785	11,040	11,628
Multiple Family	799	1,152	1,849	2,418
Mobile Homes	466	466	466	377
Other Residential	338	338	338	338
Industrial	3,664	3,737	3,897	3,964
Retail	1,044	1,106	1,239	1,354
Office	17	17	32	40
Schools	429	498	523	537
Agriculture	1,155	1,155	1,155	1,155
Parks	665	665	665	665
Roads & Freeways	257	679	692	998

APPENDIX B - 3 (continued). **Regional Growth Forecast for the Period 1990 through 2015 for the Tijuana Hydrologic Unit (Hydrologic Unit Basin 911).**

HU 911	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	295,751	295,751	295,751	295,751
Developed Acres	13,695	15,731	24,661	35,792
Low Density Single Family	1,411	2,344	9,700	19,895
Single Family	2,578	3,109	3,672	3,801
Multiple Family	398	489	710	885
Mobile Homes	108	108	108	51
Other Residential	107	107	107	107
Industrial	1,593	2,016	2,450	2,602
Retail	414	440	569	671
Office	62	63	63	64
Schools	339	370	393	393
Agriculture	57	57	57	57
Parks	4,866	4,866	4,866	4,866
Roads & Freeways	1,763	1,763	1,967	2,399

APPENDIX C
WATER QUALITY CRITERIA

The literature contains many different water quality criteria designed to protect specific beneficial uses of water. A summary of the specific numerical water quality criteria considered by the Regional Board for designation as water quality objectives is described in Table C-1, Water Quality Criteria - Inorganic Constituents; and Table C-2, Water Quality Criteria - Organic Constituents. The water quality criteria summarized in Tables C-1 and C-2 provided the basis for the Regional Board's designation of many of the specific numerical water quality objectives described earlier in this Chapter.

The water quality criteria presented in Tables C-1 and C-2 are not enforceable water quality objectives. The purpose of presenting the information summarized in these tables is to allow interested persons to compare available water quality criteria to the specific water quality objectives designated by the Regional Board described in Chapter 3.

A summary of the available types of numerical water quality criteria considered by the Regional Board for designation as numerical water quality objectives are summarized below.

- ***Maximum Contaminant Levels (MCLs):***

  MCLs are part of the drinking water standards adopted both by the California Department of Health Services (DHS), Office of Drinking Water in Title 22 of the California Code of Regulations (CCR), Division 4, Chapter 15, "*Domestic Water Quality and Monitoring*" and by the US EPA under the Safe Drinking Water Act. The State MCL drinking water standards must be at least as stringent as those adopted by US EPA. Primary MCLs are derived from the one in a million incremental cancer risk estimate for carcinogens and from threshold toxicity levels for non-carcinogens. Secondary MCLs are derived from human welfare considerations (e.g., taste or odor).

- ***Maximum Contaminant Level Goals (MCL Goals):***

  MCL Goals are promulgated by US EPA under the National Primary Drinking Water Regulations as the first step in establishing MCLs. MCL Goals are set at levels which represent no adverse health risks.

- ***State "Action" Levels:***

  Action levels are published by the DHS's Office of Drinking Water and are based mainly on health effects. The 10^{-6} incremental cancer risk estimates are used for carcinogens and threshold toxicity limits are used for other constituents.

- ***Proposition 65 Regulatory Limits:***

  Proposition 65 limits are established under the California Safe Drinking Water and Toxic Enforcement Act of 1986 for known human carcinogens and reproductive toxins. For carcinogens the No-Significant-Risk-Levels are set at the one-in-100,000 incremental cancer risk level. 1/1000 of the No-Observable-Effect Level (NOEL) is used for reproductive toxicants.

- ***National Ambient Water Quality Criteria:***

  These criteria are published by US EPA under the federal Clean Water Act to protect human health and welfare and freshwater and marine aquatic life. These criteria are found in: *Quality Criteria for Water, 1986* - the "*Gold Book*"; the *Ambient Water Quality Criteria* volumes (1980, 1984, 1986, 1987, and 1989); *Quality Criteria for Water (1976)* - the "*Red*

Book"; and *Water Quality Criteria, 1972* - the "*Blue Book*".

- ***Health Advisories and Water Quality Advisories:***

  These advisories are published by US EPA's Office of Water. Short-term (10 days or less), long-term (7 years or less), and lifetime exposure health advisories for non-carcinogens and suspected human health carcinogens are included where sufficient data exist.

- ***Suggested No-Adverse-Response Levels (SNARLS):***

  These human health-related criteria are published by the National Academy of Sciences in the *Drinking Water and Health Volumes*. Incremental cancer risk estimates are presented separately for carcinogens.

- ***Water Quality for Agriculture:***

  Water Quality for Agriculture was published by the Food and Agriculture Organization of the United Nations in 1985, which contains criteria protective of agricultural uses of water.

- ***Water Quality Criteria:***

  Water Quality Criteria was written by McKee and Wolf and published by the State Water Resources Control Board in 1963 and 1978. It contains criteria for human health and welfare, aquatic life, agricultural use, industrial use, and various other beneficial uses.

Table C-1. WATER QUALITY CRITERIA - INORGANIC CONSTITUENTS

Inorganic Constituent	BASIN PLAN				Drinking Water Standards (California & Federal) Maximum Contaminant Levels (MCLs)		
	Ocean Waters (1) "‡" = carcinogen	Bays and Estuaries	Inland Surface Waters	Ground Water	California Dept. of Health Services		US EPA
					Primary MCL	Secondary MCL	Primary MCL
Ammonia	600 (2)	NH3 not > 0.025 mg/l	NH3 not > 0.025 mg/l				
Antimony	1200						6 (8)
Arsenic	8				50		50
Beryllium	0.033 ‡						4 (8)
Boron			0.5 mg/l or as noted in Table 3-1	0.5 mg/l or as noted in Table 3-2			
Bromide							
Cadmium	1				10		5
Chloride			250 mg/l or as noted in Table 3-1	60 mg/l or as noted in Table 3-2		250,000 (7)	
Chlorine	2 (3)						
Chromium (III)	190,000						
Chromium (VI)	2 (4)						
Chromium (total)	2 (4)				50		100
Color			20 units or as noted in Table 3-1	15 units or as noted in Table 3-2		15 units	
Copper	3					1000	1300 (9)
Cyanide	1						200 (8)
Fluoride			1.0 mg/l or as noted in Table 3-1	1.0 mg/l or as noted in Table 3-2	1400 to 2400 (5)		4000
Iron			0.3 mg/l or as noted in Table 3-1	0.3 mg/l or as noted in Table 3-2		300	
Lead	2				50		15 (9)
Manganese			0.05 mg/l or as noted in Table 3-1	0.05 mg/l or as noted in Table 3-2		50	
Mercury(inorganic)	0.04				2		2
Nickel	5						100 (8)
Nitrate			5 mg/l or as noted in Table 3-1	5 mg/l or as noted in Table 3-2	45,000 (6)		10,000 (10)

Table C-1 -- Values are in μg/l (ppb) unless otherwise indicated. Numbers in parentheses indicate endnotes following the tables.

Table C-1. WATER QUALITY CRITERIA - INORGANIC CONSTITUENTS

Inorganic Constituent	BASIN PLAN				Drinking Water Standards (California & Federal) Maximum Contaminant Levels (MCLs)		
	Ocean Waters (1) "‡" = carcinogen	Bays and Estuaries	Inland Surface Waters	Ground Water	California Dept. of Health Services		US EPA
					Primary MCL	Secondary MCL	Primary MCL
Oxygen, dissolved	Shall not be depressed > 10%	Shall not be less than 5.0 mg/l with designated MAR. The annual mean DO shall not be less than 7 mg/l more than 10% of the time.	Shall not be less than 5.0 mg/l in inland surface waters with WARM or less than 6.0 m/l in waters with COLD beneficial use The annual mean D.O. conc. shall not be less than 7 mg/l more than 10% of the time.				
pH	Shall not be +/- 0.2 units of natural pH	Shall not be depressed below 7.0; nor raised above 9.0. Changes in normal ambient pH shall not exceed 0.2 units.	Shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 units in fresh waters with designated COLD or WARM beneficial uses.				
Phosphorus			Shall not exceed 0.05 mg/l in any steam at the point where it enters any standing body of water,nor 0.025 mg/l in any standing body of water; for flowing waters, shall not exceed 0.1 mgl total P. These values not to be exceeded more than 10% of the time.				
Radioactivity, Gross Alpha					15 pCi/l		15 pCi/l (12)
Radioactivity, Gross Beta					50 pCi/l		4 mrem/yr
Radium 226 + 228					5 pCi/l		5 pCi/l / 20 pCi/l (13)
Selenium	15				10		50
Settleable solids			Shall not contain suspended and settleable solids in concentrations that result in the deposition of solids that cause nuisance or adversely affect beneficial uses.				
Silver	0.7				50		100
Sodium			60% Na; or as noted in Table 3-1	60% Na; or as noted in Table 3-2			
Strontium-90					8 pCi/l		
Sulfate			65 mg/l; or as noted in Table 3-1	60 mg/l; or as noted in Table 3-2		250,000 (7)	400,000-500,000 (13)
Total dissolved solids (TDS)			300 mg/l; or as noted in Table 3-1	350 mg/l; or as noted in Table 3-2		500,000 (11)	
Thallium	14						2 (8)
Tritium					20,000 pCi/l		
Turbidity		Shall not be less than 50% of the depth at locations where measurement is made by means of a standard Secchi disk, or as noted in Chapter 3 page 15.	20 NTU; or as noted in Table 3-1. Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses.	5 NTU; or as noted in Table 3-2. Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses.		5 units	1 to 5 units
Uranium					20 pCi/l		20 μg/l = 30 pCi/l (13)
Zinc	20					5000	

Table C-1 -- Values are in μg/l (ppb) unless otherwise indicated. Numbers in parentheses indicate endnotes following the tables.

Table C-1. WATER QUALITY CRITERIA - INORGANIC CONSTITUENTS

Inorganic Constituent	Drinking Water Standards (Federal) Maximum Contaminant Levels (MCLs) US EPA		California Recommended Public Health Level (RPHL) Department of Health Services	Health Advisories or Suggested No-Adverse-Response Levels (SNARLs) for toxicity other than cancer risk		US EPA Integrated Risk Information System (IRIS) Reference Dose as a Water Quality Criterion (16)	One-in-a-Million Incremental Cancer Risk Estimates for Drinking Water			California Proposition 65 Regulatory Level as a Water Quality Criterion (19)	Agricultural Water Quality Goals (21)
	Secondary MCL	MCL Goal		US EPA	National Academy of Sciences (NAS)		Cal/EPA Cancer Potency Factor as a Water Quality Criterion (17)	US EPA Integrated Risk Information System (IRIS)	US EPA Health Advisory or SNARL		
Ammonia				30,000 (14)					(D)		
Antimony		6 (8)		3		2.8			(D)		
Arsenic								0.02	0.02 (A,14)	5	100
Beryllium		4 (8)		4000 / 20,000 (7-yr,14,15)				0.008	0.008 (B,14)	(18)	100
Boron				600 (14)		630			(D)		750 (22) / 700
Bromide					2300						
Cadmium		5		5	5	3.5	(18)		(D)	(18)	10
Chloride	250,000										106,000
Chlorine						1050			(D)		
Chromium (III)											
Chromium (VI)							0.083		(A)	(18)	100
Chromium (total)		100		100		35			(D)		
Color	15 units										
Copper	1000	1300							(D)		200
Cyanide		200 (8)		200		150			(D)		
Fluoride	2000	4000				840			(D)		1000
Iron	300										5000
Lead		zero							(B)	0.25 (20)	5000
Manganese	50					980					200
Mercury(inorganic)		2	2 (13)	2		2.1			(D)		
Nickel		100 (8)		100		140	(18)		(D)	(18)	200
Nitrate		10,000 (2)		10,000 (2)		11,000 (2)			(D)		

Table C-1 -- Values are in μg/l (ppb) unless otherwise indicated. Numbers in parentheses indicate endnotes following the tables.

Table C-1. WATER QUALITY CRITERIA - INORGANIC CONSTITUENTS

Inorganic Constituent	Drinking Water Standards (Federal) Maximum Contaminant Levels (MCLs) US EPA: Secondary MCL	Drinking Water Standards (Federal) Maximum Contaminant Levels (MCLs) US EPA: MCL Goal	California Recommended Public Health Level (RPHL) Department of Health Services	Health Advisories or Suggested No-Adverse-Response Levels (SNARLs) for toxicity other than cancer risk: US EPA	Health Advisories or Suggested No-Adverse-Response Levels (SNARLs) for toxicity other than cancer risk: National Academy of Sciences (NAS)	US EPA Integrated Risk Information System (IRIS) Reference Dose as a Water Quality Criterion (16)	One-in-a-Million Incremental Cancer Risk Estimates for Drinking Water: Cal/EPA Cancer Potency Factor as a Water Quality Criterion (17)	One-in-a-Million Incremental Cancer Risk Estimates for Drinking Water: US EPA Integrated Risk Information System (IRIS)	One-in-a-Million Incremental Cancer Risk Estimates for Drinking Water: US EPA Health Advisory or SNARL	California Proposition 65 Regulatory Level as a Water Quality Criterion (19)	Agricultural Water Quality Goals (21)
Oxygen, dissolved											
pH	6.5 to 8.5 units										
Phosphorus				0.1 (23)					(D)		
Radioactivity, Gross Alpha		zero							(A)		
Radioactivity, Gross Beta		zero							0.04 mrem/yr (A,14)		
Radium 226 + 228		zero (13)							0.22–0.26 pCi/l (A,14)		
Selenium		50				35					20
Settleable solids											
Silver				100 (14)		35			(D)		
Sodium				2000 (24)							
Strontium-90									(A)		
Sulfate	250,000	400,000-500,000 (13)									
Total dissolved solids (TDS)	500,000										450,000
Thallium		0.5 (8)		0.4		0.5					
Tritium									(A)		
Turbidity											
Uranium		zero (13)			35				1.7 pCi/l (A)		
Zinc	5000			2000		2100			(D)		2000

Table C-1 -- Values are in μg/l (ppb) unless otherwise indicated. Numbers in parentheses indicate endnotes following the tables.

Table C-1. WATER QUALITY CRITERIA - INORGANIC CONSTITUENTS

Inorganic Constituent	US EPA National Ambient Water Quality Criteria									
	Health and Welfare Protection			Freshwater Aquatic Life Protection						
				Recommended Criteria				Additional Toxicity Information		
	Non-Cancer Public Health Effects	One-in-a-Million Incremental Cancer Risk Estimate	Taste & Odor or Welfare	Continuous Concentration (4-day Average)	24-hour Average	Maximum Concentration (1-hour Average)	Maximum (Instantaneous)	Acute	Chronic	Other
Ammonia				(26)		(26)				
Antimony	14 / 4300 (25)			30 (13,27)		88 (13,27)		9000	1600	610 (42)
Arsenic		0.018 / 0.14 (25)		190 (27)		360 (27)		850 (41)		48 (43)
Beryllium								130	5.3	
Boron										
Bromide										
Cadmium				0.55 (28,29)		1.4 (28,36)				
Chloride	250,000			230,000 (30)		860,000 (30)				
Chlorine				11 (31)		19 (31)				
Chromium (III)				98 (28,32)		820 (28,37)				
Chromium (VI)				11		16				
Chromium (total)										
Color										
Copper			1000	5.4 (28,33)		7.5 (28,38)				
Cyanide	700 / 220,000 (25)			5.2		22				
Fluoride										
Iron			300				1000			
Lead				0.99 (28,34)		25 (28,39)				
Manganese			50							
Mercury(Inorganic)	0.14 / 0.15 (25)			0.012		2.4				
Nickel	610 / 4600 (25)			73 (28,35)		653 (28,40)				
Nitrate	10,000 (2)									

Table C-1 -- Values are in μg/l (ppb) unless otherwise indicated. Numbers in parentheses indicate endnotes following the tables.

Table C-1. WATER QUALITY CRITERIA - INORGANIC CONSTITUENTS

Inorganic Constituent	US EPA National Ambient Water Quality Criteria									
	Health and Welfare Protection			Freshwater Aquatic Life Protection						
				Recommended Criteria				Additional Toxicity Information		
	Non-Cancer Public Health Effects	One-in-a-Million Incremental Cancer Risk Estimate	Taste & Odor or Welfare	Continuous Concentration (4-day Average)	24-hour Average	Maximum Concentration (1-hour Average)	Maximum (Instantaneous)	Acute	Chronic	Other
Oxygen, dissolved				(22)	(22)					
pH			5 to 9 units				6.5 to 9.0 units			
Phosphorus										
Radioactivity, Gross Alpha										
Radioactivity, Gross Beta										
Radium 226 + 228										
Selenium				5		20				
Settleable solids										
Silver				0.12 (13)		0.84 (28,44)			0.12	
Sodium										
Strontium-90										
Sulfate			250,000							
Total dissolved solids (TDS)										
Thallium	1.7 / 6.3 (25)							1400	40	20 (46)
Tritium										
Turbidity										
Uranium										
Zinc						54 (28,45)				

Table C-1 -- Values are in μg/l (ppb) unless otherwise indicated. Numbers in parentheses indicate endnotes following the tables.

Table C-1. WATER QUALITY CRITERIA - INORGANIC CONSTITUENTS

Inorganic Constituent	US EPA National Ambient Water Quality Criteria Saltwater Aquatic Life Protection						California Ocean Plan Numerical Water Quality Objectives					
	Recommended Criteria		Additional Toxicity Informatio				Human Health Protection (30-day Average) "‡" = carcinogen	Marine Aquatic Life Protection				
	Continuous Concentration (4-day Average)	Maximum Concentration (1-hour Average)	Maximum (Instantaneous)	Acute	Chronic	Other		6-month Median	30-day Average	7-day Average	Daily Maximum	Instantaneous Maximum
Ammonia	35 (47)	233 (47)						600 (2)			2400 (2)	6000 (2)
Antimony	500 (13,27)	1500 (13,27)					1200					
Arsenic	36 (27)	69 (27)		2319 (41)		13 (43)		8			32	80
Beryllium							0.033 ‡					
Boron												
Bromide												
Cadmium	9.3	43						1			4	10
Chloride												
Chlorine	7.5 (48)	13 (48)						2 (3)			8 (3)	60 (3)
Chromium (III)				10,300 (49)			190,000					
Chromium (VI)	50	1100						2 (4)			8 (4)	20 (4)
Chromium (total)								2 (4)			8 (4)	20 (4)
Color												
Copper	2.9	2.9						3			12	30
Cyanide	1	1						1			4	10
Fluoride												
Iron												
Lead	5.6	140						2			8	20
Manganese			100									
Mercury(inorganic)	0.025	2.1						0.04			0.16	0.4
Nickel	8.3	75						5			20	50
Nitrate												

Table C-1 -- Values are in μg/l (ppb) unless otherwise indicated. Numbers in parentheses indicate endnotes following the tables.

Table C-1. WATER QUALITY CRITERIA - INORGANIC CONSTITUENTS

Inorganic Constituent	US EPA National Ambient Water Quality Criteria Saltwater Aquatic Life Protection						California Ocean Plan Numerical Water Quality Objectives					
	Recommended Criteria		Additional Toxicity Informatio				Human Health Protection	Marine Aquatic Life Protection				
	Continuous Concentration (4-day Average)	Maximum Concentration (1-hour Average)	Maximum (Instantaneous)	Acute	Chronic	Other	(30-day Average) "‡" = carcinogen	6-month Median	30-day Average	7-day Average	Daily Maximum	Instantaneous Maximum
Oxygen, dissolved												
pH			6.5 to 8.5 units									6.0 to 9.0 units
Phosphorus			0.1 (50)									
Radioactivity, Gross Alpha												15 pCi/l (12)
Radioactivity, Gross Beta												50 pCi/l
Radium 226 + 228												5 pCi/l
Selenium	71	300						15			60	150
Settleable solids									1000	1500		3000
Silver	0.92 (13)	2.3						0.7			2.8	7
Sodium												
Strontium-90												8 pCi/l
Sulfate												
Total dissolved solids (TDS)												
Thallium				2130			14					
Tritium												20,000 pCi/l
Turbidity									75 NTU	100 NTU		225 NTU
Uranium												20 pCi/l
Zinc	86	95						20			80	200

Table C-1 -- Values are in μg/l (ppb) unless otherwise indicated. Numbers in parentheses indicate endnotes following the tables.

ENDNOTES FOR TABLE C-1 - INORGANICS

(7-day) For exposure of 7 days or less.
(10-day) For exposure of 10 days or less.
(24-hr) For exposure of 24 hours or less.
(7-yr) For "longer-term" exposure (7 years or less, EPA).

(A) Known human carcinogen; sufficient epidemiologic evidence in humans.

(B) Probable human carcinogen; sufficient evidence from animal studies; no or inadequate human data.
(C) Possible human carcinogen; limited evidence from animal studies; no human data.
(D) Not classified as to human carcinogenicity; no data or inadequate evidence.
(E) Evidence of non-carcinogenicity for humans.

(1) Or as noted in the California Ocean Plan (Reference 28)
(2) Expressed as nitrogen.
(3) For total chlorine residual; for intermittent chlorine sources see Reference 26, Chapter IV, Table B.
(4) Value developed for chromium VI; may be applied to total chromium if valence unknown.

(5) MCL varies with air temperature; 2.4 mg/l (≤ 53.7 °F); 2.2 mg/l (53.8 - 58.3 °F); 2.0 mg/l (58.4 - 63.8 °F); 1.8 mg/l (63.9 - 70.6 °F); 1.6 mg/l (70.0 - 79.2 °F); 1.4 mg/l (79.3 - 90.5 °F).
(6) As NO3.
(7) Recommended level; Upper level = 500 mg/l; Short-term level = 600 mg/l.
(8) Effective 17 January 1994.
(9) MCL includes this "Action level", to be exceeded in no more than 10 percent of samples.

(10) As nitrogen; in addition, MCL for total nitrate and nitrite = 10,000 μg/l (as N).
(11) Recommended level; Upper level = 1000; Short-term level = 1500 mg/l.
(12) Includes Radium 226 but excludes Radon and Uranium.
(13) Proposed.
(14) Draft / tentative / provisional.
(15) Calculated for child / for adult
(16) Assumes 70 kg body weight, 2 liters/day water consumption, and 20% relative source contribution. An additional uncertainty factor of 10 is used for Class C carcinogens.

(17) Assumes 70 kg body weight and 2 liters/day water consumption.
(18) Determined not to pose a risk of cancer through ingestion (Title 22, CCR, Division 2).
(19) Regulatory dose level divided by 2 liters per day average consumption; represents a 1-in-100,000 incremental cancer risk estimate unless otherwise noted.
(20) Based on reproductive toxicity

(21) Reference 19 unless noted otherwise.
(22) See Reference 16.
(23) For white phosphorus.
(24) Guidance level (Reference 3) assumes reletive source contribution of 10% from drinking water.
(25) For consumption of water and aquatic organisms / for consumption of aquatic organisms only.
(26) Varies with pH and temperature.

(27) For the trivalent form.
(28) Value based on hardness of 40 mg/l; value increases with increasing hardness.
(29) For hardness in mg/l as CaCO3, criterion = e(0.7852[ln(hardness)] - 3.490) μg/l.
(30) For dissolved chloride associated with sodium; criterion probably will not be adequately protective when chloride is associated with potassium, calcium, or magnesium, rather than sodium.
(31) For total residual chlorine.
(32) For hardness in mg/l as CaCO3, criterion = e(0.8190[ln(hardness)] + 1.561) μg/l.
(33) For hardness in mg/l as CaCO3, criterion = e(0.8545[ln(hardness)] - 1.465) μg/l.

(34) For hardness in mg/l as CaCO3, criterion = e(1.273[ln(hardness)] - 4.705) μg/l.

(35) For hardness in mg/l as CaCO3, criterion = e(0.8460[ln(hardness)] + 1.1645) μg/l.

(36) For hardness in mg/l as CaCO3, criterion = e(1.128[ln(hardness)] - 3.828) μg/l.
(37) For hardness in mg/l as CaCO3, criterion = e(0.8190[ln(hardness)] + 3.688) μg/l.
(38) For hardness in mg/l as CaCO3, criterion = e(0.9422[ln(hardness)] - 1.464) μg/l.
(39) For hardness in mg/l as CaCO3, criterion = e(1.273[ln(hardness)] - 1.460) μg/l.

(40) For hardness in mg/l as CaCO3, criterion = e(0.8460[ln(hardness)] + 3.3612) μg/l.
(41) For the pentavalent form.
(42) Toxicity to algae occurs.
(43) Based on reproductive toxicity.
(44) For hardness in mg/l as CaCO3, criterion = e(1.72[ln(hardness)] - 6.52) μg/l.
(45) For hardness in mg/l as CaCO3, criterion = e(0.8473[ln(hardness)] + 0.8604) μg/l.
(46) Toxicity to one species of fish after 2600 hours of exposure.

(47) Unionized ammonia concentrations
(48) For sum of chlorine-produced oxidants.
(49) EC50 for eastern oyster embryos.

(50) For elemental phosphorus; marine or estuarine.

Table C-2 WATER QUALITY CRITERIA - ORGANIC CONSTITUENTS

Organic Constituent	BASIN PLAN				Drinking Water Standards (California & Federal) Maximum Contaminant Levels (MCLs)					California Recommended Public Health Level (RPHL) Department of Health Services	California State Action Levels Department of Health Services		Other Taste and Odor Thresholds	Health Advisories or Suggested No-Adverse-Response Levels (SNARLS) for toxicity other than cancer risk	
	Ocean Waters (1) "‡" = carcinogen	Bays and Estuaries	Inland Surface Waters and Ground Waters		California Dept. of Health Services		US Environmental Protection Agency							US EPA	National Academy of Sciences (NAS)
			Primary MCL	Secondary MCL	Primary MCL	Secondary MCL	Primary MCL	Secondary MCL	MCL Goal		Toxicity	Taste & Odor			
Acenaphthylene	0.0088 ‡ (2)														
Acenaphthylene	220														
Acrylonitrile	0.10 ‡													1 / 4 (7-yr,13,14)	
Aldrin	0.000022 ‡										0.05 (LOQ)			0.3 (10-day,14)	
Anthracene	0.0088 ‡ (2)														
Atrazine			3		3		3		3	3 (11)				3	150
Bentazon			18		18					18 (11)				20	
Benz(a)anthracene	0.0088 ‡ (2)						0.1 (11)		zero (11)						
Benzene	5.9 ‡		1		1		5		zero	0.35 (11)				200 (10-day)	
Benzidine	0.000069 ‡														
Benzo(b)fluoranthene	0.0088 ‡ (2)						0.2 (11)		zero (11)						
Benzo(k)fluoranthene	0.0088 ‡ (2)						0.2 (11)		zero (11)						
Benzo(g,h,i)perylene	0.0088 ‡ (2)														
Benzo(a)pyrene	0.0088 ‡ (2)						0.2 (12)		zero (12)						
alpha-BHC	0.008 (3)										0.7				500 (7-day,3)
beta-BHC	0.008 (3)										0.3				500 (7-day,3)
Gamma-BHC (Lindane)	0.008 (3)		4		4		0.2		0.2					0.2	500 (7-day,3)
delta-BHC	0.008 (3)														500 (7-day,3)
technical-BHC	0.008 (3)														500 (7-day)
Bis(2-chloroethoxy) methane	4.4														
Bis(2-chloroethyl) ether	0.045 ‡														
Bis(2-chloroisopropyl) ether	1200													300	
Bromodichloromethane	130 ‡ (4)		100 (10)		100 (10)		100 (10)							400 / 1300 (7-yr,13,14)	
Bromoform	130 ‡ (4)		100 (10)		100 (10)		100 (10)							2000 (10-day)	
Bromomethane	130 ‡ (4)													10	
Carbofuran			18		18		40		40	18 (11)				40	
Carbon tetrachloride	0.90 ‡		0.5		0.5		5		zero	0.5 (11)				200 (10-day)	200 (7-day)
Catechol	30 (5)														2200 (24-hr)
Chlordane	0.000023 ‡ (6)		0.1		0.1		2		zero	0.03 (11)				60 (10-day)	
Chlorobenzene	570		30		30		100		100	30 (11)				100	
4-Chloro-m-cresol	1 (7)														
4-Chloro-o-cresol	1 (7)														
6-Chloro-m-cresol	1 (7)														
Chloroform	130 ‡		100 (10)		100 (10)		100 (10)							4000 (10-day)	
Chloromethane	130 ‡ (4)													3	
2-Chlorophenol	1 (7)													40 (14)	
3-Chlorophenol	1 (7)														
4-Chlorophenol	1 (7)														
Chrysene	0.0088 ‡ (2)						0.2 (11)		zero (11)						
2,4-D			100		100		70		70					70	87.5
DBCP			0.2		0.2		0.2		zero	0.002 (11)				50 (10-day)	
DDD	0.00017 ‡ (8)														
DDE	0.00017 ‡ (8)														
DDT	0.00017 ‡ (8)														
Dibenz(a,h)anthracene	0.0088 ‡ (2)						0.3 (11)		zero (11)						
Dibromochloromethane	130 ‡ (4)		100 (10)		100 (10)		100 (10)							60 (14)	18,000 (24-hr)
Dibutyl phthalate	3500														770
1,2-Dichlorobenzene	5100 (9)						600	10 (11)	600		130 (9)	10		600	300 (15)
1,3-Dichlorobenzene	5100 (9)						600		600		130 (9)	20		600	

Table C-2 -- Values are in μg/l (ppb) unless otherwise indicated. Numbers in parentheses indicate endnotes following the tables.

Table C-2 WATER QUALITY CRITERIA - ORGANIC CONSTITUENTS

Organic Constituent	BASIN PLAN				Drinking Water Standards (California & Federal) Maximum Contaminant Levels (MCLs)					California Recommended Public Health Level (RPHL) Department of Health Services	California State Action Levels Department of Health Services		Other Taste and Odor Thresholds	Health Advisories or Suggested No-Adverse-Response Levels (SNARLS) for toxicity other than cancer risk	
	Ocean Waters (1) "‡" = carcinogen	Bays and Estuaries	Inland Surface Waters and Ground Waters		California Dept. of Health Services		US Environmental Protection Agency							US EPA	National Academy of Sciences (NAS)
			Primary MCL	Secondary MCL	Primary MCL	Secondary MCL	Primary MCL	Secondary MCL	MCL Goal		Toxicity	Taste & Odor			
1,4-Dichlorobenzene	18 ‡		5		5		75	5 (11)	75	5 (11)				75	94 (15)
3,3'-Dichlorobenzidine	0.0081 ‡														
1,1-Dichloroethane			5		5					5 (11)					
1,2-Dichloroethane	130 ‡		0.5		0.5		5		zero	0.3 (11)				700 (10-day)	
1,1-Dichloroethylene	7100		6		6		7		7	6 (11)				7	100
cis-1,2-Dichloroethylene			6		6		70		70	6 (11)				70	
trans-1,2-Dichloroethylene			10		10		100		100	10 (11)				100	
Dichloromethane	450 ‡						5 (12)		zero (12)		40			2000 (10-day)	5000 (7-day)
2,3-Dichlorophenol	1 (7)														
2,4-Dichlorophenol	1 (7)													20	2000 / 7000 (13)
2,5-Dichlorophenol	1 (7)														
2,6-Dichlorophenol	1 (7)														
3,4-Dichlorophenol	1 (7)														
1,2-Dichloropropane			5		5		5		zero	5 (11)				90 (10-day)	
1,3-Dichloropropene	8.9 ‡		0.5		0.5					0.2 (11)				30 (10-day)	
Dieldrin	0.000040 ‡										0.05 (LOQ)			0.5 (10-day)	
Di(2-ethylhexyl)phthalate	3.5 ‡		4		4		6 (12)		zero (12)	4 (11)					4200
Diethyl phthalate	33,000								5000 (11)					5000	
2,4-Dimethylphenol	30 (5)											400			
Dimethyl phthalate	820,000														
4,6-Dinitro-o-cresol	30 (5)														
Dinitrophenol															110
2,4-Dinitrophenol	4														110
2,4-Dinitrotoluene	2.6 ‡													500 (10-day)	
1,2-Diphenylhydrazine	0.16 ‡														
Endosulfan	9 (16)														
Endosulfan sulfate	9 (16)														
Endrin	0.002		0.2		0.2		2 (12) / 0.2		2 (12)					2	
Ethylbenzene	4100		680		680		700	30 (11)	700	680 (11)			29 (18)	700	
Ethylene dibromide (EDB)			0.02		0.02		0.05		zero	0.01 (11)				8 (10-day)	
Fluoranthene	15														
Fluorene	0.0088 ‡ (2)														
Glyphosate			700		700		700 (12)		700 (12)	700 (11)				700	
Heptachlor	0.00072 ‡ (17)		0.01		0.01		0.4		zero	0.01 (11)				10 (10-day)	
Heptachlor epoxide	0.00072 ‡ (17)		0.01		0.01		0.2		zero	0.007 (11)				0.1 (7-yr)	
Hexachlorobenzene	0.00021 ‡						1 (12)		zero (12)					50 (10-day)	30 (7-day)
Hexachlorobutadiene	14 ‡													1	
Hexachlorocyclopentadiene	58						50 (12)	8 (11)	50 (12)						
Hexachloroethane	2.5 ‡													1	
Indeno(1,2,3-c,d)pyrene	0.0088 ‡ (2)						0.4 (11)		zero (11)						
Isophorone	150,000													100	
Methanes, halo-	130 ‡ (4)						100 (10)								
Methoxychlor			100		100		40		40					40	700
Molinate			20		20					20 (11)					
Nitrobenzene	4.9														5 (7-day)
2-Nitrophenol	30 (5)														290 (7-day,19)
Nitrophenol	30 (5)														290 (7-day)
4-Nitrophenol	30 (5)													60 (14)	290 (7-day,19)
N-Nitrosodimethylamine	7.3 ‡														

Table C-2 -- Values are in µg/l (ppb) unless otherwise indicated. Numbers in parentheses indicate endnotes following the tables.

Table C-2 WATER QUALITY CRITERIA - ORGANIC CONSTITUENTS

Organic Constituent	BASIN PLAN				Drinking Water Standards (California & Federal) Maximum Contaminant Levels (MCLs)					California Recommended Public Health Level (RPHL) Department of Health Services	California State Action Levels Department of Health Services		Other Taste and Odor Thresholds	Health Advisories or Suggested No-Adverse-Response Levels (SNARLS) for toxicity other than cancer risk	
	Ocean Waters (1) "‡" = carcinogen	Bays and Estuaries	Inland Surface Waters and Ground Waters		California Dept. of Health Services		US Environmental Protection Agency							US EPA	National Academy of Sciences (NAS)
			Primary MCL	Secondary MCL	Primary MCL	Secondary MCL	Primary MCL	Secondary MCL	MCL Goal		Toxicity	Taste & Odor			
N-Nitrosodiphenylamine	2.5 ‡														
trans-Nonachlor	0.000023 ‡ (6)														
Oil & grease	25,000														
Oxychlordane	0.000023 ‡ (6)														
PAHs	0.0088 ‡ (2)						see individual chemicals		see individual chemicals					see individual chemicals	
Pentachlorophenol	1 (7)						1		zero		30			300 (10-day)	6 / 21 (13)
Phenanthrene	0.0088 ‡ (2)														
Phenol	30 (5)											5.0 (22)		4000	
Phenols, chlorinated	1														
Phenols, nitro-	30 (5)														
Phenols, non-chlorinated	30														
Phthalate esters			see individual chemicals		see individual chemicals		see individual chemicals		see individual chemicals					see individual chemicals	see individual chemicals
Phenanthrene	0.0088 ‡ (2)		1												
Phenazopyridine			1												
Phenazopyridine hydrochloride			1												
Phenesterin			1												
Phenobarbital			1												
Phenol	30 (5)		1									5.0 (22)		4000	
Phenols, chlorinated	1		1												
Phenols, nitro-	30 (5)		1												
Phenols, non-chlorinated	30		1												
Phenoxybenzamine			1												
Phenoxybenzamine hydrochloride			1												
Phenyl glycidyl ether			1												
o-Phenylphenate, sodium			1												
Polychlorinated biphenyls	0.000019 ‡						0.5 (21)		zero (21)						50 (7-day)
Pyrene	0.0088 ‡ (2)														
Resorcinol	30 (5)														500 (7-day)
Simazine			10		10		4 (12)		4 (12)					4	1505
2,3,7,8-TCDD (Dioxin)	0.0000000039 ‡ (20)						0.00003 (12)		zero (12)					0.0001 (10-day)	0.0007
1,1,2,2-Tetrachloroethane	1200		1		1					1 (11)					
Tetrachloroethylene (PCE)	99 ‡		5		5		5		zero	0.7 (11)				2000 (10-day)	
2,3,4,6-Tetrachlorophenol	1 (7)														
2,3,5,6-Tetrachlorophenol	1 (7)														
Thiobencarb			70	1	70	1				70 (11)					
Toluene	85,000						1000	40 (11)	1000		100		42 (18)	1000	340
Toxaphene	0.00021 ‡		5		5		3		zero					40 (10-day)	8.75
2,4,5-TP (Silvex)			10		10		50		50					50	5.25
Tributyltin	0.0014														
1,1,1-Trichloroethane	540,000		200		200		200		200	200 (11)				200	3800
1,1,2-Trichloroethane	43,000		32		32		5 (12)		3 (12)					3	
Trichloroethylene (TCE)	27 ‡		5		5		5		zero	2.5 (11)					
Trichlorofluoromethane			150		150					150 (11)				2000	8000 (7-day)
2,4,5-Trichlorophenol	1 (7)														
2,4,6-Trichlorophenol	0.29 ‡														2500 (7-day)
1,1,2-Trichloro-1,2,2-trifluoroethane			1200		1200					1200 (11)					
Trinitrophenol	30 (5)														200 (7-day)
Vinyl chloride	36 ‡		0.5		0.5		2		zero	0.15 (11)				3000 (10-day)	
Xylene(s)			1750		1750		10,000	20 (11)	10,000	1750 (11)			17 (18)	10,000	

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Table C-2 WATER QUALITY CRITERIA - ORGANIC CONSTITUENTS

Organic Constituent	US EPA Integrated Risk Information System (IRIS) Reference Dose as a Water Quality Criterion (23)	One-in-a-Million Incremental Cancer Risk Estimates for Drinking Water: Cal/EPA Cancer Potency Factor as a Water Quality Criterion (24)	One-in-a-Million Incremental Cancer Risk Estimates for Drinking Water: US EPA Integrated Risk Information System (IRIS)	One-in-a-Million Incremental Cancer Risk Estimates for Drinking Water: US EPA Health Advisory or SNARL	One-in-a-Million Incremental Cancer Risk Estimates for Drinking Water: National Academy of Sciences (NAS) *Drinking Water and Health*	California Proposition 65 Regulatory Level as a Water Quality Criterion	Agricultural Water Quality Goals (28)	US EPA National Ambient Water Quality Criteria — Health and Welfare Protection: Non-Cancer Public Health Effects	US EPA National Ambient Water Quality Criteria — Health and Welfare Protection: One-in-a-Million Incremental Cancer Risk Estimate	US EPA National Ambient Water Quality Criteria — Health and Welfare Protection: Taste and Odor or Welfare	US EPA National Ambient Water Quality Criteria — Freshwater Aquatic Life Protection, Recommended Criteria: Continuous Concentration (4-day Average)	US EPA National Ambient Water Quality Criteria — Freshwater Aquatic Life Protection, Recommended Criteria: 24-hour Average	US EPA National Ambient Water Quality Criteria — Freshwater Aquatic Life Protection, Recommended Criteria: Maximum Concentration (1-hour Average)
Acenaphthylene													
Acenaphthylene				(C)				320 / 780 (29)					
Acrylonitrile		0.035	0.07	0.07 (B1)	0.38	0.35			0.059 / 0.66 (29)				
Aldrin		0.0021	0.002	0.002 (B2,14)	0.003	0.02			0.00013 / 0.00014 (29)				
Anthracene	2100			(D)				9600 / 110,000 (29)					
Atrazine	3.5		0.14	(C)				25 (30)					
Bentazon	18			(D)									
Benz(a)anthracene				(B2)					0.0028 / 0.031 (32)				
Benzene		0.35	1	1.0 (A)		3.5			1.2 / 71 (29)				
Benzidine		0.00007		(A)		0.0005			0.00012 / 0.00054 (29)				
Benzo(b)fluoranthene				(B2)					0.0028 / 0.031 (32)				
Benzo(k)fluoranthene				(B2)					0.0028 / 0.31 (32)				
Benzo(g,h,i)perylene				(D)									
Benzo(a)pyrene		0.0029	0.003	(B2)		0.03			0.0028 / 0.031 (32)				
alpha-BHC					0.33	0.15			0.0039 / 0.013 (29)				
beta-BHC					0.12	0.25			0.014 / 0.046 (29)				
Gamma-BHC (Lindane)	0.2	0.032		0.03 (C)	0.054	0.3			0.019 / 0.063 (29)			0.08	
delta-BHC													
technical-BHC		0.0088				0.1			0.0123				
Bis(2-chloroethoxy) methane													
Bis(2-chloroethyl) ether		0.014			0.42	0.15			0.031 / 1.4 (29)				
Bis(2-chloroisopropyl) ether	280			(D)				1400 / 170,000 (29)					
Bromodichloromethane		0.27	1.4	0.6 (B2,14)		2.5			0.27 / 22 (29)				
Bromoform			4	4 (B2,14)					4.3 / 360 (29)				
Bromomethane	7			(D)				48 / 4000 (29)					
Carbofuran	35			(E)									
Carbon tetrachloride		0.23	0.3	0.3 (B2)	4.5	2.5			0.25 / 4.4 (29)				
Catechol													
Chlordane		0.029 / 0.027	0.03	0.03 (B2)	0.028	0.25			0.00057 / 0.00059 (29)			0.0043	
Chlorobenzene	140			(D)	2.3 (25)			680 / 21,000 (29)		20			
4-Chloro-m-cresol										3000			
4-Chloro-o-cresol										1800			
6-Chloro-m-cresol										20			
Chloroform		1.1 / 0.43	6	6.0 (B2,14)	0.26 / 5.6 (26)	10			5.7 / 470 (29)				
Chloromethane	2.8			(C)									
2-Chlorophenol	35			(D)						0.1			
3-Chlorophenol										0.1			
4-Chlorophenol										0.1			
Chrysene				(B2)					0.0028 / 0.31 (32)				
2,4-D	70			(D)				100					
DBCP		0.005	0.03	0.03 (B2)	0.051	0.05			0.025				
DDD		0.15				1 (8)			0.00083 / 0.00084 (29)				
DDE		0.1				1 (8)			0.00059 / 0.00059 (29)				
DDT		0.1	0.1	(B2)	0.042	1 (8)			0.00059 / 0.00059 (29)			0.0010	
Dibenz(a,h)anthracene				(B2)		0.1			0.0028 / 0.031 (32)				
Dibromochloromethane	14			(C)	0.6	3.5			0.41 / 34 (29)				
Dibutyl phthalate	700			(D)				2700 / 12,000 (29)					
1,2-Dichlorobenzene	620			(D)				2700 / 17,000 (29)					
1,3-Dichlorobenzene	620			(D)				400 / 2600 (31)					

Table C-2 -- Values are in μg/l (ppb) unless otherwise indicated. Numbers in parentheses indicate endnotes following the tables.

Table C-2 WATER QUALITY CRITERIA - ORGANIC CONSTITUENTS

Organic Constituent	US EPA Integrated Risk Information System (IRIS) Reference Dose as a Water Quality Criterion (23)	One-in-a-Million Incremental Cancer Risk Estimates for Drinking Water: Cal/EPA Cancer Potency Factor as a Water Quality Criterion (24)	US EPA Integrated Risk Information System (IRIS)	US EPA Health Advisory or SNARL	National Academy of Sciences (NAS) *Drinking Water and Health*	California Proposition 65 Regulatory Level as a Water Quality Criterion	Agricultural Water Quality Goals (28)	US EPA National Ambient Water Quality Criteria — Health and Welfare Protection: Non-Cancer Public Health Effects	One-in-a-Million Incremental Cancer Risk Estimate	Taste and Odor or Welfare	Freshwater Aquatic Life Protection — Recommended Criteria: Continuous Concentration (4-day Average)	24-hour Average	Maximum Concentration (1-hour Average)
1,4-Dichlorobenzene	70	0.88		(C)		10		400 / 2600 (31)					
3,3'-Dichlorobenzidine		0.029				0.3			0.04 / 0.077 (29)				
1,1-Dichloroethane						50							
1,2-Dichloroethane		0.5	0.4	0.4 (B2)	0.71	5			0.38 / 99 (29)				
1,1-Dichloroethylene	6.3		0.06	0.06 (C)					0.057 / 3.2 (29)				
cis-1,2-Dichloroethylene	70			(D)									
trans-1,2-Dichloroethylene	140			(D)									
Dichloromethane		2.5	5	5 (B2)		25			4.7 / 1600 (29)				
2,3-Dichlorophenol										0.04			
2,4-Dichlorophenol	21			(D)				93 / 790 (29)		0.3			
2,5-Dichlorophenol										0.5			
2,6-Dichlorophenol										0.2			
3,4-Dichlorophenol										0.3			
1,2-Dichloropropane		0.56	0.5	0.5 (B2)									
1,3-Dichloropropene		0.19	0.2	0.2 (B2)	0.45			10 / 1700 (29)					
Dieldrin		0.0022	0.002	0.002 (B2)	0.0019	0.02			0.00014 / 0.00014 (29)			0.0019	
Di(2-ethylhexyl)phthalate		4.2	3	3 (B2)	2.4	40			1.8 / 5.9 (29)		360 (11)		400 (11)
Diethyl phthalate	5600			(D)				23,000 / 120,000 (29)					
2,4-Dimethylphenol	140									400			
Dimethyl phthalate				(D)				313,000 / 2,900,000(29)					
4,6-Dinitro-o-cresol								13.4 / 765 (29)					
Dinitrophenol								70					
2,4-Dinitrophenol								70 / 14,000 (29)					
2,4-Dinitrotoluene		0.11	50	0.05 (B2)		1			0.11 / 9.1 (29)				
1,2-Diphenylhydrazine						0.4			0.040 / 0.54 (29)				
Endosulfan								0.93 / 2.0 (29)				0.056	
Endosulfan sulfate								0.93 / 2.0 (29)				0.056 (35)	
Endrin	2.1			(D)				0.76 / 0.81 (33,29)				0.0023	
Ethylbenzene	700			(D)				3100 / 29,000 (29)					
Ethylene dibromide (EDB)		0.0097	0.0004	0.0004 (B2)	0.055	0.1							
Fluoranthene				(D)				300 / 370 (29)					
Fluorene	280			(D)				1300 / 14,000 (29)					
Glyphosate	700			(D)									
Heptachlor		0.0061 / 0.0078	0.008	0.008 (B2)	0.012	0.1			0.00021 / 0.00021 (29)			0.0038	
Heptachlor epoxide		0.0027 / 0.0038	0.004	0.004 (B2)		0.04			0.00010 / 0.00011 (29)			0.0038	
Hexachlorobenzene		0.019		0.02 (B2)	0.017	0.2			0.00075 / 0.00077 (29)		3.68 (11)		6 (11)
Hexachlorobutadiene	1.4			(C)					0.44 / 50 (29)				
Hexachlorocyclopentadiene	49			(D)				240 / 17,000 (29)		1			
Hexachloroethane				(C)		10			1.9 / 8.9 (29)				
Indeno(1,2,3-c,d)pyrene				(B2)					0.0028 / 0.031 (32,29)				
Isophorone	140			40 (C)					8.4 / 600 (29)				
Methanes, halo-													
Methoxychlor	35			(D)				100					
Molinate	14												
Nitrobenzene								17 / 1900 (29)		30			
2-Nitrophenol													
Nitrophenol													
4-Nitrophenol				(D)									
N-Nitrosodimethylamine		0.0022				0.02			0.00069 / 8.1 (29)				

Table C-2 -- Values are in μg/l (ppb) unless otherwise indicated. Numbers in parentheses indicate endnotes following the tables.

Table C-2 WATER QUALITY CRITERIA - ORGANIC CONSTITUENTS

Organic Constituent	US EPA Integrated Risk Information System (IRIS) Reference Dose as a Water Quality Criterion (23)	One-in-a-Million Incremental Cancer Risk Estimates for Drinking Water: Cal/EPA Cancer Potency Factor as a Water Quality Criterion (24)	US EPA Integrated Risk Information System (IRIS)	US EPA Health Advisory or SNARL	National Academy of Sciences (NAS) *Drinking Water and Health*	California Proposition 65 Regulatory Level as a Water Quality Criterion	Agricultural Water Quality Goals (28)	US EPA National Ambient Water Quality Criteria — Health and Welfare Protection: Non-Cancer Public Health Effects	One-in-a-Million Incremental Cancer Risk Estimate	Taste and Odor or Welfare	Freshwater Aquatic Life Protection Recommended Criteria: Continuous Concentration (4-day Average)	24-hour Average	Maximum Concentration (1-hour Average)
N-Nitrosodiphenylamine		3.9				40			5.0 / 16 (29)				
trans-Nonachlor													
Oil & grease													
Oxychlordane													
PAHs									0.0028 / 0.31 (29)				
Pentachlorophenol		1.9	0.3	0.3 (B2)		20			0.28 / 8.2 (29)	30	(34)		(36)
Phenanthrene											6.3 (11)		30 (11)
Phenol	4200			(D)				21,000 / 4,600,000 (29)		300			
Phenols, chlorinated													
Phenols, nitro-													
Phenols, non-chlorinated													
Phthalate esters				see individual chemicals		see individual chemicals		see individual chemicals					
Phenanthrene											6.3 (11)		30 (11)
Phenazopyridine						2							
Phenazopyridine hydrochloride						2.5							
Phenesterin						0.0025							
Phenobarbital						1							
Phenol	4200			(D)				21,000 / 4,600,000 (29)		300			
Phenols, chlorinated													
Phenols, nitro-													
Phenols, non-chlorinated													
Phenoxybenzamine						0.1							
Phenoxybenzamine hydrochloride						0.15							
Phenyl glycidyl ether						2.5 (11)							
o-Phenylphenate, sodium						100							
Polychlorinated biphenyls		0.0045	0.005	0.005 (B2)	0.16 (37)	0.045			0.000044/0.000045(29)			0.014	
Pyrene	210 (14)			(D)				960 / 11,000 (29)					
Resorcinol													
Simazine	3.5			(C)									
2,3,7,8-TCDD (Dioxin)		0.00000027	0.0000002	0.0000002 (B2)		0.0000025			1.3E–8 / 1.4E–8 (29)				
1,1,2,2-Tetrachloroethane				(C)		1.5			0.17 / 11 (29)				
Tetrachloroethylene (PCE)		0.69	0.7	0.7 (B2)	3.6	7			0.8 / 8.85 (29)				
2,3,4,6-Tetrachlorophenol										1			
2,3,5,6-Tetrachlorophenol													
Thiobencarb													
Toluene	1400			(D)		3500 (38)		6800 / 200,000 (29)					
Toxaphene		0.029	0.03	0.03 (B2)		0.3			0.00073 / 0.00075 (29)		0.0002		0.73
2,4,5-TP (Silvex)	53			(D)				10					
Tributyltin													
1,1,1-Trichloroethane	250			(D)	17 (25)								
1,1,2-Trichloroethane	2.8		0.6	0.6 (C)		5			0.60 / 42 (29)				
Trichloroethylene (TCE)		2.3 (11)	3	3 (B2)	1.5 (25)	25			2.7 / 81 (29)				
Trichlorofluoromethane	2100			(D)					0.19				
2,4,5-Trichlorophenol								2600		1	63 (100)		100 (11)
2,4,6-Trichlorophenol		0.5	3	3 (B2,14)		5			2.1 / 6.5 (29)	2			
1,1,2-Trichloro-1,2,2-trifluoroethane													
Trinitrophenol													
Vinyl chloride		0.13	0.015	0.015 (A)	1.1	1.5			2 / 525 (29)				
Xylene(s)	14,000			(D)									

Table C-2 -- Values are in μg/l (ppb) unless otherwise indicated. Numbers in parentheses indicate endnotes following the tables.

Table C-2 WATER QUALITY CRITERIA - ORGANIC CONSTITUENTS

Organic Constituent	US EPA Ambient Water Quality Criteria (cont.) Freshwater Aquatic Life Protection (cont.) Recommended Criteria (cont.)				California Ocean Plan Numerical Water Quality Objectives						US EPA National Ambient Water Quality Criteria Saltwater Aquatic Life Protection						
	Maximum (Instantaneous)	Additional Toxicity Information			Human Health Protection (30-day Average)	Marine Aquatic Life Protection					Recommended Criteria				Additional Toxicity Information		
		Acute	Chronic	Other	"‡" = carcinogen	6-month Median	30-day Average	7-day Average	Daily Maximum	Instantaneous Maximum	Continuous Concentration (4-day Average)	24-hour Average	Maximum Concentration (1-hour Average)	Maximum (Instantaneous)	Acute	Chronic	Other
Acenaphthylene					0.0088 ‡ (2)										300 (32)		
Acenaphthylene		68	21		220										55		
Acrylonitrile		7550		2600 (44)	0.10 ‡												
Aldrin	3				0.000022 ‡									1.3			
Anthracene					0.0088 ‡ (2)										300 (32)		
Atrazine	1.0 (30)																
Bentazon																	
Benz(a)anthracene					0.0088 ‡ (2)										300 (32)		
Benzene		5300			5.9 ‡										5100		700 (47)
Benzidine		2500			0.000069 ‡												
Benzo(b)fluoranthene					0.0088 ‡ (2)										300 (32)		
Benzo(k)fluoranthene					0.0088 ‡ (2)										300 (32)		
Benzo(g,h,i)perylene					0.0088 ‡ (2)										300 (32)		
Benzo(a)pyrene					0.0088 ‡ (2)										300 (32)		
alpha-BHC						0.004 (3)			0.008 (3)	0.012 (3)							
beta-BHC						0.004 (3)			0.008 (3)	0.012 (3)							
Gamma-BHC (Lindane)	2.0					0.004 (3)			0.008 (3)	0.012 (3)				0.16			
delta-BHC						0.004 (3)			0.008 (3)	0.012 (3)							
technical-BHC		100				0.004 (3)			0.008 (3)	0.012 (3)					0.34		
Bis(2-chloroethoxy) methane					4.4												
Bis(2-chloroethyl) ether		238,000 (39	122 (43)		0.045 ‡												
Bis(2-chloroisopropyl) ether		238,000 (39	122 (43)		1200												
Bromodichloromethane		11,000 (40)			130 ‡ (4)										12,000 (40)	6400 (40)	11,500 (40,48)
Bromoform		11,000 (40)			130 ‡ (4)										12,000 (40)	6400 (40)	11,500 (40,48)
Bromomethane		11,000 (40)			130 ‡ (4)										12,000 (40)	6400 (40)	11,500 (40,48)
Carbofuran																	
Carbon tetrachloride		35,200			0.90 ‡										50,000	6400 (40)	11,500 (40,48)
Catechol						30 (5)			120 (5)	300 (5)							
Chlordane	2.4				0.000023 ‡ (6)							0.004		0.09			
Chlorobenzene		250 (41)		50 (41,45)	570										160 (41)	129 (41)	
4-Chloro-m-cresol		30				1 (7)			4 (7)	10 (7)							
4-Chloro-o-cresol						1 (7)			4 (7)	10 (7)							
6-Chloro-m-cresol						1 (7)			4 (7)	10 (7)							
Chloroform		28,900	1240		130 ‡										12,000 (40)	6400 (40)	11,500 (40,48)
Chloromethane		11,000 (40)			130 ‡ (4)										12,000 (40)	6400 (40)	11,500 (40,48)
2-Chlorophenol		4380		2000 (46)		1 (7)			4 (7)	10 (7)							
3-Chlorophenol						1 (7)			4 (7)	10 (7)							
4-Chlorophenol						1 (7)			4 (7)	10 (7)					29,700		
Chrysene					0.0088 ‡ (2)										300 (32)		
2,4-D																	
DBCP																	
DDD		0.6			0.00017 ‡ (8)										3.6		
DDE		1050			0.00017 ‡ (8)										14		
DDT	1.1				0.00017 ‡ (8)							0.001		0.13			
Dibenz(a,h)anthracene					0.0088 ‡ (2)										300 (32)		
Dibromochloromethane		11,000 (40)			130 ‡ (4)										12,000 (40)	6400 (40)	11,500 (40,48)
Dibutyl phthalate		940 (42)	3 (42)		3500										2944 (42)		3.4 (49,42)
1,2-Dichlorobenzene		1120 (31)	763 (31)		5100 (9)										1970 (31)	129 (41)	
1,3-Dichlorobenzene		1120 (31)	763 (31)		5100 (9)										1970 (31)	129 (41)	

Table C-2 -- Values are in μg/l (ppb) unless otherwise indicated. Numbers in parentheses indicate endnotes following the tables.

Table C-2 WATER QUALITY CRITERIA - ORGANIC CONSTITUENTS

Organic Constituent	US EPA Ambient Water Quality Criteria (cont.) Freshwater Aquatic Life Protection (cont.) Recommended Criteria (cont.) Maximum (Instantaneous)	Additional Toxicity Information: Acute	Additional Toxicity Information: Chronic	Additional Toxicity Information: Other	California Ocean Plan Numerical Water Quality Objectives: Human Health Protection (30-day Average) "‡" = carcinogen	Marine Aquatic Life Protection: 6-month Median	30-day Average	7-day Average	Daily Maximum	Instantaneous Maximum	US EPA National Ambient Water Quality Criteria Saltwater Aquatic Life Protection, Recommended Criteria: Continuous Concentration (4-day Average)	24-hour Average	Maximum Concentration (1-hour Average)	Maximum (Instantaneous)	Additional Toxicity Information: Acute	Chronic	Other
1,4-Dichlorobenzene		1120 (31)	763 (31)		18 ‡										1970 (31)	129 (41)	
3,3'-Dichlorobenzidine					0.0081 ‡												
1,1-Dichloroethane																	
1,2-Dichloroethane		118,000	20,000		130 ‡										113,000		
1,1-Dichloroethylene		11,600 (50)			7100										224,000 (50)		
cis-1,2-Dichloroethylene		11,600 (50)													224,000 (50)		
trans-1,2-Dichloroethylene		11,600 (50)													224,000 (50)		
Dichloromethane		11,600 (50)			450 ‡										12,000 (40)	6400 (40)	11,500 (40,48)
2,3-Dichlorophenol						1 (7)			4 (7)	10 (7)							
2,4-Dichlorophenol		2020	365	70 (56)		1 (7)			4 (7)	10 (7)							
2,5-Dichlorophenol						1 (7)			4 (7)	10 (7)							
2,6-Dichlorophenol						1 (7)			4 (7)	10 (7)							
3,4-Dichlorophenol						1 (7)			4 (7)	10 (7)							
1,2-Dichloropropane		23,000 (51)	5700 (51)												10,300 (51)	3040 (51)	
1,3-Dichloropropene		6060 (52)	244 (52)		8.9 ‡										790 (52)		
Dieldrin	2.5				0.000040 ‡							0.0019		0.71			
Di(2-ethylhexyl)phthalate		940 (42)	3 (42)		3.5 ‡						360 (11)		400 (11)		2,944 (42)		3.4 (49,42)
Diethyl phthalate		940 (42)	3 (42)		33,000										2,944 (42)		3.4 (49,42)
2,4-Dimethylphenol		2120				30 (5)			120 (5)	300 (5)							
Dimethyl phthalate		940 (42)	3 (42)		820,000										2,944 (42)		3.4 (49,42)
4,6-Dinitro-o-cresol		230 (53)		150 (49,53)	220	30 (5)			120 (5)	300 (5)					4850 (53)		
Dinitrophenol		230 (53)		150 (49,53)		30 (5)			120 (5)	300 (5)					4850 (53)		
2,4-Dinitrophenol		230 (53)		150 (49,53)	4	30 (5)			120 (5)	300 (5)					4850 (53)		
2,4-Dinitrotoluene		330 (54)	230 (54)		2.6 ‡										590 (54)		370 (54,48)
1,2-Diphenylhydrazine		270 (9)			0.16 ‡												
Endosulfan	0.22					9 (16)			18 (16)	27 (16)		0.0087		0.034			
Endosulfan sulfate						9 (16)			18 (16)	27 (16)		0.0087 (35)					
Endrin	0.18					0.002			0.004	0.006		0.0023		0.037			
Ethylbenzene		32,000			4100										430		
Ethylene dibromide (EDB)																	
Fluoranthene		3980			15										40	16	
Fluorene					0.0088 ‡ (2)										300 (32)		
Glyphosate																	
Heptachlor	0.52				0.00072 ‡ (17)							0.0036		0.053			
Heptachlor epoxide	0.52				0.00072 ‡ (17)							0.0036		0.053			
Hexachlorobenzene		250 (41)		50 (41,45)	0.00021 ‡										160 (41)	129 (41)	
Hexachlorobutadiene		90	9.3		14 ‡										32		
Hexachlorocyclopentadiene		7.0	5.2		58										7		
Hexachloroethane		980	540		2.5 ‡										940		
Indeno(1,2,3-c,d)pyrene					0.0088 ‡ (2)										300 (32)		
Isophorone		117,000			150,000										12,900		
Methanes, halo-		11,000			130 ‡ (4)										12000	6400	11,500 (48)
Methoxychlor	0.03													0.03			
Molinate																	
Nitrobenzene		27,000			4.9										6680		
2-Nitrophenol		230 (53)		150 (49,53)		30 (5)			120 (5)	300 (5)					4850 (53)		
Nitrophenol		230 (53)		150 (49,53)		30 (5)			120 (5)	300 (5)					4850 (53)		
4-Nitrophenol		230 (53)		150 (49,53)		30 (5)			120 (5)	300 (5)					4850 (53)		
N-Nitrosodimethylamine		5850 (55)			7.3 ‡										3,300,000 (55)		

Table C-2 -- Values are in $\mu g/l$ (ppb) unless otherwise indicated. Numbers in parentheses indicate endnotes following the tables.

Table C-2 WATER QUALITY CRITERIA - ORGANIC CONSTITUENTS

Organic Constituent	US EPA Ambient Water Quality Criteria (cont.) Freshwater Aquatic Life Protection (cont.) Recommended Criteria (cont.)				California Ocean Plan Numerical Water Quality Objectives						US EPA National Ambient Water Quality Criteria Saltwater Aquatic Life Protection						
	Maximum (Instantaneous)	Additional Toxicity Information			Human Health Protection (30-day Average)	Marine Aquatic Life Protection					Recommended Criteria				Additional Toxicity Information		
		Acute	Chronic	Other	"‡" = carcinogen	6-month Median	30-day Average	7-day Average	Daily Maximum	Instantaneous Maximum	Continuous Concentration (4-day Average)	24-hour Average	Maximum Concentration (1-hour Average)	Maximum (Instantaneous)	Acute	Chronic	Other
N-Nitrosodiphenylamine		5850 (55)			2.5 ‡										3,300,000 (55)		
trans-Nonachlor					0.000023 ‡ (6)												
Oil & grease							25,000	40,000		75,000							
Oxychlordane					0.000023 ‡ (6)												
PAHs					0.0088 ‡ (2)										300		
Pentachlorophenol				1.74 (57)		1 (7)			4 (7)	10 (7)	7.9		13				
Phenanthrene					0.0088 ‡ (2)						4.6 (11)		7.7 (11)		300 (32)		
Phenol		10,200	2560			30 (5)			120 (5)	300 (5)					5800		
Phenols, chlorinated						1			4	10							
Phenols, nitro-		230		150 (49)		30 (5)			120 (5)	300 (5)					4850		
Phenols, non-chlorinated						30			120	300							
Phthalate esters		940	3												2944		3.4 (49,42)
Phenanthrene					0.0088 ‡ (2)						4.6 (11)		7.7 (11)		300 (32)		
Phenazopyridine																	
Phenazopyridine hydrochloride																	
Phenesterin																	
Phenobarbital																	
Phenol		10,200	2560			30 (5)			120 (5)	300 (5)					5800		
Phenols, chlorinated						1			4	10							
Phenols, nitro-		230		150 (49)		30 (5)			120 (5)	300 (5)					4850		
Phenols, non-chlorinated						30			120	300							
Phenoxybenzamine																	
Phenoxybenzamine hydrochloride																	
Phenyl glycidyl ether																	
o-Phenylphenate, sodium																	
Polychlorinated biphenyls		> 2			0.000019 ‡							0.03			>10		
Pyrene					0.0088 ‡ (2)										300 (32)		
Resorcinol						30 (5)			120 (5)	300 (5)							
Simazine	10 (58)																
2,3,7,8-TCDD (Dioxin)					0.0000000039 ‡ (20)												
1,1,2,2-Tetrachloroethane		9320 (59)	2400		1200										9020		
Tetrachloroethylene (PCE)		5280	840		99 ‡										10,200	450	
2,3,4,6-Tetrachlorophenol						1 (7)			4 (7)	10 (7)							
2,3,5,6-Tetrachlorophenol						1 (7)			4 (7)	10 (7)					440		
Thiobencarb																	
Toluene		17,000			85,000										6300	5000	
Toxaphene					0.00021 ‡						0.0002		0.21				
2,4,5-TP (Silvex)																	
Tributyltin	0.026 (30)				0.0014									0.010 (30)			
1,1,1-Trichloroethane		18,000		200 (60)	540,000										31,200		
1,1,2-Trichloroethane		18,000	9400		43,000												
Trichloroethylene (TCE)		45,000		21,900 (61)	27 ‡										2000		
Trichlorofluoromethane		11,000 (40)													12,000 (40)	6400 (40)	11,500 (40,48)
2,4,5-Trichlorophenol						1 (7)			4 (7)	10 (7)	11 (11)		240 (11)				
2,4,6-Trichlorophenol			970		0.29 ‡	1 (7)			4 (7)	10 (7)							
1,1,2-Trichloro-1,2,2-trifluoroethane																	
Trinitrophenol		230 (53)		150 (49,53)		30 (5)			120 (5)	300 (5)					4850 (53)		
Vinyl chloride					36 ‡												
Xylene(s)																	

Table C-2 -- Values are in $\mu g/l$ (ppb) unless otherwise indicated. Numbers in parentheses indicate endnotes following the tables.

ENDNOTES FOR TABLE C-2 ORGANICS

(7-day) For exposure of 7 days or less.
(10-day) For exposure of 10 days or less.
(24-hr) For exposure of 24 hours or less.
(7-yr) For "longer-term" exposure (7 years or less, EPA).

(A) Known human carcinogen; sufficient epidemiologic evidence in humans.
(B1) Probable human carcinogen; limited epidemiologic evidence in humans
(B2) Probable human carcinogen; sufficient evidence from animal studies; no or inadequate human data.
(C) Possible human carcinogen; limited evidence from animal studies; no human data.
(D) Not classified as to human carcinogenicity; no data or inadequate evidence.
(E) Evidence of non-carcinogenicity for humans.

(1) For hardness in mg/l as CaCO3, criterion = e(0.8473[ln(hardness)] + 0.8604) µg/l.
(2) For sum of acenaphthylene, anthrancene, benz(a)anthrancene, 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.
(3) For hardness in mg/l as CaCO3, criterion = e(1.273[ln(hardness)] - 1.460) µg/l.

(4) For sum of bromoform, bromomethane, chloromethane, dibromochloromethane, and bromodichloromethane.
(5) For sum of nonchlorinated phenolic compounds.
(6) For the sum of oxychlordane and alpha and gamma isomers of chlordane, chlordene and nonachlor.
(7) For sum of chlorinated phenolic compounds.
(8) Instantaneous maximum.
(9) For sum of 1,2- and 1-3-dichlorobenzenes.
(10) From Reference 30.
(11) Proposed.
(12) Effective 17 January 1994.
(13) For hardness in mg/l as CaCO3, criterion = e(0.8473[ln(hardness)] + 0.7614) µg/l.
(14) MCL varies with air temperature; 2.4 mg/l (Š 53.7 °F); 2.2 mg/l (53.8 - 58.3 °F); 2.0 mg/l (58.4 - 63.8 °F); 1.8 mg/l (63.9 - 70.6 °F); 1.6 mg/l (70.0 - 79.2 °F); 1.4 mg/l (79.3 - 90.5 °F).
(15) Based on organoleptic considerations (taste, odor, color, laundry staining, etc.)
(16) For hardness in mg/l as CaCO3, criterion = e(1.273[ln(hardness)] - 4.705) µg/l.
(17) As CaCO3; minimum concentration except where natural concentrations are less.
(18) Toxicity to algae occurs.

(19) For hardness in mg/l as CaCO3, criterion = e(0.8190[ln(hardness)] + 1.561) µg/l.
(20) For "TCDD equivalents" calculated as the sum of 2,3,7,8-chlorinated dibenzodioxin and dibenzofuran concentrations multiplied by their respective U.S. EPA Toxicity Equivalency Factors.
(21) Expressed as decachlorobiphenyl.
(22) For hardness in mg/l as CaCO3, criterion = e(0.8190[ln(hardness)] + 3.688) µg/l.
(23) Assumes 70 kg body weight, 2 liters/day water consumption, and 20% relative source contribution. An additional uncertainty factor of 10 is used for Class C carcinogens.
(24) Assumes 70 kg body weight and 2 liters/day water consumption.
(25) For sum of dichloropropanes.

(26) Draft / tentative / provisional.

(27) For sum of halomethanes.
(28) Reference 19 unless noted otherwise.
(29) For the sum of oxychlordane and alpha and gamma isomers of chlordane, chlordene and nonachlor.
(30) For hardness in mg/l as CaCO3, criterion = e(0.7852[ln(hardness)] - 3.490) µg/l.
(31) For hardness in mg/l as CaCO3, criterion = e(1.128[ln(hardness)] - 3.828) µg/l.

(32) For hardness in mg/l as CaCO3, criterion = e(0.9422[ln(hardness)] - 1.464) µg/l.
(33) For sum of dichlorobenzenes.

(34) For total trihalomethanes (sum of bromoform, bromodichloromethane, chloroform and dibromochloromethane); based largely on technology and economics.
(35) Based on endosulfan; U.S. EPA Water Quality Advisory (Reference 13).

(36) Determined not to pose a risk of cancer through ingestion (Title 22, CCR, Division
(37) Includes Radium 226 but excludes Radon and Uranium.
(38) Pentavalent arsenic [As(V)] effects on plants.
(39) Recommended level; Upper level = 500 mg/l; Short-term level = 600 mg/l.
(40) For sum of dichloroethylenes.
(41) For sum of dichloropropenes.
(42) As NO3.
(43) Effective 17 January 1994.
(44) Toxicity to a fish species exposed for 7.5 days.
(45) Adverse behavioral effects occur to one species.

(46) For hardness in mg/l as CaCO3, criterion = e(1.72[ln(hardness)] - 6.52) µg/l.
(47) Adverse effects on a fish species exposed for 168 days.
(48) A decrease in the number of algal cells occurs.
(49) Guidance level (Reference 3) assumes reletive source contribution of 10% from drinking water.
(50) For chlorinated systems.
(51) For white phosphorus.

(52) For sum of carcinogenic polynuclear aromatic hydrocarbons.
(53) For sum of nitrophenols.
(54) For hardness in mg/l as CaCO3, criterion = e(0.8460[ln(hardness)] + 3.3612) µg/l.

(55) For total chlorine residual; for intermittent chlorine sources see Reference 26,
(56) For consumption of water and aquatic organisms / for consumption of aquatic organisms only.
(57) MCL includes this "Action level"; to be exceeded in no more than 10 percent of samples.
(58) For sum of nonchlorinated phenolic compounds.
(59) Recommended level; Upper level = 1000; Short-term level = 1500 mg/l.
(60) For sum of tetrachloroethanes.
(61) Calculated from corn oil gavage animal study / from drinking water animal study.

REFERENCES

Drinking Water Standards — Maximum Contaminant Levels (MCLs)

1. California Department of Health Services, California Administrative Code, Title 22, Division 4, Chapter 15, "Domestic Water Quality and Monitoring".
2. U. S. Environmental Protection Agency, 40 Code of Federal Regulations, Parts 141 and 143.
3. U. S. Environmental Protection Agency, Office of Water, "Drinking Water Regulations and Health Advisories" (December 1992).
4. U. S. Environmental Protection Agency, Region 9, Drinking Water Branch, "Drinking Water Standards and Health Advisory Table" (December 1992).
5. U. S. Environmental Protection Agency, Federal Register, Volume 56, No. 110 (Friday, 7 June 1991), pages 26460-26564. Corrected in FR, Vol. 56, No. 135 (Mon., 15 July 1991) pages 32112-32113.
6. U. S. Environmental Protection Agency, Federal Register, Volume 56, No. 126 (Monday, 1 July 1991), pages 30266-30281. Amended by Federal Register, Volume 57, pages 22178 et seq. (27 May 1992).
7. U. S. Environmental Protection Agency, Federal Register, Volume 56, No. 138 (Thursday, 18 July 1991), pages 33050-33127.
8. U. S. Environmental Protection Agency, Federal Register, Volume 57, No. 138 (Friday, 17 July 1992), pages 31776-31849.

California State Action Levels

9. California Department of Health Services, Office of Drinking Water, "Summary: Maximum Contaminant Levels (MCLs) and Action Levels (ALs)" (18 October 1990).

California Recommended Public Health Levels (RPHLs) in Drinking Water

10. California Department of Health Services, Office of Drinking Water, "Notice of Proposed Rulemaking, Recommended Public Health Levels (RPHLs) for Contaminants in Drinking Water (R-29-91)" (4 December 1991).

Health Advisories and Suggested No-Adverse-Response Levels (SNARLs)

References 3 and 4.

11. U. S. Environmental Protection Agency, Office of Drinking Water "Health Advisory" documents (various dates).
12. National Academy of Sciences, "Drinking Water and Health", Vol.1 (1977), Vol. 3 (1980), Vol. 4 (1982), Vol. 5 (1983), Vol. 6 (1986), and Vol. 7 (1987).
13. U. S. Environmental Protection Agency, "Water Quality Advisory" documents (March 1986, September 1987).

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14. California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA), California Code of Regulations, Title 22, Division 2, Chapter 3, Articles 7 and 8.
15. California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA), Proposition 65 "Status Report" (January 1993).

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References 3, 4, 11, 12, and 13.

16. U. S. Environmental Protection Agency, "Quality Criteria for Water, 1986" (May 1986) plus updates (various dates).
17. U. S. Environmental Protection Agency, Federal Register, Vol. 49, No. 194 (Wednesday, 15 February 1984) [TCDD cancer risk level].
18. "California Environmental Protection Agency Criteria for Carcinogens", Office of Environmental Health Hazard Assessment (July 1992).

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19. Ayers, R. S. and D. W. Westcot, "Water Quality for Agriculture", Food and Agriculture Organization of the United Nations - Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985).

U. S. EPA National Ambient Water Quality Criteria

References 13 and 16.

20. U. S. Environmental Protection Agency, "Water Quality Criteria, 1972" (1973).
21. U. S. Environmental Protection Agency, Federal Register, Volume 55, No. 93, (Monday, 14 May 1990), pp. 19987-19992.
22. U. S. Environmental Protection Agency, Federal Register, Volume 57, No. 246 (Tuesday, 22 December 1992), pp. 60848-60923.
23. U. S. Environmental Protection Agency, "Ambient Water Quality Criteria" documents (various dates).

California Inland Surface Waters Plan - Numerical Water Quality Objectives

24. California State Water Resources Control Board, "Water Quality Control Plan for Inland Surface Waters of California", Document 91-12 WQ, Chapter II (11 April 1991).
25. California State Water Resources Control Board, "Functional Equivalent Document: Amendments of the Water Quality Control Plan for Inland Surface Waters of California", Draft (November 1992).

California Enclosed Bays and Estuaries Plan - Numerical Water Quality Objectives

26. California State Water Resources Control Board, "Water Quality Control Plan for Enclosed Bays and Estuaries of California", Document 91-13 WQ, Chapter II (11 April 1991).
27. California State Water Resources Control Board, "Functional Equivalent Document: Amendments of the Water Quality Control Plan for Enclosed Bays and Estuaries of California", Draft (November 1992).

California Ocean Plan - Numerical Water Quality Objectives

28. California State Water Resources Control Board, "Water Quality Control Plan: Ocean Waters of California", Chapter IV (22 March 1990).

Other References

29. McKee & Wolf, California State Water Resources Control Board, "Water Quality Criteria" (1963, 1978).
30. U.S. Environmental Protection Agency, Federal Register, Vol. 54, No. 97 (Mon., 22 May 1989), pp. 22138, 22139.

APPENDIX D

CONDITION(S) FOR CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS OF ITEMS IN TABLE 4-4

CONDITIONS FOR ITEM 21. SHORT-TERM USE OF RECLAIMED WATER:

1. Short-term water reclamation projects are projects that last one year or less. Short-term projects can include temporary use of reclaimed water for dust control, soil compaction, green belt irrigation, or any other temporary reuse project authorized by the Executive Officer, for which no permanent physical reclaimed water facilities or structures are installed; and

2. The reclaimed water producer must submit a written request for a waiver to the Regional Board. This request must include written notification from the local health department or the State Department of Health Services that the proposed project complies with all local and State health requirements for reclaimed water use and Title 22, Division 4, Chapter 3, Reclamation Criteria, Articles 1 - 10. This written notification shall also specify any monitoring required to demonstrate compliance with Title 22, Division 4, Chapter 3, Articles 2, 3, 4, 5, and 5.1. A new written request for a waiver must be submitted to the Regional Board if the temporary project exceeds one year. New written requests must be received 60 days prior to expiration of the one year project. If no new request is received the short-term project must cease immediately.

CONDITIONS FOR ITEM 24. TEMPORARY DISCHARGE OF SPECIFIED CONTAMINATED SOILS:

a. *General Conditions for All Temporary Waste Piles*

(1) The discharger shall file a Report of Waste Discharge which provides the technical information necessary to demonstrate that the discharge meets the criteria set forth herein. The discharger shall submit a fee of $750.00 pursuant to Section 2200, Title 23 of the California Code of Regulations.

(2) This waiver specifically does not apply to hazardous waste, as defined in Section 66261.3, Division 4.5, Title 22 of the California Code of Regulations, or as amended.

(3) All waste piles used for treatment or storage shall be bermed to prevent surface runoff/runon from contacting wastes and to prevent erosion and transport of contaminated soils by surface runoff. Berm material shall consist of clean, noncontaminated soil.

(4) All waste piles used for treatment or storage shall be protected against 100-year peak stream flows as defined by the County flood control agency.

(5) Wastes discharged to waste piles established under this waiver, together with any containment materials used at the temporary waste pile, and any underlying geologic materials contaminated by the discharge, shall be removed within the maximum time period allowed under the applicable Special Conditions. Subsequently the site shall be restored to its original state within 30 days following the removal of all treatment facilities, related equipment, etc. and shall be disposed of or stored in accordance with applicable regulations.

(6) If return water or ponded water contained within the treatment or storage area of the temporary waste pile will be disposed of at a location other than to a sanitary sewer system, then the discharger shall submit written notification to the Executive Officer prior to initiating the discharge and either: 1) obtain waste discharge requirements; 2) obtain a waiver of waste

discharge requirements or 3) obtain a written determination from the Executive Officer that the disposal of the return water or ponded water is not subject to regulation by the Regional Board.

b. *Special Conditions Applicable to Waste Piles for Treatment or Storage of Soils Contaminated with Petroleum Hydrocarbons*

(1) Temporary waste piles established under this waiver shall be limited to a maximum time period of four months or 120 days.

(2) All waste piles shall be overlain by a suitable heavy gauge plastic sheeting (not less than 10 mils thick) to adequately prevent rainwater infiltration, control fugitive dust, and other nuisances.

(3) All waste piles shall be underlain by either a suitable heavy gauge plastic sheeting (not less than 10 mils thick) or a liner of low permeability approved by the Executive Officer.

(4) Unless otherwise stated herein, waste piles shall conform to provisions in the state's Local Oversight Program (LOP) for Orange, Riverside, and San Diego Counties.

c. *Special Conditions Applicable to Waste Piles for Treatment or Storage of Dredge Spoils Contaminated with Heavy Metals*

(1) Temporary waste piles established under this waiver shall be limited to a maximum time period of nine months or 270 days.

(2) All waste piles shall be overlain by either a suitable heavy gauge plastic sheeting or an alternative approved by the Executive Officer to adequately prevent rainwater infiltration, control fugitive dust, and other nuisances. The control methods shall be subject to approval by the Executive Officer.

(3) All waste piles shall be underlain by a liner of low permeability (not less than 20 mils thick). The liner and containment facility shall be designed to contain all waste and fluids, and shall be subject to approval by the Executive Officer.

(4) Materials used in containment structures shall have the appropriate chemical and physical properties to ensure that such structures do not fail to contain waste because of: the stress of installation, pressure gradients, physical contact with the waste or leachate, or chemical reactions with soil and rock.

CONDITIONS FOR ITEM 25. DISPOSAL / REUSE OF DREDGE SPOILS IN INDUSTRIAL OR COMMERCIAL APPLICATIONS

a. *General Conditions for Disposal/Reuse of Treated Dredge Spoil in Industrial or Commercial Applications*

(1) The discharger shall file a report of waste discharge which provides the technical information necessary to demonstrate that the residual concentrations of constituents of concern meet the criteria set forth herein. The discharger shall submit a fee of $750.00 pursuant to CCR Title 23, Section 2200.

(2) All sampling and analytical procedures, including documentation of waste characterization, shall be in accordance with the indicated methods described in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, U.S. Environmental Protection Agency (current edition). Reported concentrations levels shall be mean average, with an 80% upper confidence interval, and the total range within each constituent.

(3) The Waste Extraction Test (WET) shall be used for all metal elements, polychlorinated biphenols (PCB's), tributyltin (TBT), and their compounds to determine the amount of extractable substance

from a contaminated soil. Procedures for the WET are described in Section 66261.24, Article 3, Chapter 11, Division 4.5, Title 22 of the California Code of Regulations, or as amended. Concentration limits are based on the modified WET methodology (using deionized water in place of sodium citrate buffer solution) and then multiplied by the ten fold dilution rate used in the test.

(4) The Toxicity Characteristic Leaching Procedure (TCLP) shall be used for all volatile organic compounds to determine the amount of extractable substance from a contaminated soil. Procedures for the TCLP are described in Appendix I, Chapter 18, Division 4.5, Title 22 of the California Code of Regulations, or as amended. Concentration limits are based on the modified TCLP methodology (using deionized water in place of sodium acetate buffer solution) and then multiplied by the twenty fold dilution rate used in the test.

(5) This waiver specifically does not apply to hazardous waste, as defined in Section 66261.3, Division 4.5, Title 22 of the California Code of Regulations, or as amended.

(6) The discharge shall meet the additional conditions outlined under the exact type of discharge proposed. The levels of contaminants in the soil shall not exceed any of the maximum concentration limits listed under the type of discharge proposed for the soil.

(7) The discharge shall be protected against 100-year peak stream flows as defined by the County flood control agency.

(8) The discharger shall file a certification report when disposal/reuse is completed, on a form approved by the Executive Officer.

(9) This waiver applies only to the contaminants specified under each disposal use category. These may not be the only pollutants found in contaminated soils that could threaten water quality. Contaminated soils from other sources including, but not limited to; solvents, pesticides, other metals, salts, and nutrients, are excluded from this waiver. Contaminants that are suspected constituents of concern that are not listed may need to be evaluated based on knowledge of the site cleanup and on a case by case basis until such time as numerical limits applicable for a waiver can be established.

b. *Special Conditions Applicable to Use of Treated Dredge Spoil for Industrial or Commercial Reuse/Fill near Groundwater, Bays and Estuaries, and Pacific Ocean*

(1) Soil shall be covered by either (1) **constructed** materials (e.g. used as roadbase, fill beneath buildings, bridge abutments), or (2) not less than 2 feet of **noncontaminated clean** fill to minimize surface water infiltration, preclude exposure by erosion, and control leaching effects.

(2) Soil shall be placed a minimum of 100 feet away from any surface water.

(3) Soil shall be placed a minimum of 5 feet above the highest anticipated elevation of ground water [CCR, Title 23, Section 2530 (c)].

(4) This waiver does not apply to basins that are designated for municipal and domestic supply.

(5) The applicable standards for the underlying ground water basins shall not only be based upon the water quality of those basins, but also the surface water of an enclosed bay, estuary, or Pacific Ocean that it is in contact with.

(6) The average concentration of contaminants in the soil shall not exceed any of the following concentration limits (mean average with an 80% upper confidence interval):

Constituents	Ground Water[1]	Bays and Estuaries[4]	Pacific Ocean[5a]
	Concentration Limit (Numerical Objective Multiplied by 10-fold Attenuation)		
Metals			
Chromium (VI)	500 ug/l	500 ug/l[4a]	20 ug/l
Copper	10000 ug/l[3]	29 ug/l[4b]	30 ug/l
Lead	500 ug/l	56 ug/l[4a]	20 ug/l
Mercury	20 ug/l	0.25 ug/l[4c]	0.4 ug/l
Silver	500 ug/l	23 ug/l[4d]	7 ug/l[5c]
Zinc	50000 ug/l[3]	860 ug/l[4a]	200 ug/l
Synthetic			
PCBs	5 ug/l	0.0007 ug/l[4c]	0.00019 ug/l[5b]
TBT	0.2 ug/l	0.05 ug/l[4c]	0.014 ug/l[5b]
Hydrocarbons			
TPH	100 mg/kg[6]	100 mg/kg[6]	100 mg/kg[6]
TRPH	1000 mg/kg[6]	1000 mg/kg[6]	1000 mg/kg[6]
Benzene	10 ug/l	210 ug/l[4c]	59 ug/l[5b]
Toluene	10000 ug/l	3000000 ug/l[4c]	850000 ug/l[5b]
Ethylbenzene	6800 ug/l	290000 ug/l[4c]	4300 ug/l[5b]
Total Xylenes	17500 ug/l	--	--
Naphthalene	200 ug/l[2]	200 ug/l[2]	200 ug/l[2]

Water Quality Objectives are derived from the following sources.

1. California Drinking Water Standards, primary maximum contaminant levels

2. US EPA suggested no adverse response levels (SNARLs)

3. California Drinking Water Standards, secondary maximum contaminant levels

4. Best Professional Judgement for Bays and Estuaries
    a. 4-day Average Concentration - Saltwater Aquatic Life Protection
    b. 1-hour Average Concentration - Saltwater Aquatic Life Protection
    c. 30-day Average Concentration - Human Health Protection
    d. Instantaneous Maximum Concentration - Saltwater Aquatic Life Protection

5. California Ocean Plan Criteria, Marine Aquatic Life Protection
    a. 6-month Median Concentration - Saltwater Aquatic Life Protection
    b. 30-day Average Concentration - Human Health Protection
    c. Instantaneous Maximum Concentration - Saltwater Aquatic Life Protection

6. No Numerical Objectives Used - Constituent is an Indicator of Other Contaminants

DEFINITION OF TERMS IN CONDITIONS FOR ITEM 25

Total Petroleum Hydrocarbon (TPH): Determination of concentration of residual gasoline and diesel in a soil shall utilize US EPA test method 8015 (carbon ranges C_4 through C_{24}), based on wet-weight total concentrations.

Total Recoverable Petroleum Hydrocarbons (TRPH): Determination of concentration of residual hydrocarbons in a soil shall utilize US EPA test method 418.1, based on wet-weight total concentrations.

Solute concentrations: Concentrations of the constituents of concern in deionized water using modified Waste Extraction Test (WET) or the Toxicity Characteristic Leaching Procedure (TCLP) methodologies.

Solute: Deionized water used as extraction solution in the WET and TCLP methodologies.

Limit: A concentration value not to be exceeded which is necessary to protect water quality and beneficial uses for the San Diego Region (This limit may be based on water quality objectives or a water quality objective multiplied by an appropriate attenuation factor).

Clean Fill: Soil containing no waste or leachate in accordance with CCR Title 23 Section 2581 (a)(3).

Attenuation: The amount of reduction in the concentration of a constituent as it moves through a soil. The reduction may result from a combination of processes, including; assimilation, adherence, adsorption, degradation, and separation of the waste from water.

CONDITIONS FOR ITEM 26. COMPOSTING AND PROCESSING, MULCHING, OR GRINDING FACILITIES

A. APPLICABILITY

1. ***Types of Facilities***
   a. *Facilities composting Green Waste, Agricultural Waste, Food Processing Waste or Paper Waste*
   b. *Facilities processing, mulching or grinding Green Waste, or Agricultural Waste*

2. ***Size of Facilities***
   a. *Composting and Processing, Mulching, or Grinding Operations Less than Five Hundred (500) Cubic Yards*

   The submittal of a report of waste discharge and the issuance of waste discharge requirements are waived for discharges from the following:
   (1) Green waste, food processing waste, agricultural waste, or paper waste composting operations that do not exceed five hundred (500) cubic yards at any given time;
   (2) Green waste or agricultural waste processing, mulching or grinding operations that do not exceed a total volume of five hundred (500) cubic yards at any given time.

   b. *Composting and Processing, Mulching, or Grinding Operations Greater than Five Hundred (500) Cubic Yards*

   For dischargers who comply with the following *Reporting, Site, Operational, and General Conditions*, the issuance of waste discharge requirements are waived for discharges resulting from the following:
   (1) The storage and treatment by composting of greater than five hundred (500) cubic yards at any given time of green waste, food processing waste, agricultural waste, or paper waste, and any additives as approved by the RWQCB; or
   (2) The storage and treatment by processing, mulching, or grinding of greater than five hundred (500) cubic yards of green waste, or agricultural waste.

B. REPORTING CONDITIONS

1. *Report of Waste Discharge*

The discharger shall file a report of waste discharge that includes a technical report containing a requirement-by-requirement analysis based on acceptable engineering standards and best management practices, of how the process and physical designs of the facility will ensure compliance with the conditions listed herein. The discharger shall submit a fee pursuant to CCR Title 23, Section 2200 for a Threat to Water Quality and Complexity Rating 3-C, Chapter 15.

2. *General Industrial Storm Water Permit*

The discharger shall file either a Notice of Intent to comply with the requirements set forth in State Water Resources Control Board (SWRCB) NPDES General Permit No. CAS000001 for the discharge of storm water or submit documentation that the NPDES storm water permit requirements are not applicable to the discharger's facility.

3. *Changes in Operation*

The discharger shall notify the RWQCB of:

a. any significant change in the nature and quantity of waste composted or processed, area of operation, or season of operation; or

b. termination of operation.

C. SITE CONDITIONS

1. *Control and Management*

All areas upon which green waste, food processing waste, agricultural waste, or paper waste and any feedstock additives are discharged for composting or processing, mulching, grinding, storing and treating shall be designed, constructed and maintained to prevent the degradation of waters of the state. Such facility operations shall be equivalent to the water quality protection achieved through the implementation of the following measures:

a. *Precipitation*

All precipitation and surface drainage from outside the compost, process, treatment or storage areas including that collected from roofed areas, and runoff from tributary areas resulting from a 25-year, 24-hour storm shall be diverted away from the such areas.

b. *Runoff*

The discharger shall develop and implement a plan to reduce or eliminate the discharge of pollutants into surface waters including storm water. The plan shall describe measures taken to prevent contaminated process water and reduce or eliminate contaminated storm water from being discharged from the site.

c. *Water Quality Protection*

All compost, process and storage areas shall be sited where soil characteristics, distance from waste to ground water, and other factors will ensure no impairment of beneficial uses of surface waters or ground waters beneath or adjacent to the facility.

d. *Stream Flow*

The facilities shall be protected from inundation or washout by overflow from any stream channel during a 25-year peak stream flow.

e. *Surface Maintenance*

If the equipment operating near or on compost, process, storage, or treatment areas produces subsidence, cracking, or otherwise compromises any surface, the discharger shall repair any damaged areas immediately.

D. *OPERATIONAL CONDITIONS*

1. *Additives*
Dischargers who use additives as defined in this document shall report to the RWQCB's Executive Officer for his approval the type, and quantity of the additive. The use of additives shall comply with the *CONDITIONS* listed in this document.

2. *Discharge Specifications*
The discharge of green waste, food processing waste, agricultural waste, or paper waste for storage and treatment by composting or processing, grinding, or mulching shall not cause or threaten to cause a condition of contamination, pollution or nuisance.

3. *Maintenance*
Containment structures such as embankments, liners or surface impoundments shall be maintained in order to ensure proper performance whenever wastes are discharged.

4. *Wet Weather Preparations*
Prior to the rainy season, the discharger shall conduct a survey of the operation to ensure that the site has been graded and prepared to prevent erosion and to prevent ponding of waste water at any location not designed and operated to retain water.

5. *Inspections*
The discharger shall inspect compost, process, storage and treatment areas for emergence of leachate, ponding, or surface failures such as cracking or subsidence; such inspections shall be frequent enough to ensure compliance with the Conditions of this waiver. If visible leachate, ponding, cracking, or subsidence of surfaces is observed, the discharger shall immediately take necessary measures to maintain the performance standards described in *SITE CONDITIONS C.*

E. *GENERAL CONDITIONS*

1. *Prohibitions*
The inclusion of the following wastes for treatment by composting or processing under the conditions of this waiver are prohibited:
a. municipal solid waste;
b. sludges (including sewage sludge, water treatment sludge, and industrial sludge);
c. septage;
d. liquid wastes, unless specifically approved by the Regional Board;
e. animal waste, except manure when used as an additive;
f. oil and grease; and
g. hazardous, designated, and any other wastes determined by the Regional Board to pose a potential threat to water quality.

2. *Entry and Inspection*
The discharger shall allow the RWQCB, or an authorized representative upon the presentation of credentials and other documents as may be required by law, to:
a. Enter upon the discharger's premises where a conditionally waived facility or activity is located or conducted, or where records must be kept under the conditions of this waiver;
b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this waiver;
c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this waiver; and
d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this waiver or as otherwise authorized by the California Water Code, any substances or parameters at any location.

DEFINITION OF TERMS IN CONDITIONS FOR ITEM 26

GREEN WASTE: Material that consists of or contains waste from plants, including leaves, clippings, cuttings, trimmings of grass, weeds, shrubbery, bushes, or trees, residential or community garden wastes, and untreated wood wastes.

FOOD PROCESSING WASTE: Material that consists of or contains only pre-processed and post-processed waste derived from plants, or foods processed or produced at restaurants, hospitals and food distributors.

AGRICULTURAL WASTE: Material that consists of the plant waste coming directly from an agricultural commodity, and is the product of farms and ranches and by-products processed from these products, as defined in Division 21, Part 2, Chapter 1 Section 58619 of the Food and Agriculture Code. Agricultural waste includes agricultural, floricultural, silvicultural, vermicultural or viticultural products.

PAPER WASTE: Material that consists of nonhazardous paper and paper by-products.

ADDITIVE: Material that consists of waste or products which are approved by the RWQCB's Executive Officer for mixture with feedstock or treated waste to adjust the moisture level, the carbon to nitrogen ratio, or the porosity of the wastes to create a condition favorable to the processing, or to improve the end-product. Additives may include manures, fertilizers, and chemical amendments.

DISCHARGER: Any person who discharges waste which could affect the quality of waters of the state, and includes any person who owns a waste management unit or who is responsible for the operation of a waste management unit pursuant to Title 23, California Code of Regulations, Section 2601.

CONDITIONS FOR ITEM 28. PERMANENT RECLAIMED WATER PROJECTS:

1. The discharger shall submit a report of waste discharge pursuant to Section 13260 or 13522.5 of the California Water Code. This report shall contain sufficient technical information from which the Regional Board can determine if the proposed discharge complies with all applicable reclamation regulations; and

2. The proposed discharge of reclaimed water must be in compliance with the California Code of Regulations, Title 22, Division 4, Chapter 3, Articles 1 - 10; and

3. The proposed discharge of reclaimed water must be in compliance with the Water Quality Control Plan, San Diego Basin (9); and

3. The report of waste discharge must contain a letter from the local health department of the State Department of Health Services stating that the proposed project complies with all State and local Health requirements for the use of reclaimed water. This letter shall also specify any monitoring required to demonstrate compliance with Title 22, Division 4, Chapter 3, Reclamation Criteria, Articles 2, 3, 4, 5 and 5.1; and

5. Temporary waiver's of waste discharge requirements remain in effect for a project until the Regional Board is able to adopt permanent requirements. The Regional Board will adopt requirements, as appropriate, at the earliest possible opportunity, and in accordance with Regional Board priorities.