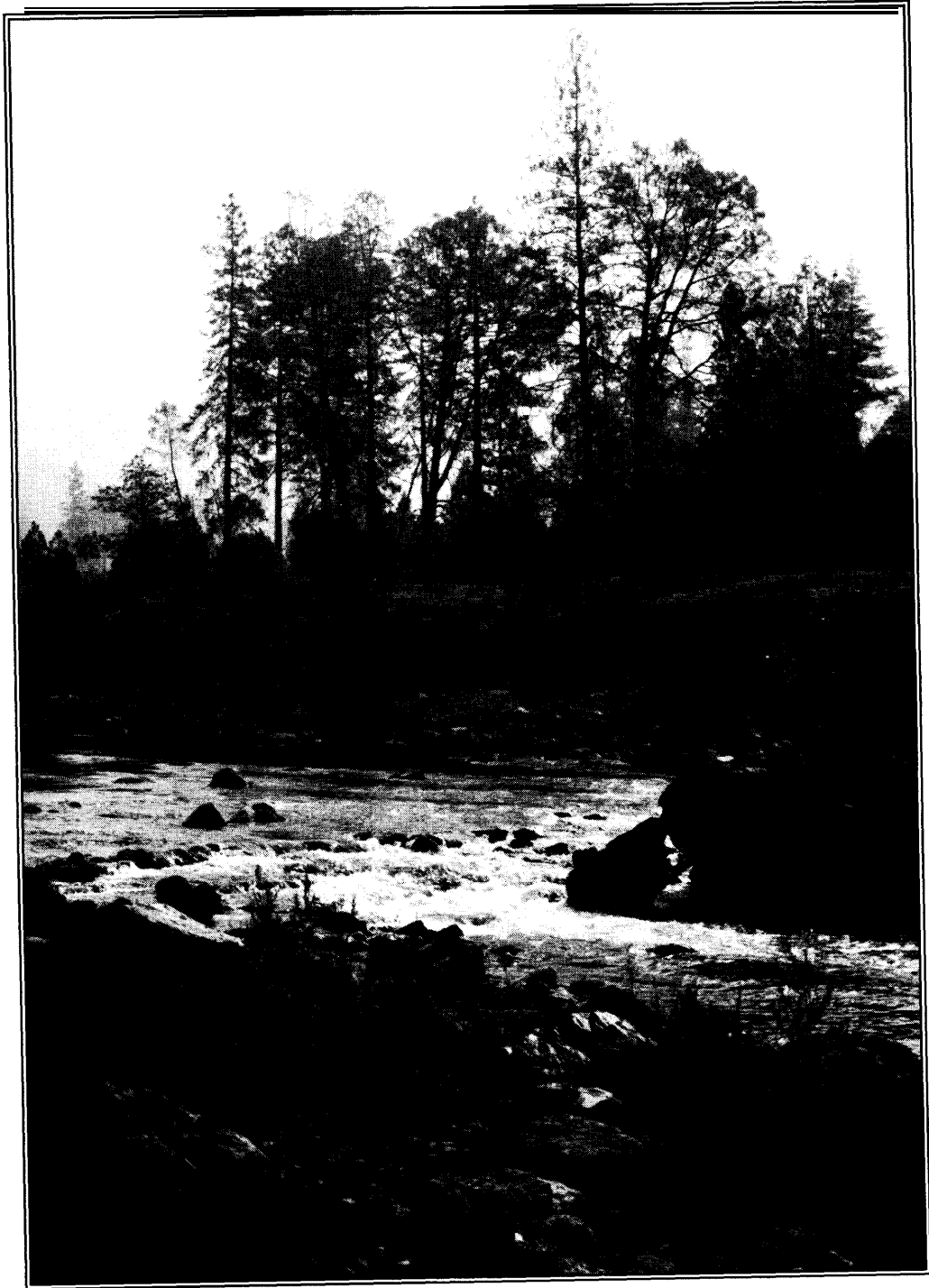


WATER QUALITY CONTROL PLAN



**NORTH COAST REGION
REGION 1**

**WATER QUALITY CONTROL PLAN
FOR THE
NORTH COAST REGION**

Adopted by the
North Coast Regional Water Quality Control Board on December 9, 1993

Approved by the
State Water Resources Control Board on March 21, 1994,
and the
Office of Administrative Law on August 18, 1994

(Includes amendment adopted on March 24, 1994)

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FOREWORD

The need for comprehensive water quality planning is set forth in both California and federal law. California's Porter-Cologne Water Quality Control Act, which is contained in California Water Code, Division 7, Chapters 1 through 17, and the Federal Water Pollution Control Act as amended by the Clean Water Act of 1977 require water quality control plans for the waters of the State as well as public review of the plans. The basic purpose of the state's planning effort is to determine the future direction of water quality control for protection of California's waters.

The Water Quality Control Plan for the North Coast Region (Basin Plan) is comprehensive in scope. It contains a brief description of the North Coast Region, and describes its water quality and quantity problems and the present and potential beneficial uses of the surface and ground waters within the Region. The water quality objectives contained in the Basin Plan are prescribed for the purposes of protecting the beneficial uses. The implementation plans section describes the measures, which include specific prohibitions, action plans, and policies which form the basis for the control of water quality.

Statewide plans and policies are included as well as a description of Regional Water Board surveillance and monitoring activities. The plan contains provision for public participation, complies with the requirements of the California Environmental Quality Act, and establishes a setting and the framework for the development of discharger regulation.

Integral to the basin planning process is the provision for change. In that respect, the water quality control plans are reviewed triennially to determine the needed changes and to keep pace with technologies, policies, changes in the law, and physical changes within the Region. The Regional Water Board conducted its most recent triennial review of its Basin Plan in 1992 and on February 25, 1993 adopted a prioritized list of issues which the Regional Water Board has determined necessary for further evaluation and potential development into a basin plan revision. The Regional Water Board placed high priority on updating the Basin Plan to provide updated descriptions of the Region, laws, and regulations and to correct inaccuracies in the Basin Plan. This Basin Plan has been updated and revised accordingly.

Cover Photo: Trinity River at Big Bar, 1987
(A. Wellman)

I. INTRODUCTION

The primary responsibility for the protection and enhancement of water quality in California has been assigned by the California legislature to the State Water Resources Control Board (State Water Board) and the nine regional water quality control boards (regional water boards). The State Water Board provides state-level coordination of the water quality control program by establishing statewide policies and plans for the implementation of state and federal laws and regulations. The regional water boards adopt and implement water quality control plans (basin plans) which recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems.

HISTORY OF BASIN PLANNING IN THE NORTH COAST REGION

The nine regional water boards were established as "regional water pollution control boards" by the Dickey Act of 1949. The names of the regional water boards were changed, and their authority broadened, by the Porter-Cologne Water Quality Control Act of 1969. The development of comprehensive basin plans was initiated in response to both federal and state directives.

The North Coast Regional Water Quality Control Board (Regional Water Board) first adopted an interim Basin Plan in 1971. This was a brief, basic document which was used until comprehensive basin plans for its two natural hydrologic basins, the Klamath River Basin IA and the North Coastal Basin 1 B, were developed, adopted by the Regional Water Board, and approved by the State Water Board in 1975. Also in 1975, the comprehensive plans were condensed into two abstracts which were adopted by the Regional Water Board and approved by the State Water Board.

In the development of the 1975 comprehensive plans, the California Department of Water Resources was the major contractor for planning in Basin IA. A three-member consortium (basin contractor) consisting of Brown and Caldwell, Water Resources Engineers, Inc. and Yoder-Trotter-Orlob and Associates conducted the planning for Basin 1 B. The basin contractors were aided by several subcontractors for specialized studies outside the contractors' expertise. The State Water Board

contracted with agencies to organize and supply their respective data for each subbasin. The Regional Water Board and staff participated throughout the planning process and were responsible for organizing and conducting the public meetings and workshops. An Office of Technical Coordination (OTC) was established by contract with the State Water Board to provide technical criteria, coordination and standardization to the Basin Planning Program. OTC reviewed the plans for technical content and coordination on a statewide level.

In 1975, the State Water Board's Office of Planning and Research in conjunction with the regional water boards organized and directed the statewide basin planning program. Planning areas were defined in accordance with natural hydrologic boundaries. At that time, a total of 16 study basins were defined within the nine administrative regional water boards and two of these basins, the Klamath River Basin IA and the North Coastal Basin IB comprised the boundaries of the North Coast Regional Water Quality Control Board.

In 1980, the State Water Board, the Department of Water Resources, and the U.S. Geological Survey entered into an agreement which redefined the hydrologic basin planning areas within the State of California. The North Coast Region is Hydrologic Unit Number 1. This hydrologic unit is divided into hydrologic areas and subareas as shown on Figure I-1 (located in the map pocket). The names and areas shown on Figure I-1 are the same as used by the Department of Water Resources in its Bulletin 94 series.

Since 1975, the Regional Water Board and Regional Water Board staff have had the primary responsibility for basin planning. The Regional Water Board observes the formal public hearing process while considering basin planning issues, and before submitting its decision to the State Water Board for approval. The Basin Planning Unit of the State Water Board's Division of Water Quality serves to coordinate planning efforts among the nine regional water boards as well as the Office of Administrative Law and the U.S. Environmental Protection Agency.

The comprehensive plans and abstracts have been amended several times to serve the needs of the

1. INTRODUCTION

Regional Water Board, its staff, and the public. On April 28, 1988, the Regional Water Board combined and updated the two comprehensive plans and their abstracts into a single Water Quality Control Plan for the North Coast Region (Basin Plan). The Appendix Section of this Plan contains a summary of Basin Plan amendments since 1975.

Planning Relationships

This Basin Plan is only one of a number of plans which deal directly or indirectly with the water resources of the North Coast Region.

At the federal level, overall guidance on the course of future development of water and related land resources is provided by the Comprehensive Framework Study, California Region. This study was completed in 1971 by the Water Resources Council, pursuant to the Water Resources Planning Act of 1965.

At the state level, the California Water Plan calls for the orderly and coordinated control, protection, conservation, development, and use of the state's water resources. Basin plans became part of the California Water Plan after the basin plans were adopted by the regional water boards and approved by the State Water Board.

In addition, several state agencies are involved in planning for resources whose protection and development are dependent on high water quality. Completed plans related to water quality include the California Fish and Wildlife Plan (1966) the California Comprehensive Ocean Area Plan (1967) the California Protected Waterways Plan (1971) and the California Coastal Plan (1975). Senate Bill 1285, an outgrowth of the Protected Waterways Plan, mandated that detailed waterway management plans be prepared for the major North Coast rivers. These plans were prepared by the Protected Waterways Program. Other related plans are the California Outdoor Recreation Resources Plan, the California Coastal Zone Conservation Plan, and the California Wild and Scenic Rivers Management Plan.

All of the counties in the North Coast Region have prepared general plans which include water and sewerage disposal elements. These plans are used by

the counties for establishing priorities for meeting current and future water and sewerage needs. The counties have prepared solid waste management plans in response to the Nejedly-Z'berg-Dills Solid Waste Management and Resource Recovery Act of 1972, and these are reviewed triennially. In addition, Assembly Bill 2948 of 1986, (the Tanner Bill), requires all counties to adopt plans for the management and disposal of the hazardous and toxic wastes generated within their boundaries.

The protection and orderly development of the Region's water resources make it essential that all planning efforts be coordinated.

FUNCTION AND OBJECTIVES OF THE BASIN PLAN

The basic purpose of the state's basin planning effort is to determine the future direction of water quality control for protection of California's waters.

The goal of this Basin Plan is to provide a definitive program of actions designed to preserve and enhance water quality and to protect beneficial uses of water in the North Coast Region. The plan is concerned with all factors and activities which might affect water quality. It emphasizes, however, actions to be taken by the State Water Board and the Regional Water Board since they have primary responsibility for maintenance of water quality in the North Coast Region.

This Basin Plan is comprehensive in scope. It contains a brief description of the North Coast Region, and describes its water quality and quantity problems and the present and potential beneficial uses of the surface and ground waters within the Region. The water quality objectives contained in the plan are prescribed for the purposes of protecting the beneficial uses. The Implementation Plans section describes the measures, which include specific prohibitions, action plans, and policies which form the basis for the control of water quality. Statewide plans and policies are included as well as a description of Regional Water Board surveillance and monitoring activities. The plan contains provisions for public participation, complies with the requirements of the California Environmental Quality Act, and establishes a setting

and the framework for the development of discharger regulation.

Basin plans complement and may be more stringent than water quality control plans and policies adopted by the State Water Board, such as the "Water Quality Control Plan for Ocean Waters of California" and the "Water Quality Control Policy for the Enclosed Bays and Estuaries of California". Provisions of State Water Board plans supersede basin plans; however, the same state plans may allow for site-specific objectives and exceptions in order to meet localized needs and circumstances.

This Basin Plan is used as a regulatory tool by the Regional Water Board's technical staff. Regional Water Board orders cite the Basin Plan's water quality standards and prohibitions applicable to a particular discharge. The Basin Plan also is used by other agencies in their permitting and resource management activities. It also serves as an educational and reference document for staff, dischargers and members of the public.

LEGAL BASIS AND AUTHORITY

Comprehensive water quality planning is mandated by California and federal law. The federal Clean Water Act contains the law protecting navigable waters, and the California Water Code is the state body of law protecting groundwaters and fresh and marine surface waters.

The federal Clean Water Act (Section 303, 33 U.S.C. § 1313) requires states to adopt water quality standards (water quality objectives and beneficial uses) for navigable waters of the United States and to review and update those standards on a triennial basis. Other provisions of the Clean Water Act related to basin planning include Section 208, which authorizes the preparation of areawide wastewater management plans, and Section 319 (added by 1987 amendments) which provides for more specific planning related to control of nonpoint source problems. The 1987 amendments to the federal Clean Water Act also mandated adoption by the states of numerical standards for 126 "priority pollutant" toxic chemicals.

The State Water Board and regional water boards implement the federal Clean Water Act in California under the oversight of the U.S. Environmental Protection Agency (EPA), Region IX. Direction for implementation of the Clean Water Act is provided by the Code of Federal Regulations (40 CFR) and by a variety of EPA guidance documents on specific subjects.

The Porter-Cologne Water Quality Control Act (Porter-Cologne) is codified in the California Water Code (CWC) and establishes the State Water Board and the nine regional water boards in their current form. It authorizes the State Water Board to adopt, review and revise state water policy, which may include water quality objectives, principles, and guidelines (CWC Sections 13142-13143). It directs the State Water Board to formulate, adopt and revise general procedures for the basin planning process by regional water boards (CWC Section 13164). Porter-Cologne also authorizes the State Water Board to adopt water quality control plans on its own initiative (CWC Section 13170); such plans supersede regional basin plans to the extent of any conflict.

Article 3 of Chapter 4 of Porter-Cologne directs regional water boards to adopt, review, and revise basin plans, and provides specific guidance on factors which must be considered in adoption of water quality objectives and implementation measures. The format for basin plans as described in Sections 13241-I 3247 of Porter-Cologne follows a logical progression towards water quality protection by:

- 1) describing the resources and beneficial uses to be protected;
- 2) stating water quality objectives for the protection of those uses;
- 3) providing implementation plans (which include specific prohibitions, action plans and policies) to achieve the water quality objectives;
- 4) describing the statewide plans and policies which apply to the waters of the region; and
- 5) describing the region's surveillance and monitoring activities.

1. INTRODUCTION

TRIENNIAL REVIEW AND BASIN PLAN AMENDMENT PROCESS

Both Porter-Cologne (CWC Section 13240) and the Clean Water Act (Section 303(c)(l)) require review of basin plans at least once each three-year period to keep pace with changes in regulations, new technologies and policies, and physical changes within the Region. The Regional Water Board is responsible for this triennial review, and is required to: 1) identify those portions of the Basin Plan which are in need of modification or new additions; 2) adopt standards as appropriate; and 3) recognize the portions of the Basin Plan which are appropriate as written. The review includes a public hearing process, thus providing a forum for the public to raise issues for the Regional Water Board to consider for incorporation into its Basin Plan.

At the conclusion of the triennial review the Regional Water Board adopts a resolution by the Regional Water Board which: 1) summarizes those sections of the Basin Plan which the Regional Water Board has determined to be appropriate and up to date, and 2) sets forth a prioritized list of issues (priority list) which the Regional Water Board has determined are necessary for further evaluation and potential development into a basin plan revision.

The triennial review priority list directs the planning efforts of the Regional Water Board for a period of three years following its adoption. As staffing and budget allows, and starting at the top of the list, the Regional Water Board considers each of the issues identified on the priority list for potential basin plan revisions. The Regional Water Board may also initiate Basin Plan revisions apart from the triennial review process in response to urgent needs which arise after completion of the triennial review.

Once an issue has been evaluated, a proposed amendment is noticed for public hearing. The hearing considers testimony specific to each proposed amendment. This process allows the Regional Water Board to consider each potential amendment on its own merits, to thoroughly identify the problem, to consider alternatives for action, and to assess the expected environmental impact of the proposed action.

Following their adoption by the Regional Water Board, basin plan amendments and supporting documents are submitted to the State Water Board for review and approval. The State Water Board may approve the amendments or remand them to the Regional Water Board with directions for change. Certain basin plan amendments approved by the State Water Board after June 1, 1992, must be reviewed and approved by the Office of Administrative Law (OAL). For purposes of state law, all amendments take effect upon approval by the OAL. Adoption or revision of surface water standards are subject to the approval of the U.S. Environmental Protection Agency.

Public Participation

Public participation is a key element in both state and federal planning requirements. California Code of Regulations, Title 23, Division 3, Chapter 1.5, Section 647.2 describes the Notice and Agenda requirements for all meetings of the Regional Water Board. Water Code Section 13244 requires advance public notice of basin plan amendments and periodic reviews. Federal public participation requirements of 40 CFR Part 25 also apply.

The public participation requirements are intended to foster public awareness and the open processes of governmental decision-making. The Regional Water Board seeks to implement public participation requirements by requesting the public's input, assimilating its viewpoints and preferences, and demonstrating that those viewpoints have been considered.

In the basin planning process, a notice of the proposed action is published in area newspapers and distributed to a list of interested persons or organizations. All basin plan amendments must observe as a minimum the publication procedures which are described in Section 6061 of the Government Code. This requires notification in a newspaper of general circulation once, and three consecutive times when a prohibition of waste discharge is being considered.

All basin plan and statewide plan amendments are subject to the California Environmental Quality Act (CEQA); however, the basin planning process 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, Section 15251). Under the basin planning process, the plan amendment, as well as the staff report and backup materials, serve as a "functional equivalent" to an EIR or negative declaration and initial study. A CEQA "notice of filing" as well as a hearing notice must be published. Under normal circumstances, these notices are published concurrently and at least 45 days prior to the hearing. The notice for noncontroversial matters may be reduced to 30 days. Additionally, under limited emergency situations, further reduction of the advance notice may be possible. The notice sets out dates for public meetings and requests comments from the public. The notice must describe the availability of related reports, include a discussion of possible alternative actions, and an environmental impact analysis of the proposed action(s). All materials related to the proposed action must be available at least thirty days in advance of the public hearing.

Input from interested persons may be either through written correspondence, through public workshop sessions, or at the hearing. At the hearing all interested persons are given the opportunity to speak and respond to the material being considered, within reasonable limitations as determined by the Regional Water Board.

California Code of Regulations, Title 23, Division 4, Chapter 1.5, Section 3781 requires that Regional Water Board approval of basin plan amendments be followed by a Notice of Decision which is filed with the Secretary of the Resources Agency. The Resources Agency is to post this notice for public inspection for at least 30 days.

REGIONAL SETTING OF THE NORTH COAST REGION

This section provides an overview of the environmental and socioeconomic setting of the North Coast Region.

The North Coast Region is defined in Section 13200(a) of Porter-Cologne as follows:

North Coast region, which comprises all basins including Lower Klamath Lake and

Lost River Basins draining into the Pacific Ocean from the California-Oregon state line southerly to the southerly boundary of the watershed of the Estero de San Antonio and Stemple Creek in Marin and Sonoma Counties.

The North Coast Region is divided into two natural drainage basins, the Klamath River Basin and the North Coastal Basin. The North Coast Region covers all of Del Norte, Humboldt, Trinity, and Mendocino Counties, major portions of Siskiyou and Sonoma Counties, and small portions of Glenn, Lake, and Marin Counties.

The North Coast Region encompasses a total area of approximately 19,390 square miles, including 340 miles of scenic coastline and remote wilderness areas, as well as urbanized and agricultural areas.

The North Coast Region is characterized by distinct temperature zones. Along the coast, the climate is moderate and foggy and the temperature variation is not great. For example, at Eureka, the seasonal variation in temperature has not exceeded 63°F for the period of record. Inland, however, seasonal temperature ranges in excess of 100°F have been recorded.

Precipitation over the North Coast Region is greater than for any other part of California, and damaging floods are a fairly frequent hazard. Particularly devastating floods occurred in the North Coast area in December of 1955, in December of 1964, and in February of 1986.

Ample precipitation in combination with the mild climate found over most of the North Coast Region has provided a wealth of fish, wildlife, and scenic resources. The mountainous nature of the Region, with its dense coniferous forests interspersed with grassy or chaparral covered slopes, provides shelter and food for deer, elk, bear, mountain lion, furbearers and many upland bird and mammal species. The numerous streams and rivers of the Region contain anadromous fish, and the reservoirs, although few in number, support both coldwater and warmwater fish.

Tidelands, and marshes too, are extremely important to many species of waterfowl and shore birds, both for feeding and nesting. Cultivated land and pasture

1. INTRODUCTION

lands also provide supplemental food for many birds, including small pheasant populations. Tideland areas along the north coast provide important habitat for marine invertebrates and nursery areas for forage fish, game fish, and crustaceans. Offshore coastal rocks are used by many species of seabirds as nesting areas.

Major components of the economy are tourism and recreation, logging and timber milling, aggregate mining, commercial and sport fisheries, sheep, beef and dairy production, and vineyards and some wineries.

In all, the North Coast Region offers a beautiful natural environment with opportunities for scientific study and research, recreation, sport and commerce. To ensure their perpetuation, the resources must be used wisely.

The Klamath River Basin

The Klamath River Basin covers an area of approximately 10,830 square miles within northern California tributary to the Klamath, Smith, Applegate, Illinois, and Winchuck Rivers, as well as the closed Lost River and Butte Valley hydrologic drainage areas. The Basin is bounded by the Oregon state border on the north, the Pacific Ocean on the west, Redwood Creek and Mad River hydrologic units on the south, and by the Sacramento Valley to the east. The Basin covers all of Del Norte County, and major portions of Humboldt, Trinity, Siskiyou and Modoc counties.

The western portion of the Basin is within the Klamath Mountains and Coast Range provinces, characterized by steep, rugged peaks ranging to elevations of 6,000 to 8,000 feet with relatively little valley area. The mountain soils are shallow and often unstable. Precipitation ranges from 60 to 125 inches per year. The 45-mile coastline is dominated by a narrow coastal plain where heavy fog is common.

The eastern portion of the Basin receives low to moderate rainfall and includes predominantly high, broad valleys such as the Butte, Shasta, and Scott Valleys.

The Lost River and Butte Valley hydrologic areas are located in the Modoc-Oregon Lava Plateau. The area

is characterized by broad valleys ranging from 4,000 to 6,000 feet in elevation. Typical annual precipitation is 15 to 25 inches.

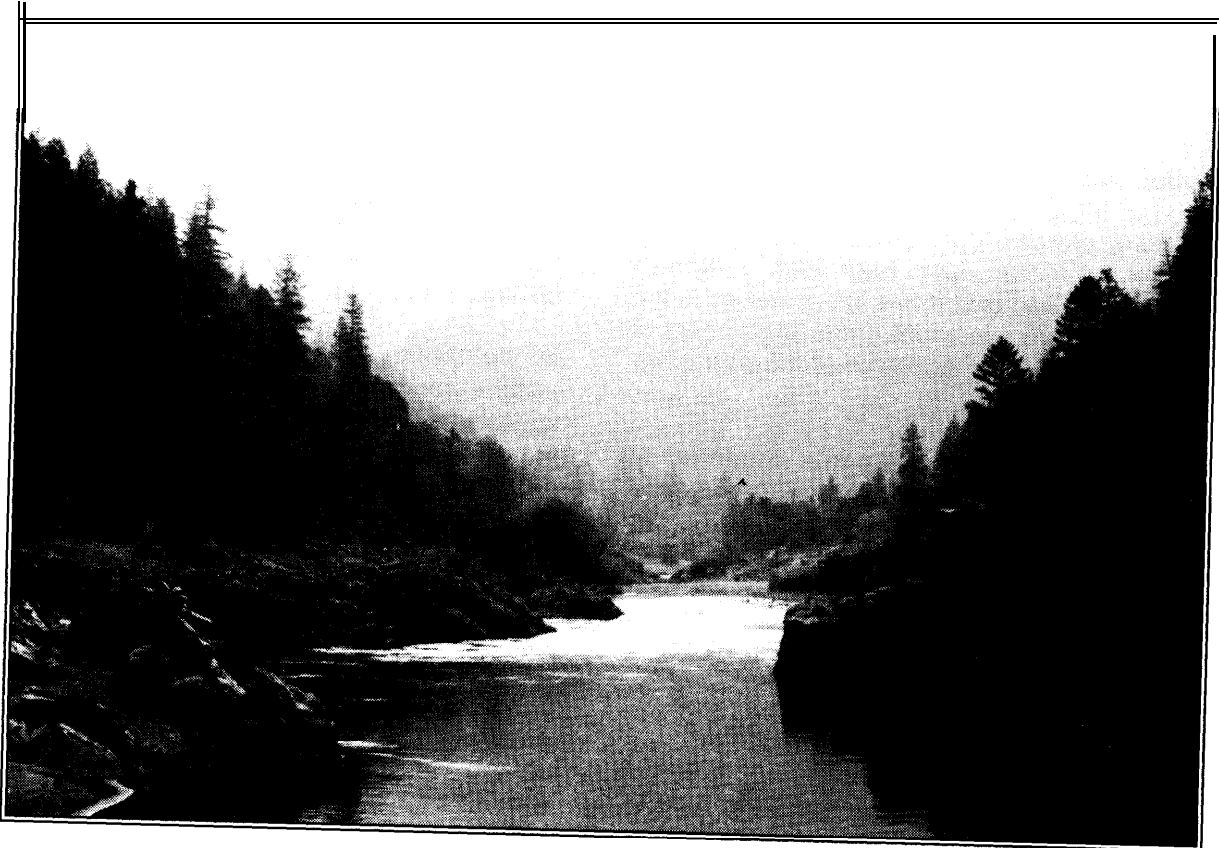
The Shasta Valley hydrologic area lies principally within the Cascade Range province. The valley floor elevation is about 2,500 to 3,000 feet, and surrounding mountains range up to 14,162 feet (Mt. Shasta). Annual precipitation ranges from below 15 inches in the valley to over 60 inches in the mountains.

The Scott River hydrologic area is in the Klamath Mountains province. The valley floor elevation is also about 2,500 to 3,000 feet, and surrounding mountains range up to approximately 8,500 feet. Annual precipitation ranges from below 20 inches in the valley to over 70 inches in the western mountains.

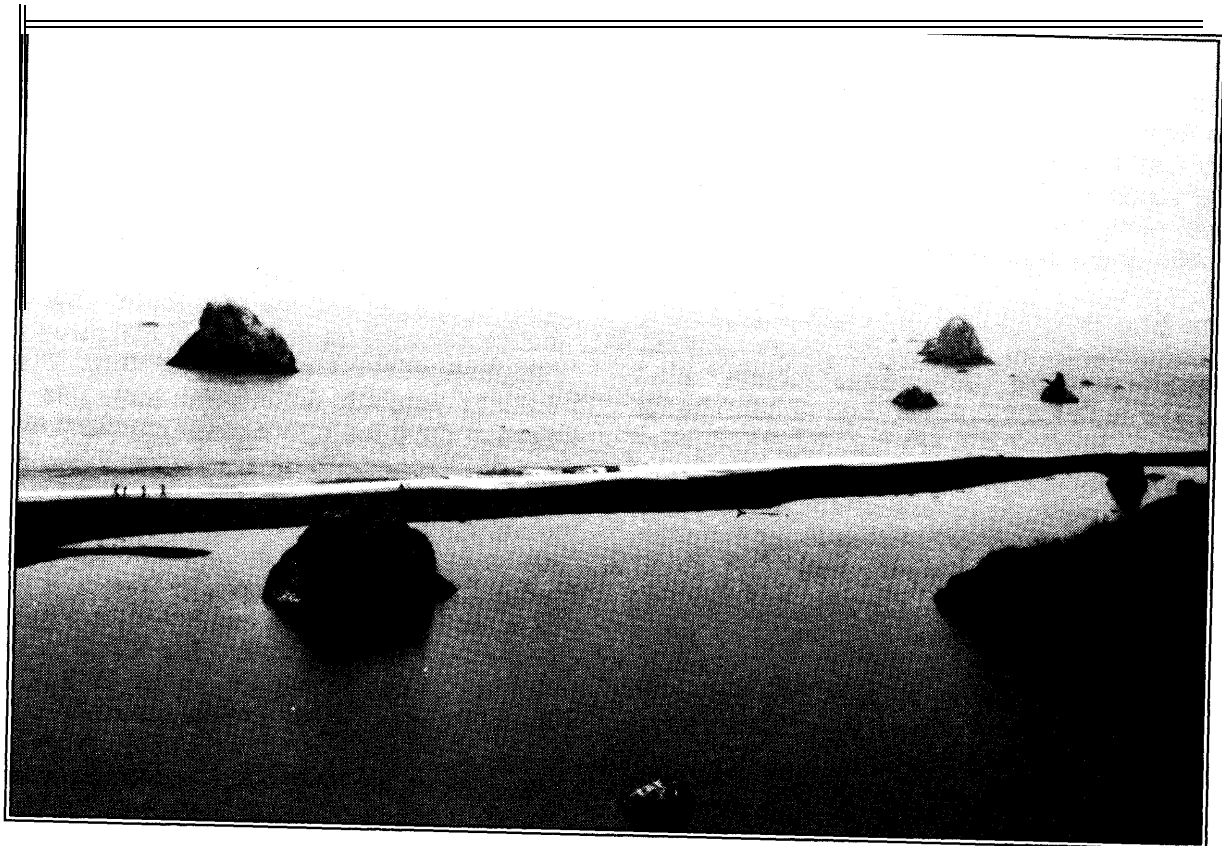
The North Coastal Basin

The North Coastal Basin covers an area of approximately 8,560 square miles located along the north-central California Coast. The Basin is bounded by the Pacific Ocean on the west, by the Klamath River and Trinity River Basins on the north, by the Sacramento Valley, Clear Lake, Putah and Cache Creeks and the Napa River Basin on the east, and by the Marin-Sonoma area on the south. The Basin covers all of Mendocino County, major portions of Humboldt and Sonoma counties, about one-fifth of Trinity County, and small portions of Glenn, Lake and Marin counties.

Most of the Basin consists of rugged, forested coastal mountains dissected by six major river systems: Eel, Russian, Mad, Navarro, Gualala, and Noyo rivers and numerous smaller river systems. Soils are generally unstable and erodible, and rainfall is high. The area along the eastern boundary of the Basin is mostly National Forest land administered by the United States Forest Service. Major population areas are centered around Humboldt Bay in the northern portion of the Basin and around Santa Rosa in the southern portion. The Santa Rosa area is on the northern fringe of the greater San Francisco Bay urban area and has experienced rapid population growth in the period following the Second World War. The economy of the remainder of the Basin has developed much more slowly than other areas in California.



Trinity River at Big Bar, 1987 (A. Wellman)



Mouth of the Russian River at Jenner, 1988 (B. Bacon)

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Population and Land Use

The planning process must consider past, existing, and future population and land uses. Recent population trends and projections are contained in the county general plans. In addition, the Department of Finance provides annual estimates of the population by county.

Approximately two percent of the total population of California reside in the North Coast Region. The largest urban centers continue to be located in the Eureka area of Humboldt County and in the Santa Rosa area of Sonoma County, which has experienced the highest population change of all the counties within the Region.

WATER RESOURCES AND WATER USE

There are 14 major surface water hydrologic units in the North Coast Region, as shown in Figure I-1. Each of these hydrologic units is divided into smaller units called hydrologic areas and hydrologic subareas.

The North Coast Region is abundant in surface water and groundwater resources. Although the North Coast Region constitutes only about 12 percent of the area of California, it produces about 40 percent of the annual runoff. This runoff contributes to flow in surface water streams, storage in lakes and reservoirs, and replenishes groundwater.

Several groundwater basins have been identified by the Department of Water Resources (DWR). Additional unnamed groundwater basins exist throughout the North Coast Region. Groundwater exists even where groundwater basins have not been identified. Groundwater basins do not always follow the same boundaries as surface waters. Groundwater is used widely throughout the Region for domestic, agricultural, and industrial water supply.

The Klamath River Basin

The Klamath River Basin includes five hydrologic units: Winchuck River, Rogue River, Smith River, Klamath River and Trinity River.

The Winchuck River and Rogue River hydrologic units, located near the California-Oregon border, have

had no significant surface water development. Consumptive water use in these units include domestic, agricultural, and industrial water supply. No significant groundwater basins have been identified by DWR in these units.

In the Smith River hydrologic unit no significant surface water development has occurred. Domestic, agricultural, and industrial water needs are supplied through surface water diversions and groundwater pumping. DWR has identified one groundwater basin, the Smith River Plain basin, in this hydrologic unit.

The Klamath River hydrologic unit is divided into seven hydrologic areas: Lost River, Butte Valley, Shasta Valley, Scott River, Middle Klamath, Salmon River and Lower Klamath River. Water resources and water use are described for each of these hydrologic areas in the following paragraphs.

Groundwater is the primary source of domestic water supply in the Lost River hydrologic area. Groundwater basins identified by DWR are the Klamath River Valley, Fairchild Swamp Valley, Modoc Plateau Recent Volcanic Area, and Modoc Plateau Pleistocene Volcanic Area.

The Bureau of Reclamation's Klamath Project located in the Lost River hydrologic area is the largest irrigation development in the Klamath River Basin. It serves irrigation water to 233,625 acres of irrigable land in Oregon and the Lost River area of California. The project's water supply is derived from the Klamath River in Oregon and the Lost River. The principal feature within the basin is the 527,000 acre-foot Clear Lake Reservoir on the Upper Lost River. Runoff and drainage reaching the 13,200 acre Tule Lake is pumped to the 9,000 acre Lower Klamath Lake Sump for irrigation and wildlife refuge use. Water not used for irrigation in Lower Klamath Lake Sump is pumped to the Oregon portion of the Klamath River via the Klamath Straits Drain to regulate the water table within the Tule Lake Irrigation District area. The Klamath Project serves a majority of the irrigable land in the Lost River subunit. The Tulelake Irrigation District, the basin's largest, serves 60,600 acres in California with Klamath Project water.

Water use in the Butte Valley hydrologic area comes mostly from groundwater pumping. Groundwater basins identified by DWR in the Butte Valley

hydrologic area are the Butte Valley, Bray Town Area, and Red Rock Valley. Approximately 28,000 acres are irrigated in the Butte Valley. Water not used for irrigation is pumped from the 4,000 acre Meiss Lake to the Klamath River via drainage facilities operated by Meiss Lake Ranch in order to regulate the water table.

In the Shasta Valley hydrologic area, domestic and agricultural water supply needs have historically been met through surface water diversions and from springs. Groundwater is used increasingly for domestic and agricultural supply. DWR has identified one groundwater basin in the Butte Valley. The principal water service agency in the Shasta Valley hydrologic area is the Montague Water Conservation District, which serves over 14,000 of the 48,000 acres irrigated in the subunit. The District's main supply source is 50,000 acre-foot Lake Shastina on the Shasta River. Several smaller irrigation districts in Shasta Valley serve from 1,500 to 3,500 acres each.

Domestic and agricultural water supply needs in the Scott Valley hydrologic area are met through surface water diversions, groundwater pumping, and springs. Approximately 33,000 acres are irrigated in the Scott Valley area. Increases in groundwater pumping for irrigation have prompted adjudication of groundwater in Scott Valley. DWR has identified one groundwater basin in this hydrologic area.

Domestic and agricultural water supply needs in the Middle Klamath hydrologic area are met through surface water diversions, groundwater pumping, and springs. DWR has identified two groundwater basins in this hydrologic area: Happy Camp Town Area and Seiad Valley.

Domestic water use in the Salmon River hydrologic area is supplied by surface water diversions and springs. No groundwater basins have been identified by DWR in this hydrologic area.

In the Lower Klamath River hydrologic area, domestic and agricultural water supply is provided through surface water diversions and groundwater pumping. DWR has identified one groundwater basin in this hydrologic area.

Four Pacific Power and Light Company hydroelectric reservoirs regulate Klamath River flows in the Upper

and Middle Klamath River hydrologic areas. The uppermost is John Boyle Dam, located in Oregon about ten miles upstream from the border; its installed power plant capacity is 80,000 kilowatts (kw). Copco No. 1 (20,000 kw) is located just inside the California border; it is a 77,000 acre-foot reservoir impounded by a 132-foot high dam. Copco No. 2 is a 55 acre-foot diversion reservoir which serves a 27,000 kw power plant downstream. The lowermost power development is the 58,000 acre-foot Iron Gate Reservoir, located 17 miles downstream from the state line; it is formed by a 183 foot-high dam and supports an 18,000 kw power plant. The upper three plants are operated on a peaking basis, while Iron Gate is a baseload plant.

In the Trinity River hydrologic unit, domestic, agricultural, and industrial water is supplied through surface water diversions, groundwater pumping, and springs. Groundwater basins identified by DWR in this hydrologic unit are in the Hayfork Valley, Hoopa Valley, and Hyampon Valley.

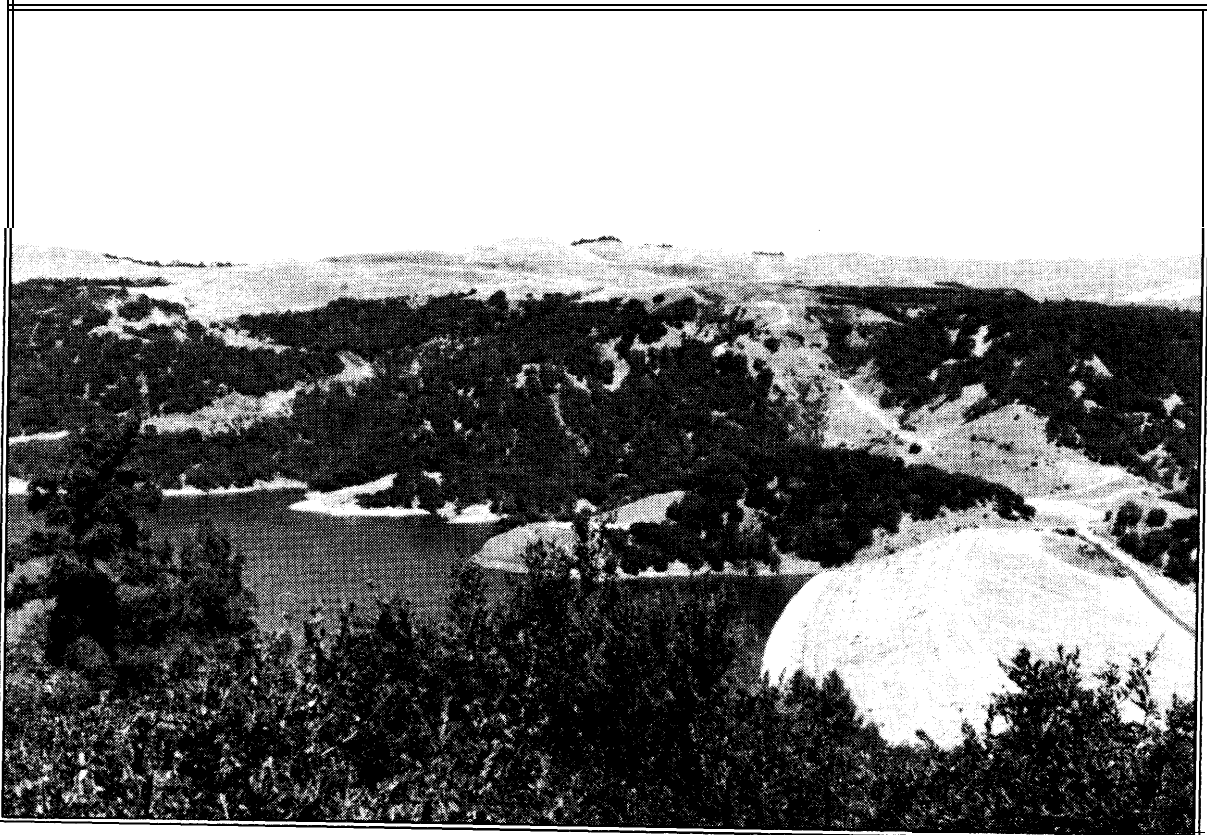
The Trinity River Division of the Central Valley Project is the largest water development in the Klamath River Basin. The 538-foot-high Trinity Dam forms 2.5 million acre-foot Clair Engle Lake. Releases pass through the 105,556 kw Trinity power plant to Lewiston Reservoir (14,660 acre-feet), from which approximately one million acre-feet per year are diverted by tunnel to the Sacramento Valley. The diverted flows pass through two additional power plants with a combined capacity of 291,444 kw.

Further major developments on the Klamath and Trinity Rivers or on the Smith River and any of its tributaries are forbidden by the 1972 California Wild and Scenic Rivers Act. Only minor additional surface water development for local use is foreseen, primarily because of the high costs in relation to crops which can be grown in the area.

The North Coastal Basin

The North Coastal Basin is divided into nine hydrologic units: Redwood Creek, Trinidad, Mad River, Eureka Plain, Eel River, Cape Mendocino, Mendocino Coast, Russian River, and Bodega.

In the Redwood Creek and Trinidad hydrologic units, there are no significant surface water developments.



Lake Sonoma and Warm Springs Dam, 1994 (C. Goodwin)



Bike path along Santa Rosa Plains near the Laguna de Santa Rosa 1994 (C. Goodwin)

1. INTRODUCTION

Groundwater and surface water diversions supply most of the domestic and agricultural needs. Groundwater basins identified by DWR in these units are in the Prairie Creek Area, Redwood Creek Valley, and Big Lagoon Area.

In the Mad River and Eureka Plain hydrologic units, water supply is adequate to meet currently projected requirements. The only major surface storage is provided by the 48,030 acre-foot capacity Ruth Reservoir on the Mad River which regulates municipal and industrial water supply for the Eureka/Arcata area by exporting Mad River subbasin water to the Eureka Plain subbasin. Groundwater basins have been identified by DWR in both of these hydrologic units. The main groundwater sources in the Eureka Plain are in the Elk River/Salmon Creek area and the Jacoby Creek/Freshwater Creek area.

The only major surface water development in the Eel River hydrologic unit is Lake Pillsbury, which is formed by Scott Dam, with a storage capacity of 80,700 acre-feet. This facility, in conjunction with Van Arsdale Dam and the Potter Valley Tunnel, provides for power and export of Eel River water to the Russian River unit. The City of Willits obtains its water supply from the 723 acre-foot capacity Morris Reservoir and the 635 acre-foot capacity Centennial Reservoir, both located on James Creek. Fifteen groundwater basins have been identified by DWR in this unit: Eel River Valley, Peppervood Town Area, Larabee Valley, Hettenshaw Valley, Dinsmore Town Area, Laytonville Valley, Little Lake Valley, Weott Town Area, Garberville Town Area, Lower Laytonville Valley, Gravelly Valley, Sherwood Valley, Round Valley, Williams Valley, and Eden Valley. The Eel River hydrologic unit is an area of water surplus for currently projected requirements.

No significant surface water development has occurred in the Cape Mendocino hydrologic unit. Groundwater is used for domestic supply in this unit. DWR has identified two groundwater basins in this unit: Mattole River Valley and Honeydew Town Area.

There is no significant surface water storage within the Mendocino Coast hydrologic unit. Surface water diversions and groundwater pumping are used to supply agricultural needs. Groundwater is the principal source of domestic water supply. Eleven groundwater basins have been identified by DWR:

Ten Mile River, Cottoneva Creek Valley, Branscomb Town Area, Little Valley, Fort Bragg Terrace Area, Big River Valley, Navarro River Valley, Anderson Valley, Garcia River Valley, Gualala River Valley, and Annapolis Ohlson Ranch Formation Highlands. The Mendocino Coast hydrologic unit is reaching its existing capacity.

Surface water storage in the Russian River hydrologic unit includes Lake Mendocino, which stores imported Eel River water and East Fork Russian River water, and Lake Sonoma, which is located on Dry Creek, a tributary of the Russian River. Lake Mendocino is formed by Coyote Dam and has a maximum storage capacity of 122,500 acre-feet with 70,000 acre-feet allocated to water supply. Lake Sonoma is formed by Warm Springs Dam and has a maximum storage capacity of 381,000 acre-feet with 212,000 acre-feet allocated to water supply. DWR has identified a number of groundwater basins in this unit. These include: Potter Valley, Ukiah Valley, Sanel Valley, MacDowell Valley, Cloverdale Area, Alexander Area, Alexander Valley, Healdsburg Area, Santa Rosa Plain, Santa Rosa Valley, Kenwood/Rincon Valley, Lower Russian River Valley, and Sebastopol Merced Formation Highlands. Groundwaters are used for domestic supply by the cities of Ukiah, Windsor, Santa Rosa, Rohnert Park, and Sebastopol, as well as in unincorporated areas outside of the City of Santa Rosa. There is sufficient water supply within this hydrologic unit to meet currently projected demands for the foreseeable future. Russian River water also is exported to northern Marin County.

The Bodega hydrologic unit has no significant surface water storage. One groundwater basin has been identified in the unit.

Four hydroelectric power generation plants exist in the North Coastal Basin. Matthews Dam at Ruth Reservoir is equipped with a 2 megawatt facility. Van Arsdale Dam supports a 9 megawatt plant. Coyote Dam at Lake Mendocino supports two power generation units with a combined capacity of 3.5 megawatts. Warm Springs Dam at Lake Sonoma is equipped with a 2.6 megawatt facility.

WATER QUANTITY AND QUALITY PROBLEMS

The present water quality within the Region generally meets or exceeds the water quality objectives set forth

1. INTRODUCTION

in Section 3 of this Plan. In most cases the water quality is sufficient to support, and in some cases, enhance the beneficial uses assigned to water bodies in Section 2 of this Plan. However, there are a number of present or potential water quality problems which may interfere with beneficial uses or create nuisances or health hazards.

Updated summaries of existing water quality throughout much of the Region are contained in bulletins published by the Department of Water Resources and the U.S. Geological Survey, as well as in special reports issued periodically by the Regional Water Board.

An opportunity to address and assess water quality problems is provided in the triennial review of the Basin Plan. It is at this time that the Regional Water Board utilizes the input of interested agencies and individuals to identify and prioritize the water quality issues within the Region. In addition, the Regional Water Board, in its budget review process, addresses its water quality problem areas on an annual basis to determine the time and effort expended on each identified issue.

2. BENEFICIAL USES

The basis for the discussion of beneficial water uses which follows is Section 13050(f) of California's Porter-Cologne Water Quality Control Act, which states:

"Beneficial uses" of the waters of the state that may be protected against water 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.

A key part of a water quality control plan is an assessment of the beneficial uses which are to be protected. Table 2-1 identifies beneficial uses for major surface water bodies in the Region, as well as for broad categories of waters (i.e., bays, estuaries, minor coastal streams). Protection will be afforded to the present and potential beneficial uses of waters of the North Coast Region as shown in Table 2-1. The beneficial uses of any specifically identified water body generally apply to all its tributaries. For unidentified water bodies, the beneficial uses will be evaluated on a case-by-case basis.

Water bodies within the Region that do not have beneficial uses designated for them in Table 2-1 are assigned MUN designations in accordance with the provisions of State Water Resources Control Board Resolution No. 88-63 "Sources of Drinking Water" policy (Appendix Section of this plan) which is, by reference, a part of this plan. These MUN designations in no way affect the presence or absence of other beneficial use designations in these water bodies.

The most sensitive beneficial uses from the standpoint of water quality management are municipal, domestic, and industrial supply, recreation, and uses associated with maintenance of resident and anadromous fisheries. The Klamath, Trinity, Smith, Eel, and Mad Rivers, and others within the North Coast Region, are renowned for salmon and steelhead fishing and support a substantial portion of the ocean sport and commercial fisheries for these species. Other notable features of the basin's beneficial uses are the wildfowl use on three national wildlife refuges in the Lost River

and Butte Valley hydrologic areas and an abundance of deer and other wildlife throughout the Region.

The codes used in Table 2-1 are explained in greater detail as follows:

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

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

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

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

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

Freshwater Replenishment (FRSH) - Uses of water for natural or artificial maintenance of surface water quantity or quality (e.g., salinity).

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

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

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

2. BENEFICIAL USES

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

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

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

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

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

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

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

Marine Habitat (MAR) - Uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats,

vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).

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

Preservation of Areas of Special Biological Significance (BIOL) - Includes marine life refuges, ecological reserves and designated areas of special biological significance, such as areas where kelp propagation and maintenance are features of the marine environment requiring special protection.

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

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

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

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

The list of beneficial uses in Table 2-1 reflects demands on the water resources of the Region. Water quality objectives based on those uses will adequately protect the quality of the Region's waters for future generations.

Current beneficial uses may be broadly categorized as water supply, recreation, fish and wildlife habitat, navigation, power generation, and scientific study.



Ranney collectors for municipal water supply, Russian River, 1988 (B. Bacon)



Siskiyou County grazing lands as an example of agricultural water use. 1988 (unknown)

**TABLE 2-1
BENEFICIAL WATER USES IN THE NORTH COAST REGION**

<u>WATER BODY 1</u>	<u>MUN*</u>	<u>AGR*</u>	<u>IND*</u>	<u>PROC*</u>	<u>GWR</u>	<u>FFS-NAV</u>	<u>POW</u>	<u>REC1</u>	<u>REC2</u>	<u>COMM</u>	<u>WARM</u>	<u>COLD</u>	<u>BJOL</u>	<u>SAL</u>	<u>WILD</u>	<u>RARE</u>	<u>MAR</u>	<u>MIGR</u>	<u>SPWN</u>	<u>SHELL</u>	<u>EST</u>	<u>AQUA</u>
<u>Lost River HA</u>																						
Clear Lake Reservoir & Upper Lost River	P	E	P	P	E	E	P	E	E	E	E	E			E	E			E			P
Lower Lost River		E	P	P	E	E		P	E	E	E	E			E	E						P
Tule Lake		E				E		P	E	E	E	E			E	E						P
Lower Klamath Lake		E				E		P	E	E	E	E			E	E						P
<u>Butte Valley HA</u>																						
Meiss Lake		E						P	E	E	E				E							P
<u>Shasta Valley HA</u>																						
Shasta River	P	E	P	P	E	E	P	E	E	E	E	E			E			E	E			P
Lake Shastina	P	E	P	P	E	E		E	E	E	E	E			E			E	E			P
<u>Scott River HA</u>																						
Scott River	P	E	P	P	E	E		E	E	E		E			E			E	E			P
<u>Salmon River HA</u>																						
Salmon River	P	P	P	P		E		E	E	E		E			E			E	E			P
<u>Middle Klamath River HA</u>																						
Iron Gate and Copco Reservoir	P	P	P	P		E	E	E	E	E	E	E			E	E		E	E			E
Klamath River	E	E	E	E	E	E	E	E	E	E	E	E			E	E		E	E			E
<u>Applegate River HA</u>																						
Applegate River	E	E	E	E	P	E	P	E	E	E		E			E			E	E			P
<u>Upper Trinity River HA</u>																						
Clair tngle Lake and Lewiston Reservoir	E	E	E	E	E	E	E	E	E	E	E	E			E			E	E			E
Trinity River	E	E	E	P	E	E		E	E	E	E	E			E			E	E			E
<u>South Fork Trinity River HA</u>																						
South Fork Crinity River	E	E	P	P		E		E	E	E		E			E			E	E			P
Hayfork Creek	E	E	E	E	E	E	P	E	E	E		E			E			E	E			P
Ewing Reservoir	E							P	E	E	E	E			E							P
<u>Lower Trinity River HA</u>																						
Trinity River	E	E	P	P	E	E		E	E	E		E			E			E	E			P
<u>Lower Klamath River HA</u>																						
Klamath River	E	E	P	P	E	E	E	E	E	E	E	E			E			E	E			E E

2. BENEFICIAL USES

**TABLE 2-1 (CONTINUED)
BENEFICIAL WATER USES IN THE NORTH COAST REGION**

<u>WATER BODY</u>	<u>MUN*</u>	<u>AGR*</u>	<u>IND*</u>	<u>PROC*</u>	<u>GWR</u>	<u>FRSH</u>	<u>NAV</u>	<u>POW</u>	<u>REC1</u>	<u>REC2</u>	<u>COMM</u>	<u>WARM</u>	<u>COLD</u>	<u>BIOL</u>	<u>SAL</u>	<u>WILD</u>	<u>RARE</u>	<u>MAR</u>	<u>MIGR</u>	<u>SPWN</u>	<u>SHELL</u>	<u>EST</u>	<u>AQUA</u>
<u>Illinois River HA</u> Illinois River	W	W	W	P		W		P	W	W	W		E			W			E	W			P
<u>Winchuck River HU</u> Winchuck River	W	W	W	P		W		P	E	W	W		W			W			W	W			P
<u>Smith River HU</u> Smith River	W	W	W	W	W				W	W	W	W	W			W	W		W	W		W	E
Lake Earl									W	W	W	W				W			W	W		W	P
Lake Talawa									W	W	W	W				W			W	W		W	P
Crescent City Harbor							W		W	W	W	W				W		W	W	W	W	W	P
<u>Redwood Creek HU</u> Redwood Creek	E	E	E						E	E	E		E			E	E		E	E		E	E
<u>Mad River HU</u> Mad River	W	W	W	W	W			W	W	W	W	W	W			W	W		W	W		W	W
<u>Eureka Plain HU</u> Humboldt Bay		W	W				W		W	W	W		W			W	W	W	W	W	W	W	W
<u>Eel River HU</u> Eel River	W	W	W		W		W	W	W	W	W	W	W			W	W		W	W		W	E
Van Duzen River	W	W	W		W				W	W	W	W	W			W	W		W	W		W	E
South Fork Eel River	W	W	W		W				W	W	W	W	W			W	W		W	W		W	P
Middle Fork Eel River	W	W	W		W				W	W	W	W	W			W	W		W	W		W	P
Outlet Creek	W	W	W		W				W	W	W	W	W			W	W		W	W		W	P
<u>Cape Mendocino HU</u> Bear River	P		W						W	W	W		W			W			W	W		W	E
Mattole River	E	W	W						W	W	W		W			W			W	W		W	E
<u>Mendocino Coast HU</u> Ten Mile River	W	W	E		E				E	E	E		E			E			E	E		E	P
Noyo River	W	W	E		E				E	E	E		E			E			E	E		E	P
Jug Handle Creek	W	W	E		E				E	E	E		E			E			E	E		E	P
Big River	W	W	E		E				E	E	E		E			E			E	E		E	P
Albion River	W	W	E		E				E	E	E		E			E			E	E		E	P
Navarro River	W	W	E		E		W		E	E	E		E			E			E	E		E	P
Garcia River	W	W	E		E				E	E	E		E			E			E	E		E	P
Gualala River	W	W	E		E				E	E	E		E			E			E	E		E	P

**TABLE 2-1 (CONTINUED)
BENEFICIAL WATER USES IN THE NORTH COAST REGION**

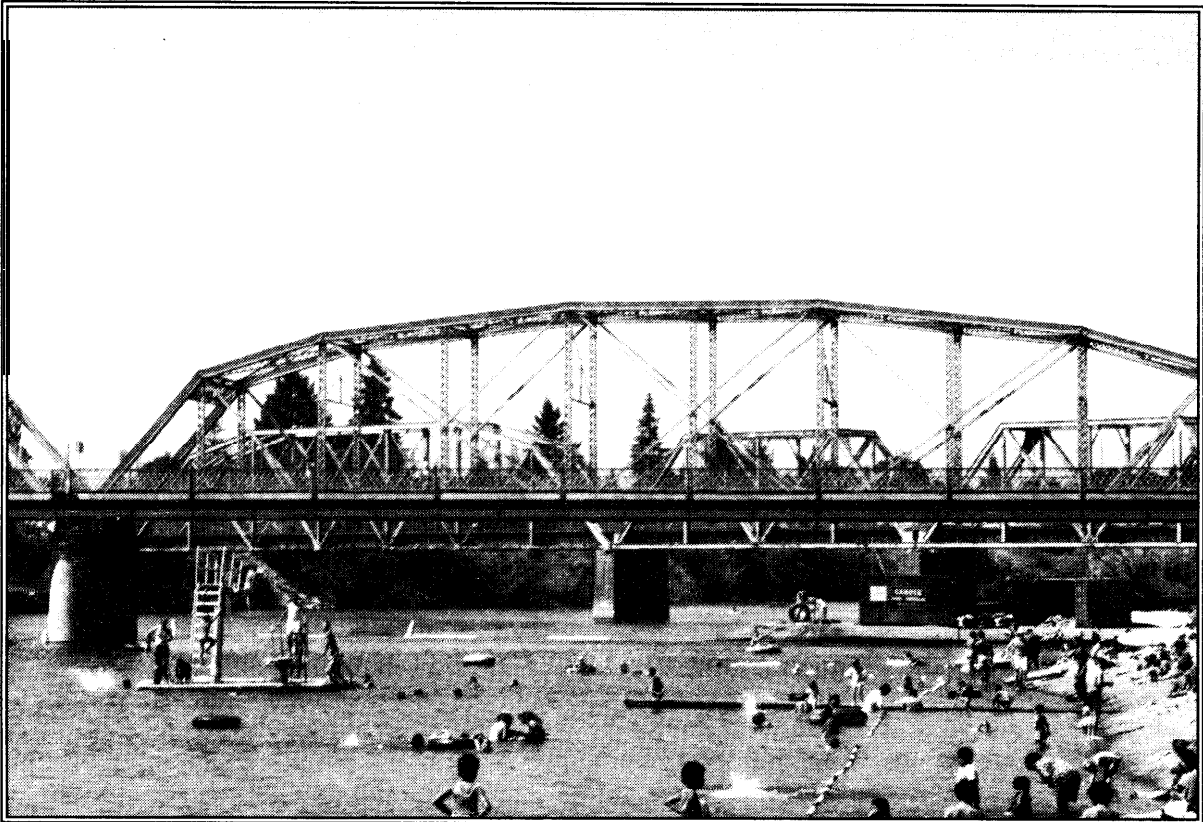
<u>WATER BODY</u> 1	MUN*	AGR*	IND*	PROC*	GWR	FRSH	NAV	POW	REC1	REC2	COMM	WARM	COLD	BIOL	SAL	WILD	RARE	MAR	MIGR	<u>SPWN</u>	<u>SHELL</u>	<u>EST</u>	<u>AQUA</u>
<u>Russian River HU</u>																							
Russian River	E	E	E	E	E		E	E	E	E	E	E	E			E			E	E		E	E
Laguna de Santa Rosa		E	E						E	E	E		E			E							P
<u>Bodega HU</u>																							
Bodega Bay		E	E				E		E	E	E		E	E		E		E	E	E	E		E
Coastal Waters			E		E		E		E	E	E			E				E	E	E	E		E
Minor Coastal Streams Not Listed above**	E	P	P		P				P	P	E		P			P			P	P		E	P
<u>OCEAN WATERS</u>			P	P			E		E	E	E			P		E	E	E	E	E	E		E
BAYS			P	P			E		P	E	E			P		E	P	E	E	E	E	P	P
<u>ESTUARIES</u>			P	P			E		E	E	P			P		E	P	E	E	E	E	E	P

1 Water bodies are grouped by hydrologic unit (HU) or hydrologic area (HA).

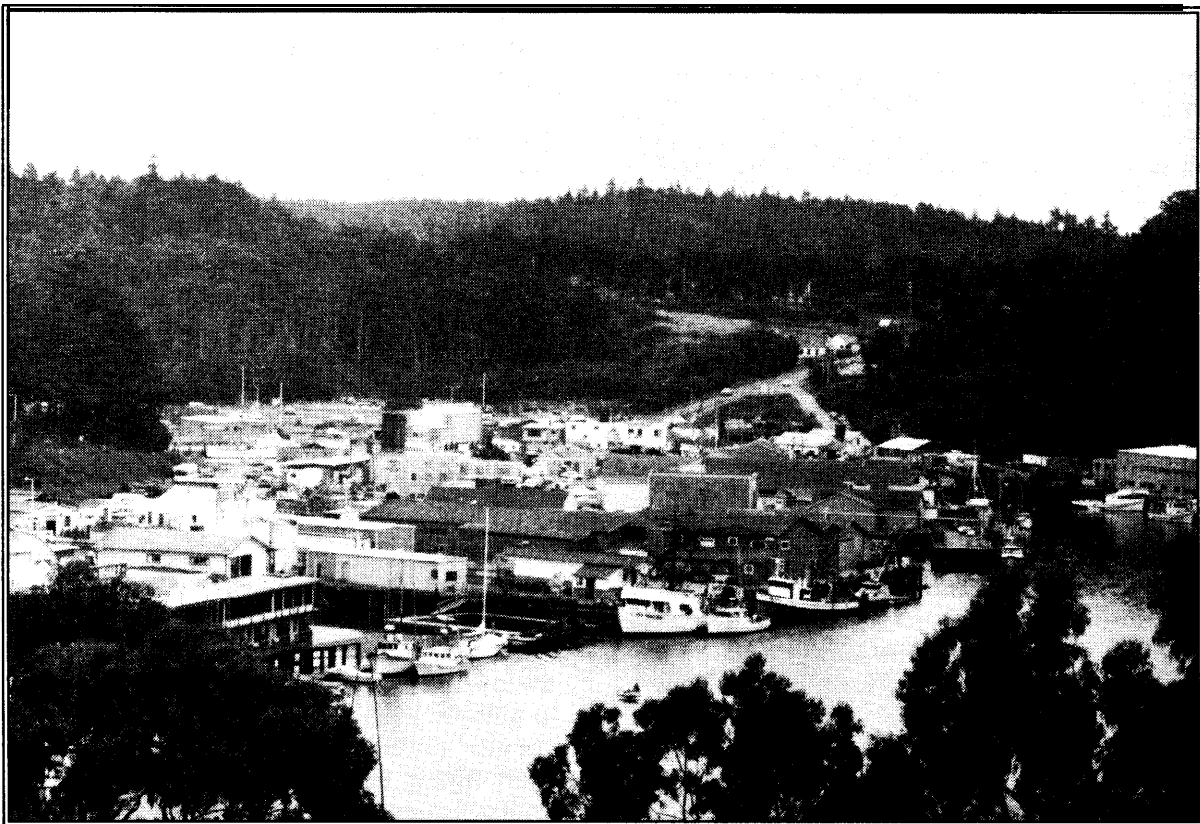
* Groundwater or surface water

P = Potential
E = Existing

** Permanent or intermittent



Recreational water use at Healdsburg Memorial Beach, 1987 (B. Bacon)



Commercial and sport fishing and navigation water uses at Noyo Harbor, Fort Bragg, 1987 (B. Bacon)

2. BENEFICIAL USES

A major percentage of water supply use in the Region occurs in the Mad River and Russian River hydrologic units. Agricultural water use is distributed over more areas than domestic, municipal and industrial use, and includes the Russian River, Eel River, Smith River, Mad River, Redwood Creek, Cape Mendocino, Mendocino Coast hydrologic units, as well as the Lost River, Butte Valley, Shasta Valley and Scott Valley areas of the Klamath River hydrologic unit.

Recreational use occurs in all hydrologic units on both fresh and salt water. Coastal areas receiving the greatest recreational use have been the ocean beaches, the lower reaches of rivers flowing to the ocean, and Humboldt and Bodega Bays. Rivers receiving the largest levels of recreational use are the Russian, Eel, Mad, Smith, Trinity, and Navarro Rivers, and Redwood Creek. Activities cover the spectrum of water-oriented recreation, with fishing and river running being popular on the rivers, and fishing, clamming and beach combing predominating at the ocean beaches and bays. Sightseeing has been an important recreational activity throughout all of the North Coast Region.

Fish and wildlife are abundant in the Region. Coastal waters and streams support anadromous fish which are important for both sport and commercial fishing. The Smith River, Klamath River, Redwood Creek, Mad River, Eel River, Russian River and the coastal streams total over 1,000 miles of stream habitat suitable for salmon and steelhead. Humboldt and Bodega Bays support shellfish and fish populations which are very important to the commercial fishing industry and to the recreationalist. Both bays also provide refuge for wildlife populations, especially waterfowl, shorebirds, and other water-associated birds.

Several of the watersheds of the North Coast Region support plant and wildlife species that are now considered to be rare, threatened, and endangered. A few examples are the Swainson's hawk, Bald eagle, American peregrine falcon, California clapper-rail, Lost River sucker, Shortnose sucker, California freshwater shrimp, Howell's spineflower, Baker's larkspur, and Sebastopol meadowfoam, all of which have been observed on watershed areas in the North Coast Region. The Department of Fish and Game prepares an annual report which summarizes

the status of rare, threatened, and endangered plants and animals.

Navigation is vital to the economy of the Region. There are fishing ports at Crescent City, Eureka, Fort Bragg, and Bodega Bay. The most important commercial harbor between San Francisco and Coos Bay, Oregon, is located at Humboldt Bay.

There is a small amount of hydroelectric power generation in the Region. Hydroelectric power plants are located at Iron Gate Reservoir and Copco Lake on the Klamath River, Clair Engle Lake on the Trinity River, Matthews Dam on the Mad River, Van Arsdale Dam on the Eel River, Coyote Dam on the East Fork of the Russian River, and Warm Springs Dam on Dry Creek, a tributary to the Russian River.

Scientific studies occur in all units of the Region. The more intensely studied areas are along the coast where there are two marine life reserves and one refuge. The three areas, which include the Del Mar Landing Ecological Reserve, the Gerstle Cove Reserve, and the Bodega Bay Refuge, are located in Sonoma County. In addition to these, there are five other sites which have been included in the statewide system and designated as areas of special biological significance. These are the Pygmy Forest Ecological Staircase, kelp beds at Saunders Reef, kelp beds at Trinidad Head, Kings Range National Conservation Areas, and Redwood National Park.

Groundwaters throughout the Region are used for domestic, agricultural, and industrial supply. Shallow groundwaters are frequently used for domestic supply. These shallow groundwaters are often interconnected to deeper aquifers through their stratigraphy and through wells constructed across multiple aquifers.

Projected Water Demands

The population of the North Coast Region is projected to increase into the twenty-first century. Additional demands will be placed on the water resources of the Region to supply more water for future residential, commercial, industrial and agricultural developments, to accommodate a higher recreational demand, and to produce more fish and wildlife to satisfy increased sport fishing and hunting interests and commercial fishing requirements. At the same time, the aesthetic

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beauty of the Region and its waters must be protected and in some cases enhanced.

In order to meet the increasing water demands posed by population growth in the North Coast Region, conservation, reclamation, and reuse of water must be encouraged. Previous projections of water demands assumed that normal weather patterns would prevail. The droughts of 1976 to 1977 and 1987 to 1992 revealed the deficiencies in water supply that exist in specific areas of the North Coast Region, including Fort Bragg, the Mendocino Coast, the Humboldt Bay area, and the Klamath River Basin.

The greatest demands for local water supply are expected to be in Sonoma and Mendocino counties although increased demand is expected region-wide in response to population increases. Agricultural water use is expected to increase in the Eel River, Navarro River, and Russian River areas. Almost all areas will experience small demands for agricultural water supply.

Recreational demands for the Region are projected to increase. The ocean and coastal areas and the lower

reaches of the streams flowing to the ocean are expected to receive a major portion of the increased recreational demand. In recognition of the unique aesthetic and wildlife values of the North Coast Region rivers, several have been included in the California Wild and Scenic River System. These include the Smith River and all of its tributaries; the Klamath River below Iron Gate Dam, and portions of its major tributaries, the Scott, Salmon, North Fork Salmon Rivers and Wooley Creek, in addition to the Trinity River below Lewiston Dam and portions of its major tributaries, the North and South Forks, and the New River; and the main stem of the Eel River and portions of its major tributaries, the North, Middle and South Forks, and the Van Duzen River.

The demand for fishing has probably peaked due to reductions in anadromous Salmonid species in several north coast rivers and streams. Efforts are being made in several of these areas to restore natural habitat in order to improve conditions for the fisheries. Salmon and steelhead populations in several north coast streams are being supplemented by releases of hatchery reared fish.

3. WATER QUALITY OBJECTIVES

The California Water Code, Division 7, Chapter 4, Section 13241 specifies that each Regional Water Quality Control Board (Regional Water Board) shall establish water quality objectives which, in the Regional Water Board's judgment, are necessary for the reasonable protection of the beneficial uses and for the prevention of nuisance.

The federal Clean Water Act (33 U.S.C. § 303) requires the State to submit to the Administrator of the U.S. Environmental Protection Agency 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 Table 2-1 and the water quality objectives contained in this section. The water quality objectives contained herein are designed to satisfy all state and federal requirements.

As new information becomes available, the Regional Water Board will review the appropriateness of the objectives contained herein. These objectives will be subject to public hearing at least once during each three-year period following adoption of this Basin Plan to determine the need for review and modification as appropriate.

The water quality objectives contained herein are a compilation of objectives adopted by the State Water Board, the Regional Water Board, and other state and federal agencies. Other water quality objectives and policies may apply that may be more stringent. Whenever several different objectives exist for the same water quality parameter, the strictest objective applies. In addition, the State Water Board "Policy With Respect to Maintaining High Quality Waters in California" also applies.

Controllable water quality factors shall conform to the water quality objectives contained herein. When other factors result in the degradation of water quality beyond the levels or limits established herein as water quality objectives, then controllable factors shall not cause further degradation of water quality. Controllable water quality factors are those actions, conditions, or circumstances resulting from man's activities that may influence the quality of the waters of the State and that may be reasonably controlled.

Water quality objectives form the basis for establishment of waste discharge requirements, waste discharge prohibitions, or maximum acceptable cleanup standards for all individuals and dischargers. These water quality objectives are considered to be necessary to protect those present and probable future beneficial uses enumerated in Table 2-1 and to protect existing high quality waters of the State. These objectives will be achieved primarily through the establishment of waste discharge requirements and through the implementation of this Basin Plan. The appropriate numeric water quality standards will be established in waste discharge orders.

The Regional Water Board, in setting waste discharge requirements, will consider, among other things, the potential impact 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 Water 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. Resolution Nos. 87-1 13, 89-1 31, and 92-135 describe the policy of the Regional Water Board regarding the specific types of waste discharge for which it will waive issuance of waste discharge requirements. These resolutions are included in the Appendix Section of this Plan.

The water quality objectives for the Region refer to several classes of waters. Ocean waters are waters of the Pacific Ocean outside of enclosed bays, estuaries, and coastal lagoons, and within the territorial (3 mile) limit. Bays are indentations along the coast which include oceanic waters within distinct headlands or harbor works whose narrowest opening is less than 75 percent of the greatest dimension of the enclosed portion of the bay; this definition includes only Crescent City Harbor in the Klamath River Basin, and Humboldt Bay and Bodega Bay in the North Coastal Basin. Estuaries are waters at the mouths of streams which serve as mixing zones for freshwater and seawater; they generally extend from the upstream limit of tidal action to a bay or open ocean. The principal estuarine areas of the Region are at the mouths of the Smith and Klamath Rivers and Lakes Earl and Talawa, and at the mouths of the Eel, Noyo, and Russian Rivers. Inland waters include all surface

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waters and groundwaters of the basin not included in the definitions of ocean waters, enclosed bays, or estuaries. Interstate waters include all rivers, streams, and lakes which flow across or form part of a state boundary. Groundwaters are any subsurface bodies of water which are beneficially used or usable. They include perched water if such water is used or usable or is hydraulically continuous with used or usable water.

The water quality objectives which follow supersede and replace those contained in the 1971 "Interim Water Quality Control Plan for the Klamath River Basin," the 1967 "Water Quality Control Policy for the Klamath River in California," the 1967 "Water Quality Control Policy for the Smith River in California," the 1967 "Water Quality Control Policy for the Humboldt-Del Norte Coastal Waters," the 1969 "Water Quality Control Policy for the Lost River," the 1971 "Interim Water Quality Control Plan for the North Coastal Basin," the 1967 "Water Quality Control Policy for the Sonoma-Mendocino Coast," the 1975 "Water Quality Control Plan for the Klamath River Basin (IA)," the 1975 "Water Quality Control Plan for the North Coastal Basin (1 B)," and the 1988 "Water Quality Control Plan for the North Coast Region".

GENERAL OBJECTIVE

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

Whenever the existing quality of water is better than the water quality objectives established herein, 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. A copy of this policy is included verbatim in the Appendix Section of this Plan.

OBJECTIVES FOR OCEAN WATERS

The provisions of the State Water Board's "Water Quality Control Plan for Ocean Waters of California" (Ocean Plan), and "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

shall apply. Copies of these plans are included verbatim in the Appendix Section of this Plan.

OBJECTIVES FOR INLAND SURFACE WATERS, ENCLOSED BAYS, AND ESTUARIES

In addition to the General Objective, the specific objectives contained in Table 3-1 and the following objectives shall apply for inland surface waters, bays, and estuaries.

Color

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

Tastes and Odors

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

Numeric water quality objectives with regards to taste and odor thresholds have been developed by the State Department of Health Services and the U.S. EPA. These numeric objectives, as well as those available in the technical literature, are incorporated into waste discharge requirements and cleanup and abatement orders as appropriate.

Floating Material

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

Suspended Material

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

Settleable Material

Waters shall not contain substances in concentrations that result in deposition of material that causes nuisance or adversely affect beneficial uses.

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Oil and Grease

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

Biostimulatory Substances

Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

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.

Turbidity

Turbidity shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof.

pH

The pH shall conform to those limits listed in Table 3-I. For waters not listed in Table 3-I and where pH objectives are not prescribed, the pH shall not be depressed below 6.5 nor raised above 8.5.

Changes in normal ambient pH levels shall not exceed 0.2 units in waters with designated marine (MAR) or saline (SAL) beneficial uses nor 0.5 units within the range specified above in fresh waters with designated COLD or WARM beneficial uses.

Dissolved Oxygen

Dissolved oxygen concentrations shall conform to those limits listed in Table 3-I. For waters not listed in Table 3-I and where dissolved oxygen objectives are not prescribed the dissolved oxygen concentrations shall not be reduced below the following minimum levels at any time.

Waters designated WARM, MAR, or SAL . . . 5.0 mg/l
Waters designated COLD 6.0 mg/l
Waters designated SPWN 7.0 mg/l
Waters designated SPWN during critical spawning and egg incubation periods . . . 9.0 mg/l

Bacteria

The bacteriological quality of waters of the North Coast Region shall not be degraded beyond natural background levels. In no case shall coliform concentrations in waters of the North Coast Region exceed the following:

In waters designated for contact recreation (REC-I), the median fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed 50/100 ml, nor shall more than ten percent of total samples during any 30-day period exceed 400/100 ml (State Department of Health Services).

At all areas where shellfish may be harvested for human consumption (SHELL), the fecal coliform concentration throughout the water column shall not exceed 43/100 ml for a 5-tube decimal dilution test or 49/100 ml when a three-tube decimal dilution test is used (National Shellfish Sanitation Program, Manual of Operation).

Temperature

Temperature objectives for COLD interstate waters, WARM interstate waters, and Enclosed Bays and Estuaries are as specified in the "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California" including any revisions thereto. A copy of this plan is included verbatim in the Appendix Section of this Plan.

In addition, the following temperature objectives apply to surface waters:

The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.

3. WATER QUALITY OBJECTIVES

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

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

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 Water 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 the requirements for "experimental water" as described in **Standard Methods for the Examination of Water and Wastewater**, 18th Edition (1992). As a minimum, compliance with this objective as stated in the previous sentence shall be evaluated with a 96-hour 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.

Pesticides

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

Waters designated for use as domestic or municipal supply shall not contain concentrations of pesticides in excess of the limiting concentrations set forth in California Code of Regulations, Title 22, Division 4,

Chapter 15, Article 4, Section 64444.5 (Table 5), and listed in Table 3-2 of this Plan.

Chemical Constituents

Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the limits specified in California Code of Regulations, Title 22, Chapter 15, Division 4, Article 4, Section 64435 (Tables 2 and 3), and Section 64444.5 (Table 5), and listed in Table 3-2 of this Plan.

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

Numerical water quality objectives for individual waters are contained in Table 3-1.

Radioactivity

Radionuclides shall not be present in concentrations which are deleterious to human, plant, animal or aquatic life nor which result in the accumulation of radionuclides in the food web to an extent which presents a hazard to human, plant, animal, or indigenous aquatic life.

Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the limits specified in California Code of Regulations, Title 22, Division 4, Chapter 15, Article 4, Section 64443, Table 4, and listed below:

MCL Radioactivity

<u>Constituent</u>	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

3. WATER QUALITY OBJECTIVES

**TABLE 3-1
SPECIFIC WATER QUALITY OBJECTIVES FOR NORTH COAST REGION**

<u>Water Body/</u>	<u>Specific Conductance (micromhos) @ 77 F.</u>		<u>Total Dissolved Solids (mg/l)</u>		<u>Min</u>	<u>Dissolved Oxygen (mg/l)</u>		<u>Hydrogen Ion (pH)</u>		<u>Hardness (mg/l)</u>	<u>Boron (mg/l)</u>	
	90%	50%	90%	50%		90%	50%	Max	Min.	50%	90%	50%
	<u>Upper Limit 3</u>	<u>Upper Limit 2</u>	<u>Upper Limit 3</u>	<u>Upper Limit 2</u>		<u>Lower Limit 3</u>	<u>Lower Limit 2</u>			<u>Upper Limit 2</u>	<u>Upper Limit 3</u>	<u>Upper Limit 2</u>
<u>Lost River HA</u>												
Clear Lake Reservoir & Upper Lost River	300	200			5.0		8.0	9.0	7.0	60	0.5	0.1
Lower Lost River	1000	700			5.0			9.0	7.0	-	0.5	0.1
Other Streams	250	150			7.0		8.0	8.4	7.0	50	0.2	0.1
Tule Lake	1300	900			5.0			9.0	7.0	400		
Lower Klamath Lake	1150	850			5.0			9.0	7.0	400		
Groundwaters 4	1100	500						8.5	7.0	250	0.3	0.2
<u>Butte Valley HA</u>												
Streams	150	100			7.0		9.0	8.5	7.0	30	0.1	0.0
Meiss Lake	2000	1300			7.0		8.0	9.0	7.5	100	0.3	0.1
Groundwaters 4	800	400						8.5	6.5	120	0.2	0.1
<u>Shasta Valley HA</u>												
Shasta River	800	600			7.0		9.0	8.5	7.0	220	1.0	0.5
Other Streams	700	400			7.0		9.0	8.5	7.0	200	0.5	0.1
Lake Shastina	300	250			6.0		9.0	8.5	7.0	120	0.4	0.2
Groundwaters 4	800	500						8.5	7.0	180	1.0	0.3
<u>Scott River HA</u>												
Scott River	350	250			7.0		9.0	8.5	7.0	100	0.4	0.1
Other Streams	400	275			7.0		9.0	8.5	7.0	120	0.2	0.1
Groundwaters 4	500	250						8.0	7.0	120	0.1	0.1
<u>Salmon River HA</u>												
All Streams	150	125			9.0		10.0	8.5	7.0	60	0.1	0.0
<u>Middle Klamath River HA</u>												
Klamath River above Iron Gate Dam including Iron Gate & Copco Reservoirs	425	275			7.0		10.0	8.5	7.0	60	0.3	0.2
Klamath River below Iron Gate Dam	350	275			8.0		10.0	8.5	7.0	80	0.5	0.2
Other Streams	300	150			7.0		9.0	8.5	7.0	60	0.1	0.0
Groundwaters 4	750	600						8.5	7.5	200	0.3	0.1
<u>Applegate River HA</u>												
All Streams	250	175			7.0		9.0	8.5	7.0	60		
<u>Upper Trinity River HA</u>												
Trinity River 5	200	175			7.0		10.0	8.5	7.0	80	0.1	0.0
Other Streams	200	150			7.0		10.0	8.5	7.0	60	0.0	0.0
Clair Engle Lake and Lewiston Reservoir	200	150			7.0		10.0	8.5	7.0	60	0.0	0.0

3. WATER QUALITY OBJECTIVES

TABLE 3-1 (CONTINUED)
 SPECIFIC WATER QUALITY OBJECTIVES FOR NORTH COAST REGION

Water Body ^{1/}	Specific Conductance (micromhos) @ 77 F.		Total Dissolved Solids (mg/l)		Dissolved Oxygen (mg/l)		Hydrogen Ion (pH)		Hardness (mg/l)	Boron (mg/l)		
	90%	50%	90%	50%	90%	50%	Max	Min	50%	90%	50%	
	Upper Limit ³	Upper Limit ²	Upper Limit ³	Upper Limit ²	Min	Lower Limit ³	Lower Limit ²		Upper Limit ²	Upper Limit ³	Upper Limit ²	
<u>Hayfork Creek</u>												
Hayfork Creek	400	275			7.0		9.0	8.5	7.0	150	0.2	0.1
Other Streams	300	250			7.0		9.0	8.5	7.0	125	0.0	0.0
Ewing Reservoir	250	200			7.0		9.0	8.0	6.5	150	0.1	0.0
Groundwaters ⁴	350	225						8.5	7.0	100	0.2	0.1
<u>S.F. Trinity River HA</u>												
S.F. Trinity River	275	200			7.0		10.0	8.5	7.0	100	0.2	0.0
Other Streams	250	175			7.0		9.0	8.5	7.0	100	0.0	0.0
<u>Lower Trinity River HA</u>												
Trinity River	275	200			8.0		10.0	8.5	7.0	100	0.2	0.0
Other Streams	250	200			9.0		10.0	8.5	7.0	100	0.1	0.0
Groundwaters ⁴	200	150						8.5	7.0	75	0.1	0.1
<u>Lower Klamath River HA</u>												
Klamath River	300 ⁶	200 ⁶			8.0		10.0	8.5	7.0	75 ⁶	0.5 ⁶	0.2 ⁶
Other Streams	200 ⁶	125 ⁶			8.0		10.0	8.5	6.5	25 ⁶	0.1 ⁶	0.0 ⁶
Groundwaters ⁴	300	225						8.5	6.5	100	0.1	0.0
<u>Illinois River HA</u>												
All Streams	200	125			8.0		10.0	8.5	7.0	75	0.1	0.0
<u>Winchuck River HU</u>												
All Streams	200 ⁶	125 ⁶			8.0		10.0	8.5	7.0	50 ⁶	0.0 ⁶	0.0 ⁶
<u>Smith River HU</u>												
Smith River-Main Forks	200	125			8.0		11.0	8.5	7.0	60	0.1	0.1
Other Streams	150 ⁶	125 ⁶			7.0		10.0	8.5	7.0	60 ⁶	0.1 ⁶	0.0 ⁶
<u>Smith River Plain HSA</u>												
Smith River	200 ⁶	150 ⁶			8.0		11.0	8.5	7.0	60 ⁶	0.1 ⁶	0.0 ⁶
Other Streams	150 ⁶	125 ⁶			7.0		10.0	8.5	6.5	60 ⁶	0.1 ⁶	0.0 ⁶
Lakes Earl & Talawa					7.0		9.0	8.5	6.5	-		
Groundwaters ⁴	350	100						8.5	6.5	75	1.0	0.0
Crescent City Harbor												
<u>Redwood Creek HU</u>												
Redwood Creek	220 ⁶	125 ⁶	115 ⁶	75 ⁶	7.0	7.5	10.0	8.5	6.5			
<u>Mad River HU</u>												
Mad River	300 ⁶	150 ⁶	160 ⁶	90 ⁶	7.0	7.5	10.0	8.5	6.5			
<u>Eureka Plain HU</u>												
Humboldt Bay					6.0	6.2	7.0	8.5	7			
<u>Eel River HU</u>												
Eel River	375 ⁶	225 ⁶	275 ⁶	140 ⁶	7.0	7.5	10.0	8.5	6.5			
Van Duzen River	375	175	200	100	7.0	7.5	10.0	8.5	6.5			

TABLE 3-1 (CONTINUED)
SPECIFIC WATER QUALITY OBJECTIVES FOR NORTH COAST REGION

<u>Water Body</u> ¹	<u>Specific Conductance (micromhos) @ 77 F.</u>		<u>Total Dissolved Solids (mg/l)</u>		<u>Dissolved Oxygen (mg/l)</u>		<u>Hydrogen Ion (pH)</u>		<u>Hardness (mg/l)</u>	<u>Boron (mg/l)</u>		
	90%	50%	90%	50%	90%	50%	50%	90%	50%	90%	50%	
	<u>Upper Limit</u> ³	<u>Upper Limit</u> ²	<u>Upper Limit</u> ³	<u>Upper Limit</u> ²	<u>Min</u>	<u>Lower Limit</u> ³	<u>Lower Limit</u> ²	<u>Max</u>	<u>Min</u>	<u>Upper Limit</u> ²	<u>Upper Limit</u> ³	<u>Upper Limit</u> ²
South Fork Eel River	350	200	200	120	7.0	7.5	10.0	8.5	6.5			
Middle Fork Eel River	450	200	230	130	7.0	7.5	10.0	8.5	6.5			
Outlet Creek	400	200	230	125	7.0	7.5	10.0	8.5	6.5			
<u>Cape Mendocino HU</u>												
Bear River	390 ⁶	255 ⁶	240 ⁶	150 ⁶	7.0	7.5	10.0	8.5	6.5			
Mattole River	300 ⁶	170 ⁶	170 ⁶	105 ⁶	7.0	7.5	10.0	8.5	6.5			
<u>Mendocino Coast HU</u>												
Ten Mile River					7.0	7.5	10.0	8.5	6.5			
Noyo River	185 ⁶	150 ⁶	120 ⁶	105 ⁶	7.0	7.5	10.0	8.5	6.5			
Jug Handle Creek					7.0	7.5	10.0	8.5	6.5			
Big River	300 ⁶	195 ⁶	190 ⁶	130 ⁶	7.0	7.5	10.0	8.5	6.5			
Albion River					7.0	7.5	10.0	8.5	6.5			
Navarro River	285 ⁶	250 ⁶	170 ⁶	150 ⁶	7.0	7.5	10.0	8.5	6.5			
Garcia River					7.0	7.5	10.0	8.5	6.5			
Gualala River				-	7.0	7.5	10.0	8.5	6.5			
<u>Russian River HU</u>												
(upstream) ⁸	320	250	170	150	7.0	7.5	10.0	8.5	6.5			
(downstream) ⁹	375 ⁶	285 ⁶	200 ⁶	170 ⁶	7.0	7.5	10.0	8.5	6.5			
Laguna de Santa Rosa					7.0	7.5	10.0	8.5	6.5			
Bodega Bay					6.0	6.2	7.0	8.5	7			
Coastal Waters ¹⁰					11	11	11	12	12			

¹ Water bodies are grouped by hydrologic unit (HU), hydrologic area (HA), or hydrologic subarea (HSA).

² 50% upper and lower limits represent the 50 percentile values of the monthly means for a calendar year. 50% or more of the monthly means must be less than or equal to an upper limit and greater than or equal to a lower limit.

³ 90% upper and lower limits represent the 90 percentile values for a calendar year. 90% or more of the values must be less than or equal to an upper limit and greater than or equal to a lower limit.

⁴ Value may vary depending on the aquifer being sampled. This value is the result of sampling over time, and as pumped, from more than one aquifer.

⁵ Daily Average Not to Exceed

60°F

56°F

56°F

Period

July 1 - Sept. 14

Sept. 15 - Oct. 1

Oct. 1 - Dec. 31

River Reach

Lewiston Dam to Douglas City Bridge

Lewiston Dam to Douglas City Bridge

Lewiston Dam to confluence of North Fork Trinity River

⁶ Does not apply to estuarine areas.

⁷ pH shall not be depressed below natural background levels.

⁸ Russian River (upstream) refers to the mainstem river upstream of its confluence with Laguna de Santa Rosa.

⁹ Russian River (downstream) refers to the mainstem river downstream of its confluence with Laguna de Santa Rosa.

¹⁰ The State's Ocean Plan applies to all North Coast Region coastal waters.

¹¹ Dissolved oxygen concentrations shall not at any time be depressed more than 10 percent from that which occurs naturally.

¹² pH shall not be changed at any time more than 0.2 units from that which occurs naturally.

no water body specific objective available.

3. WATER QUALITY OBJECTIVES

TABLE 3-2

INORGANIC, ORGANIC, AND FLUORIDE CONCENTRATIONS NOT TO BE EXCEEDED IN DOMESTIC OR MUNICIPAL SUPPLY 1,2

Constituent	LIMITING CONCENTRATION IN MILLIGRAMS PER LITER			
	Lower	Optimum	Upper	Maximum Contaminant Level, mg/L
Fluoride 3				
53.7 and below	0.9	1.2	1.7	2.4
53.8 to 58.3	0.8	1.1	1.5	2.2
58.4 to 63.8	0.8	1.0	1.3	2.0
63.9 to 70.6	0.7	0.9	1.2	1.8
70.7 to 79.2	0.7	0.8	1.0	1.6
79.3 to 90.5	0.6	0.7	0.8	1.4
Inorganic Chemicals				
* Aluminum				1.0
Arsenic				0.05
Barium				1.0
Cadmium				0.01
Chromium				0.05
Lead				0.05
Mercury				0.002
Nitrate-N (as NO ₃ -N)				45
Selenium				0.01
Silver				0.05
Organic Chemicals				
(a) Chlorinated Hydrocarbons				
Endrin				0.0002
Lindane				0.004
Methoxychlor				0.1
Toxaphene				0.005
(b) Chlorophenoxys				
2,4-D				0.1
2,4,5-TP (Silvex)				0.01
(c) Synthetics				
Atrazine				0.003
Bentazon				0.018
Benzene				0.001
Carbon Tetrachloride				0.0005
Carbofuran				0.018
Chlordane				0.0001

TABLE 3-2 (CONTINUED)

**INORGANIC, ORGANIC, AND FLUORIDE CONCENTRATIONS NOT TO BE
EXCEEDED IN DOMESTIC OR MUNICIPAL SUPPLY ^{1,2}**

Constituent	LIMITING CONCENTRATION IN MILLIGRAMS PER LITER Maximum Contaminant level, mg/L
(c) Synthetics (cont'd.)	
1,2-Dibromo-3-chloropropane	0.0002
1,4-Dichlorobenzene	0.005
1,1 -Dichloroethane	0.005
1,2_Dichloroethane	0.0005
cis-1,2-Dichloroethylene	0.006
trans-1,2-Dichloroethylene	0.01
1,1 -Dichloroethylene	0.006
1,2-Dichloropropane	0.005
1,3-Dichloropropene	0.0005
Di(2-ethylhexyl)phthalate	0.004
* Ethylbenzene	0.680
Ethylene Dibromide	0.00002
Glyphosate	0.7
Heptachlor	0.00001
Heptachlor epoxide	0.00001
Molinate	0.02
Monochlorobenzene	0.030
Simazine	0.010
1,1,2,2-Tetrachloroethane	0.001
Tetrachloroethylene	0.005
* Thiobencarb	0.07
1,1,1 -Trichloroethane	0.200
1,1,2-Trichloroethane	0.032
Trichloroethylene	0.005
Trichlorofluoromethane	0.15
1,1,2-Trichloro-1,2,2-Trifluoroethane	1.2
Vinyl Chloride	0.0005
* Xylenes ⁴	1.750

¹ Values included in this table have been summarized from California Code of Regulations, Title 22, Division 4, Chapter 15, Article 4, Sections 64435 (Tables 2 and 3) and 64444.5 (Table 5).

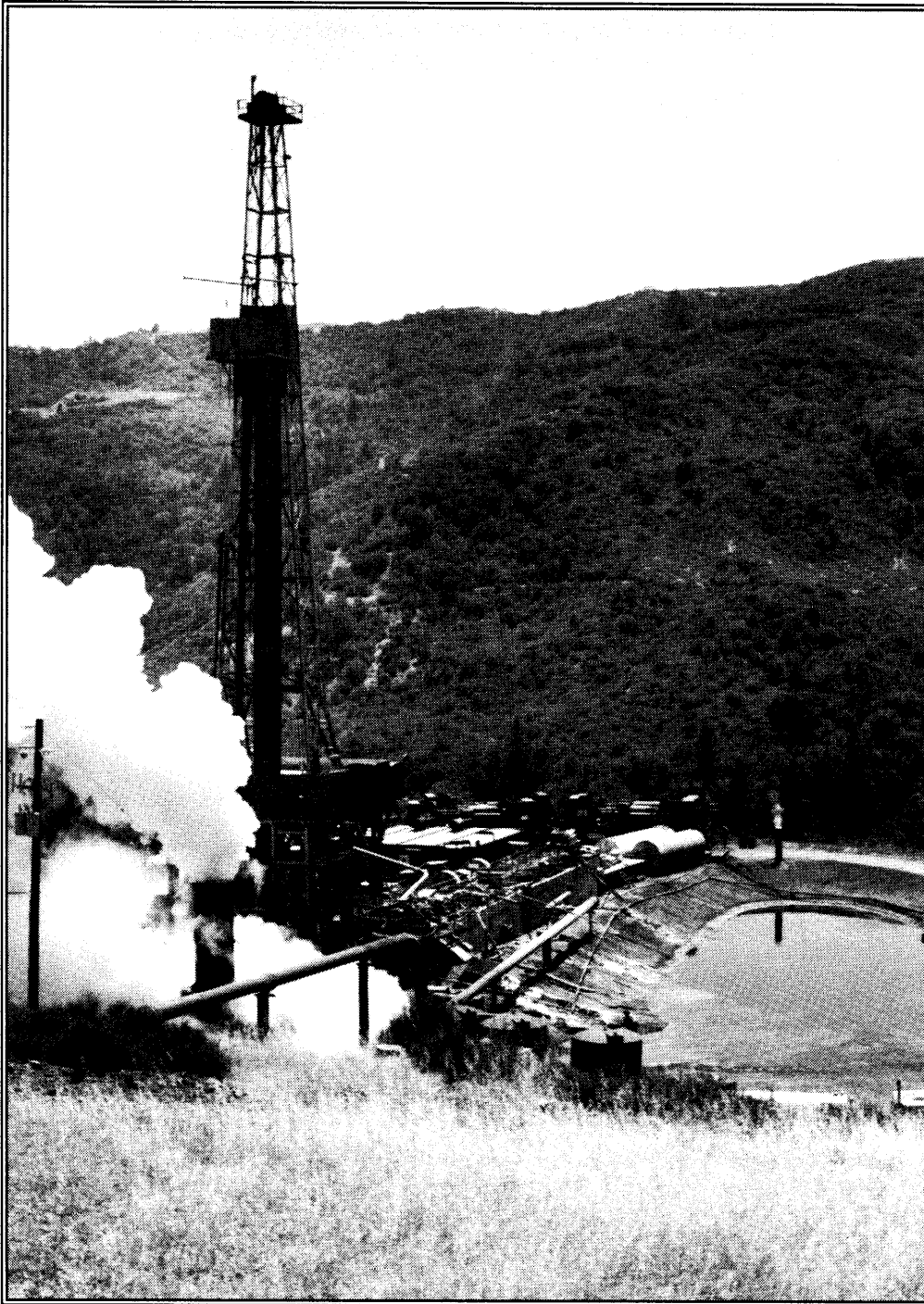
² The values included in this table are maximum contaminant levels for the purposes of groundwater and surface water discharges and cleanup. Other water quality objectives (e.g., taste and odor thresholds or other secondary MCLs) and policies (e.g., State Water Board "Policy With Respect to Maintaining High Quality Waters in California") that are more stringent may apply.

³ Annual Average of Maximum Daily Air Temperature, °F Based on temperature data obtained for a minimum of five years. The average concentration of fluoride during any month, if added, shall not exceed the upper concentration. Naturally occurring fluoride concentration shall not exceed the maximum contaminant level.

⁴ Maximum Contaminant Level is for either a single isomer or the sum of the isomers.

* Constituents marked with an * also have taste and odor thresholds that are more stringent than the MCL listed. Taste and odor thresholds have also been developed for other constituents not listed in this table.

3. WATER QUALITY OBJECTIVES



Geothermal steam well construction at the Geysers, Sonoma County, 1987
(D. Snetsinger)

WATER QUALITY OBJECTIVES FOR GROUNDWATERS

General Objectives

Tastes and Odors

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

Numeric water quality objectives have been developed by the State Department of Health Services and U.S. EPA. These numeric objectives, as well as those available in the technical literature, are incorporated into waste discharge requirements and cleanup and abatement orders as appropriate.

Bacteria

In groundwaters used for domestic or municipal supply (MUN), the median of the most probable number of coliform organisms over any 7-day period shall be less than 1 .1MPN/100 ml, less than 1 colony/100 ml, or absent (State Department of Health Services).

Radioactivity

Groundwaters used for domestic or municipal supply (MUN) shall not contain concentrations of

radionuclides in excess of the limits specified in California Code of Regulations, Title 22, Division 4, Chapter 15, Article 5, Section 64443, Table 4 and listed in Table 3-2 of this Plan.

Chemical Constituents

Groundwaters used for domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the limits specified in California Code of Regulations, Title 22, Division 4, Chapter 15, Article 4, Section 64435 Tables 2 and 3, and Section 64444.5 (Table 5) and listed in Table 3-2 of this Plan.

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

Numerical objectives for certain constituents for individual groundwaters are contained in Table 3-1.

As part of the state's continuing planning process, data will be collected and numerical water quality objectives will be developed for those mineral and nutrient constituents where sufficient information is presently not available for the establishment of such objectives.

4. IMPLEMENTATION PLANS

This section presents the actions intended to meet water quality objectives and protect beneficial uses of the Klamath River Basin and North Coastal Basin. The following measures shall be taken with respect to actual and potential point and nonpoint sources of water quality degradation.

POINT SOURCE MEASURES

WASTE DISCHARGE PROHIBITIONS

Section 13243 of the Porter-Cologne Water Quality Control Act authorizes the Regional Water Board - in a water quality control plan or in waste discharge requirements - to specify certain conditions or areas where the discharge of waste, or certain types of waste, will not be permitted.

Under this authority and in order to achieve water quality objectives, protect present and future beneficial water uses, protect public health, and prevent nuisance, the Regional Water Board declares that point source waste discharges, except as stipulated by the Thermal Plan, the Ocean Plan, and the action plans and policies contained in the Point Source Measures section of this Water Quality Control Plan, are prohibited in the following locations in the Region:

Klamath River Basin

1. All surface, freshwater impoundments and their tributaries, with the exception of the lower Lost River system.
2. Crescent City Harbor and all estuaries in accordance with the provisions of the State Water Board's "Water Quality Control Policy for the Enclosed Bays and Estuaries of California."
3. Smith River and its tributaries.
4. Klamath River and its tributaries, including but not limited to the Trinity, Salmon, Scott, and Shasta rivers and their tributaries.
5. The Applegate, Illinois, and Winchuck rivers and their tributaries.

6. On all coastal streams and natural drainage ways that flow directly to the ocean, all new discharges will be prohibited. Existing discharges to these waters will be eliminated at the earliest practicable date.
7. All intertidal reaches of the coast.
8. Areas of Special Biological Significance.
9. All other tidal waters unless it is demonstrated on the basis of waste characteristics, degree and reliability of treatment, rate of mixing and dilution, and other technical factors that water quality objectives will be met and all beneficial uses will be protected.

North Coastal Basin

1. All surface fresh water impoundments and their tributaries.
2. All bays and estuaries in accordance with the provisions of the State Water Resources Control Board's "Water Quality Control Policy for the Enclosed Bays and Estuaries of California".
3. The Mad and the Eel rivers and their tributaries during the period May 15 through September 30 and during all other periods when the waste discharge flow is greater than one percent of the receiving stream's flow as set forth in NPDES permits. 1
4. The Russian River and its tributaries during the period of May 15 through September 30 and during all other periods when the waste discharge flow is greater than one percent of the receiving stream's flow as set forth in NPDES permits. In

¹ For dischargers not in compliance with the seasonal prohibition and waste discharge rate limitation, time schedules shall be set forth in National Pollutant Discharge Elimination System (NPDES) permit updates for each discharger. In addition, each discharger not in compliance shall report to the Regional Water Board on progress towards compliance on an annual basis.

4. IMPLEMENTATION PLANS

addition, the discharge of municipal waste during October 1 through May 14 shall be of advanced treated wastewater in accordance with effluent limitations contained in NPDES permits for each affected discharger, and shall meet a median coliform level of 2.2 mpn/100 ml. ²

5. The Regional Water Board will consider exceptions for cause to the waste discharge rate limitations set forth in Prohibitions 3. and 4. (above). Exceptions shall be defined in NPDES permits for each discharger, on a case by case basis, and in accordance with the following:

- A. The wastewater treatment facility shall be reliable.

Reliability shall be demonstrated through analysis of the features of the facility including, but not limited to, system redundancy, proper operation and maintenance, and backup storage capacity to prevent the threat of pollution or nuisance.

- B. The discharge of waste shall be limited to rates and constituent levels which protect the beneficial uses of the receiving waters.

Protection shall be demonstrated through analysis of all the beneficial uses of the receiving waters. For receiving waters which support domestic water supply (MUN) and water contact recreation (REC1), analysis shall include expected normal and extreme weather conditions within the discharge period, including estimates of instantaneous and long-term minimum, average, and maximum discharge flows and percent dilution in receiving waters. The analysis shall evaluate and address cumulative effects of all discharges, including point and nonpoint source contributions, both in existence and reasonably foreseeable. For receiving waters

² For dischargers not in compliance with the waste discharge rate limitation and/or advanced wastewater treatment, time schedules shall be set forth in NPDES permit updates for each discharger. In addition, each discharger not in compliance shall report to the Regional Water Board on progress towards compliance on an annual basis.

which support domestic water supply (MUN), the Regional Water Board shall consider the California Department of Health Services evaluation of compliance with the Surface Water Filtration and Disinfection Regulations contained in Section 64650 through 64666, Chapter 17, Title 22 of the California Code of Regulations. Demonstration of protection of beneficial uses shall include consultation with the California Department of Fish and Game regarding compliance with the California Endangered Species Act.

- C. The exception shall be limited to that increment of wastewater which remains after reasonable alternatives for reclamation have been addressed.
- D. The exception shall comply with State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California," and the federal regulations covering antidegradation (40 CFR § 131.12).
- E. There shall be no discharge of waste during the period May 15 through September 30.
6. On all other coastal streams and natural drainageways that flow directly to the ocean all new discharges will be prohibited. Existing discharges to these waters will be eliminated at the earliest practicable date.
7. All intertidal reaches of the coast.
8. Areas of Special Biological Significance.
9. All other tidal waters unless it is demonstrated on the basis of waste characteristics, degree and reliability of treatment, location of discharge, rate of mixing and dilution, and other technical factors that water quality objectives will be met and all beneficial uses will be protected.

ACTION PLAN FOR HUMBOLDT BAY AREA

The purposes of this Action Plan for the Humboldt Bay Area are to:

4. IMPLEMENTATION PLANS

- 1) acknowledge progress which has been made in the protection and enhancement of Humboldt Bay since the original (1975) Basin Plan and the 1980 and 1988 updates;
- 2) describe the current status of programs in the watershed;
- 3) describe the surveillance, monitoring and assessment activities necessary to provide ongoing protection and enhancement of the water quality of the Humboldt Bay watershed.

Progress

The original (1975) action plan for the Humboldt Bay Area was intended to guide publicly-funded cleanup of the Bay. It envisioned full implementation of the State Water Board's 1974 "Water Quality Control Policy for the Enclosed Bays and Estuaries of California" (Bays and Estuaries Policy) and called for elimination of discharge of municipal wastewaters and industrial process waters (exclusive of cooling water discharges) to Humboldt Bay. That action plan allowed the Regional Water Board to permit continued discharges based on findings that the wastewater in question would be consistently treated and discharged in a manner that would enhance the quality of receiving waters or beneficial uses above that which would occur in the absence of the discharge. NPDES permits were granted to the City of Eureka, the City of Arcata, and College of the Redwoods, in accordance with the Bays and Estuaries Policy. Six publicly-owned treatment works (POTW) discharges and numerous overflow-prone pumping stations have been eliminated. Hundreds of failure-prone on-site sewage disposal systems have been eliminated through the sewerage of those areas.

Since the 1970s numerous other measures to protect and enhance the water quality and beneficial uses of Humboldt Bay have been successfully implemented through application of Basin Plan action plans, policies and programs administered by the Regional Water Board and other state and local agencies.

While these accomplishments and assessments are important, water quality problems and concerns still exist in the Humboldt Bay area. As illustrated in the statewide Water Quality Assessment program, the Bay has been affected by point and nonpoint sources

of water pollution and the potential for polluting episodes remains.

Bacterial Quality Concerns

The bacterial quality of Humboldt Bay is of particular concern due to the location of several of California's most important commercial oyster "farms" in the northern lobe of the estuary known as Arcata Bay. The shellfish harvest areas are classified by the California Department of Health Services according to several criteria, including their proximity to pollutant sources and the Department's knowledge that such areas are (or are not) of suitable sanitary quality. The Department is assisted in its classification process by close coordination with the Regional Water Board, sewage-management agencies, and the shellfish growers.

In Arcata Bay, shellfish harvest is permitted only in "Conditionally Approved" areas where water bacteriological quality meets the prescribed numerical standards described in Section 3 of this Plan, except during certain predictable periods. In this estuary, the exception occurs any time that a storm produces rainfall in excess of one-half inch within 24 hours. A harvest closure begins with each such storm and lasts for several days, depending on the storm pattern and intensity and the documented time required for "clearance" after the storm. This restriction recognizes that the bacterial quality of runoff into the Bay from all tributary watersheds causes the Bay waters to exceed the harvest-allowance standard.

In a federally-funded (Clean Water Act Section 208) study of the Bay in 1981-82, the Regional Water Board assessed the relative contributions of bacteria-laden runoff from different representative land-use areas including agricultural (pasture), rural residential, and urban areas. All were shown to produce significant bacterial concentrations in stormwater runoff. The major contribution was from pasture and rangelands. The assessment estimated that, should this land-use source be managed to preclude high-level bacterial discharges, there might be fewer days of shellfish harvest closure after each storm. The Department of Health Services, in its Humboldt Bay Management Plan, recognizes that such management has not been implemented.

4. IMPLEMENTATION PLANS

Other Water Quality Concerns

Agricultural uses in the Humboldt Bay watershed include permanent pasture, confined animal facilities, commercial-scale flower and bulb farms, and grazing. These activities may result in erosion and runoff, producing discharges of sediment, nutrients, bacteria, and pesticides. Bacteria-laden runoff has been identified as the primary agriculturally-related discharge in the Humboldt Bay watershed. Continued Regional Water Board review and monitoring of agricultural activities is necessary.

Forestry activities in the watershed include timber harvesting, road construction, site preparation, and herbicide application. Timberland owners located in the upper watershed areas will continue to file timber harvest plans on lands zoned for timber harvest production. Road construction and reconstruction within streamside management zones and concentration of logging operations in a watershed will be given special scrutiny to avoid individual and cumulative impacts on the streams.

Urban runoff is affected by past and current land uses which range from thousands of individual households and small businesses to several wood-product factories, each with actual or potential discharges of pollutants via stormwater runoff. The recent stormwater NPDES regulations and possible small-municipality regulations must be implemented to advance the management of runoff-borne pollutants. In addition, the Regional Water Board has an active program to secure cleanup of contaminated soils, runoff and groundwater from such sites.

In addition, there are several sites around the bay where past spills and leaks have contaminated groundwater which discharges to the bay. The Regional Water Board, local agencies, and responsible parties must utilize appropriate cleanup and abatement practices to address these problems.

Regional Water Board and local agency programs to assist small business owners in preventing discharges of polluting chemicals must also be implemented.

Continued surveillance, monitoring, and assessment of water quality and land use activities around Humboldt Bay, and implementation of the Bays and Estuaries Policy are necessary to assure protection

and enhancement of Humboldt Bay and its beneficial uses.

Accordingly, the Action Plan for Humboldt Bay includes the following elements:

- 1) Discharger surveillance and monitoring;
- 2) Review and assessment of land use activities; and
- 3) Continued coordination with other state and local agencies with various responsibilities with regards to Humboldt Bay.

ACTION PLAN FOR THE SANTA ROSA AREA Interim Action Plan (1986 - 1990)³ for the Santa Rosa Area:

On or before July 1, 1990, the Regional Water Board will formally review this Interim action plan and may revoke authority to discharge under the provisions of the plan or may extend the interim compliance date providing the City of Santa Rosa demonstrates to the Regional Water Board reasonable progress on the City's stated goal to eliminate direct disposal of treated waste in the Russian River.

1. There shall be no discharge of waste to the Russian River from the Laguna Regional Sewage Treatment Facility during the period of May 15 through September 30 each year. There shall

³ On September 21, 1989, the Regional Water Board adopted Resolution No. 89-I 11 which recognized the City of Santa Rosa's progress in complying with the Long-Range Plan for the Russian River and provides for continued application of the Interim Action Plan standards to the Santa Rosa area through July 1, 1995. Cease and Desist Order No. 92-147 adopted by the Regional Water Board on December 10, 1992 extends the Interim Action Plan standards through September 30, 1997 and Cease and Desist Order No. 93-103 adopted by the Regional Water Board on October 27, 1993 further extends the Interim Action Plan standards through September 30, 1999. This action plan will be amended at a future date.

4. IMPLEMENTATION PLANS

be no discharge from the Laguna Regional Sewage Treatment Facility for all other periods except as follows:

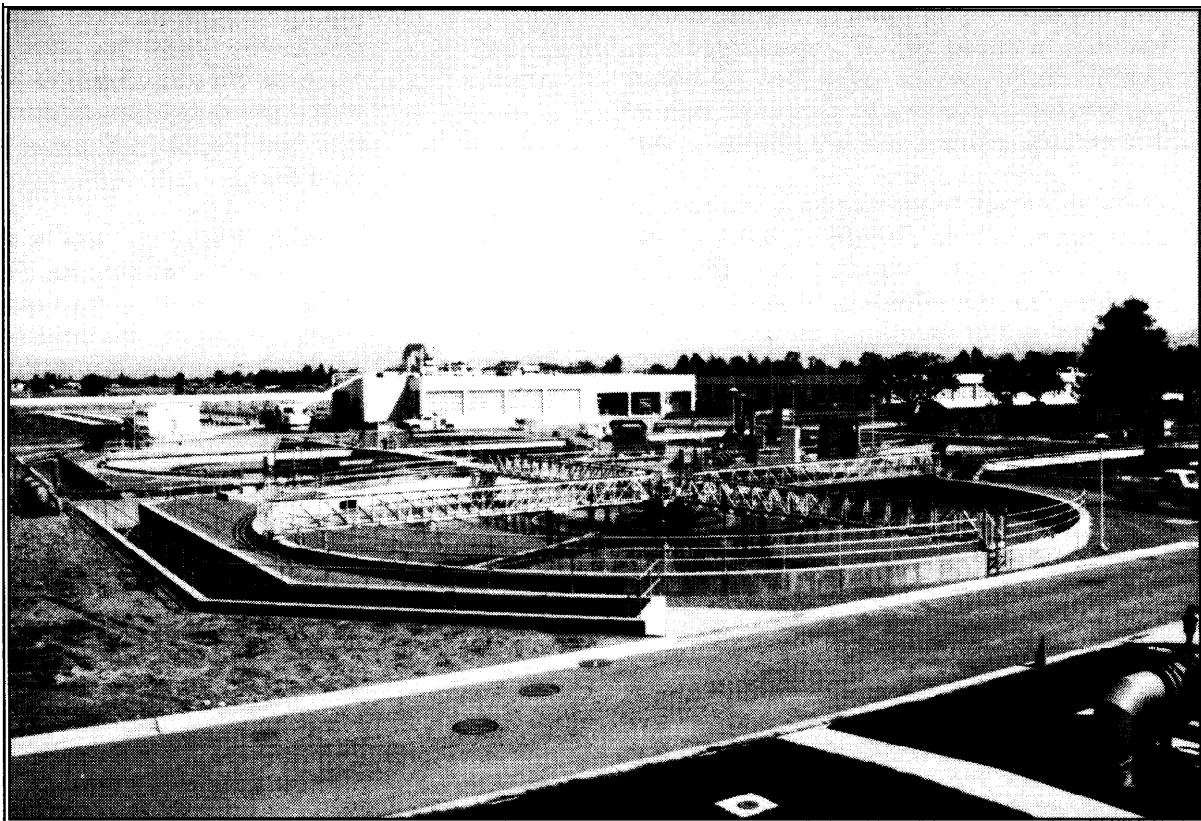
- A. To the extent possible, only advanced treated wastewater as defined in effluent limitations contained in an NDPEs permit shall be discharged during October 1 to May 14. However, discharges of secondary treated wastewater as defined in effluent limitations contained in an NDPEs permit meeting a median total coliform level of 23 MPN/100 ml from the Laguna Regional Sewage Treatment and Disposal Facilities may be discharged during October 1 to May 14 at rates not exceeding one percent of the flow of the Russian River. In any year, there shall be no discharge of secondary treated wastewater to the Russian River when the flow of the River as measured at Guerneville (USGS Gage No. 1 I-4670.00) is less than 1,000 cfs. In instances when secondary treated wastewater is discharged, the discharger shall submit a report documenting the reasons for such discharges. In no case when secondary treated wastewater is discharged in combination with advanced treated wastewater shall the total discharge exceed one percent of the flow of the Russian River.
- B. Discharge of advanced treated wastewater in accordance with an NDPEs permit from the Laguna Regional Treatment and Disposal Facilities to the Russian River may be permitted during October 1 through May 14 when all the following conditions are met:
1. The discharger shall meet a total coliform level of 2.2 MPN/100 ml;
 2. In any year, discharge shall not commence until after the flow of the Russian River initially reaches 1,000 cfs as measured at Guerneville (USGS Gage No. 11-46700.00) or until authorized by the Regional Water Board or its Executive Officer. Such authorization shall be based on evidence that justifies the necessity for the discharge and that shows that all beneficial uses of the Russian River and tributaries will continue

to be protected. The discharger shall document that system inflow has not exceeded the 1985 dry weather average plus incremental inflows not exceeding any irrigation and/or storage capacity added since 1985. Under wintertime (October 1 - May 14) drought conditions when the flow of the Russian River is less than 1,000 cfs, the Regional Water Board or its Executive Officer may suspend authorization to discharge waste, if necessary, to protect the beneficial uses of the Russian River or its tributaries.

3. Such discharge shall be limited to one percent of the flow of the Russian River except under the following conditions:
 - a. Discharges exceeding one percent of the flow of the Russian River shall be made in accordance with operating procedures to be incorporated into the NPDES permit for the Laguna Regional Wastewater Treatment Facilities. These operating procedures shall be designed to minimize the rate of discharge to the lowest percentage practicable, and to minimize the total volume of effluent discharged.
 - b. In such instances, the discharger shall provide a report to the Executive Officer documenting the reasons for increased waste discharges. The report shall include the dates, rates, and volumes of waste discharges and the circumstances necessitating such discharges and documentation that all beneficial uses of the Russian River and tributaries will be protected and that system inflow has not exceeded the 1985 dry weather average plus incremental inflow not exceeding any irrigation and/or storage capacity added since 1985.
4. In no case shall any discharge of advanced treated wastewater exceed five percent of the flow of the Russian River.



Woodley Island Marina, Humboldt Bay, 1988 (C. Vath)



City of Santa Rosa Laguna Subregional Wastewater Treatment Plant, 1994 (C. Vath)

4. IMPLEMENTATION PLANS

INTERIM ACTION PLAN FOR THE TRINITY RIVER

The purposes of this action plan are to describe those activities in the Trinity River watershed which implement the objectives listed below and to ensure a multi-agency collaborative approach to attainment of the objectives.

The Trinity River Division of the Central Valley Project, constructed in 1963 and operated by the United States Bureau of Reclamation, is a major water development project providing the transfer of water from the Trinity River to the Sacramento River Basin of California. Key features of the Trinity River Division are Lewiston Dam, Trinity Dam, and facilities which provide the diversion of runoff from the Trinity River watershed into the Sacramento River Basin. The construction of the dams and the diversion of approximately 80% of the natural flows of the Trinity River resulted in significant changes in the river.

The reduced flows resulted in changes to the river's temperature regime and disrupted physical cues for migration and spawning of salmon. To mitigate for the loss of fisheries habitat resulting from the project construction, the Trinity River Fish Hatchery was constructed at the base of Lewiston Dam. The fish populations have not been sustained, however, and both salmon and steelhead trout populations have declined since 1964, some stocks to as little as 10% of former levels. Efforts are currently underway to expand and improve the operations of the fish hatchery.

To the extent that factors are controllable as stated in Section 3 of this plan, the following temperature objectives shall apply to the activities in the Trinity River.

Daily Average Not to Exceed	Period	River Reach
60°F	July 1 - Sept. 14	Lewiston Dam to Douglas City Bridge
56°F	Sept. 15 - Oct. 1	Lewiston Dam to Douglas City Bridge
56°F	Oct. 1 - Dec. 31	Lewiston Dam to confluence of North Fork Trinity River

The Regional Water Board recognizes that the controllability of temperatures in the Trinity River downstream of Trinity and Lewiston Reservoirs is dependent on both climatic conditions and the operation of diversions to the Sacramento River.

The following ongoing efforts shall implement the temperature objective for the Trinity River:

The Trinity River Restoration Act (P.L. 98-541) authorized the Secretary of the Interior to formulate and implement a management program to restore fish and wildlife populations in the Trinity River Basin. To that end, the Bureau of Reclamation, the U.S. Fish and Wildlife Service, and the California Department of Fish and Game formed the Trinity River Task Force in 1971 to study the fish and wildlife problems of the basin and to prepare a plan for identification and mitigation of the problems. Membership in the Trinity River Fishery Restoration Task Force now also includes the U.S. Bureau of Indian Affairs, the California Department of Water Resources, Trinity County, Humboldt County, the Hoopa Valley Tribe, the Yurok Tribe, the U.S. Forest Service, the Bureau of Land Management, the U.S. Soil Conservation Service, the National Marine Fisheries Service, the California Department of Forestry and Fire Protection, and the State Water Resources Control Board.

The Trinity River Task Force shall seek to achieve the temperature objectives listed above through its individual and collective authorities. In addition, the authorities shall strive to optimize Trinity River restoration efforts through the efficient and balanced use of cold water reserves from Trinity and Lewiston reservoirs.

In 1981, the U.S. Fish and Wildlife Service and the Water and Power Resources Service of the Central Valley Project entered into an agreement, signed by the Secretary of the Interior, to work cooperatively to halt further fishery declines and to begin an effective restoration program in the Trinity River. In recognizing the problem of balancing the needs to sustain the fishery resources in the Trinity River and the uses outside of the basin for water and power, the agreement established flow allocations for normal, dry, and critically dry years for a period of twelve years. At the end of the twelve-year evaluation period, the agreement calls for the U.S. Fish and Wildlife Service to submit a report to the Secretary of the Interior

4. IMPLEMENTATION PLANS

which summarizes the effectiveness of restoration of flows and recommends an appropriate course of action for future management of Trinity River flows. The twelve-year evaluation period began in 1985 and is scheduled for completion in 1996. The agreement also recognizes the need for the completion of a Fish and Wildlife Management Plan by the Trinity River Task Force, and its implementation to successfully restore the anadromous resources of the Trinity River Basin.

Because of the successive dry-weather conditions since 1985 and the subsequent release of reduced flows to the Trinity River, the Secretary of the Interior amended the 1981 agreement to provide increased flows to the Trinity River in 1991 and in successive years until the U.S. Fish and Wildlife Service completes its study of the Trinity River flows.

As information from the twelve-year study becomes available, the Regional Water Board shall review the effectiveness of this action plan in attaining the water temperature objectives.

In 1985 the Bureau of Reclamation entered into a cooperative agreement with the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the National Marine Fisheries Service to coordinate the operations of the Trinity River Division which impact the fishery resources. To that end, the agencies together attempt to establish the timing and the proportion of releases from Trinity Dam and Lewiston Dam which would most efficiently utilize the cold water reserves available for use by the anadromous fishery.

The above agencies shall collaborate to implement the objectives set forth in this plan, and shall apprise the Regional Water Board of the progress of this effort on an annual basis.

The State Water Board issued Orders WR 90-5 and 91-01 on May 5, 1990 and January 10, 1991, which set terms and conditions for fishery protection and set a schedule for completion of tasks for the thirty-two water rights permits, licenses, permitted applications and licensed applications for the Bureau of Reclamation's Central Valley Project. The orders included seven pending permitted applications for the diversion of cold water reserves from the Trinity River. The Orders recognized that protection of the upper

Sacramento River fishery by means of water diversions from the Trinity River may adversely affect the Trinity River if not properly controlled, and chose to prevent and avoid any adverse effects to the Trinity River fishery as a result of the Order. The State Water Board will consider the comprehensive protection for the Trinity River fishery in a separate water rights proceeding in the near future. The State Water Board will consider the objectives set forth in this action plan in its future water rights proceedings for the Trinity River.

This action plan forms the basis for a collaborative approach to the management of fishery resources in the Trinity River and attainment of the water quality objectives.

The Regional Water Board will periodically review this action plan and information resulting from temperature and fishery studies in the drainage and other areas to determine the need for modification.

INTERIM POLICY ON THE REGULATION OF WASTE DISCHARGES FROM UNDERGROUND PETROLEUM TANK SYSTEMS

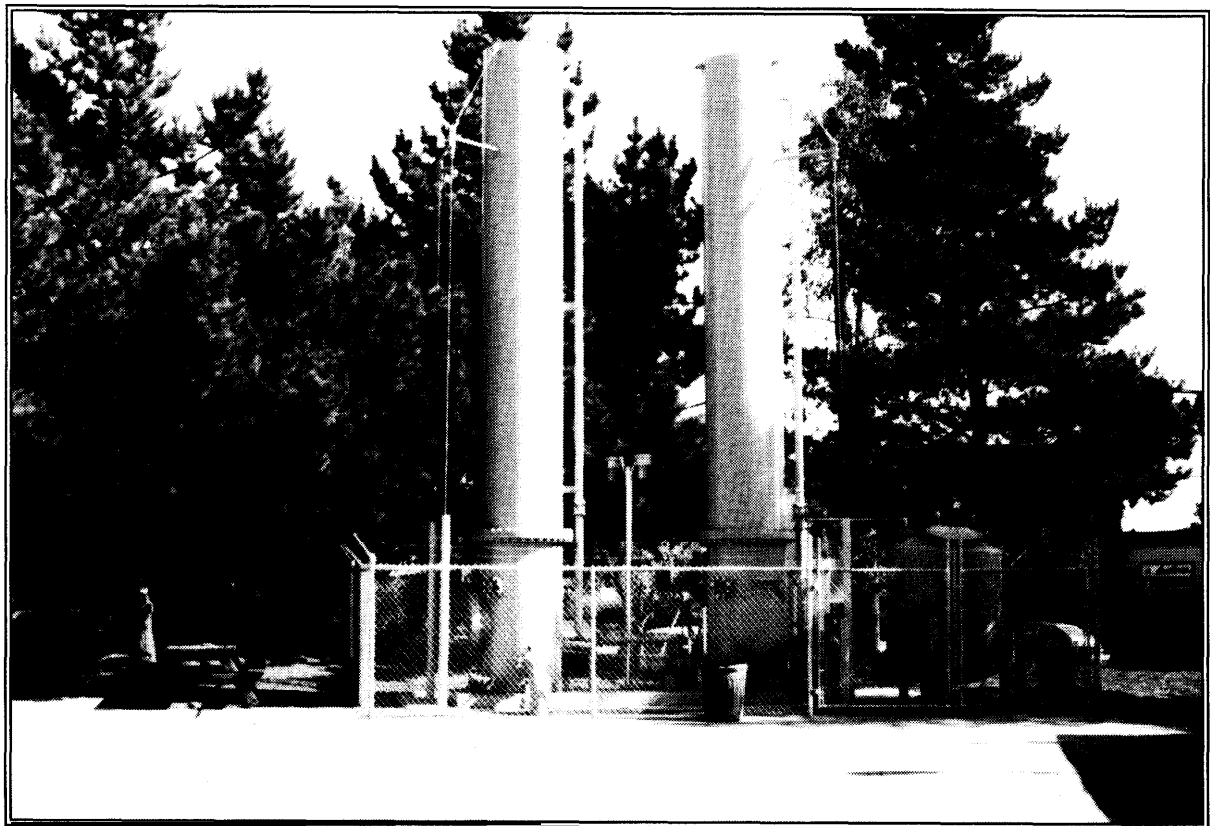
At present, the Regional Water Board is using the following laws, policies, regulations and guidelines as the basis for investigations and cleanup of discharges from underground petroleum tank systems:

- The Porter-Cologne Water Quality Control Act
- The Water Quality Control Plan for the North Coast Region
- Chapters 15 and 16, Division 3, Title 23, California Code of Regulations
- State Water Resources Control Board Resolution No. 68-I 6
- The Health and Safety Code

It shall be the policy of the Regional Water Board to implement a program to investigate and cleanup groundwater pollution caused by unauthorized releases of petroleum from underground tanks that protects water quality while at the same time minimizes the cost to responsible parties and the public in general. The following principles shall constitute the Regional Water Board's interim policy:



Underground tank removal, 1988 (C. Vath)



Air-stripping towers for groundwater cleanup, 1988 (C. Vath)

4. IMPLEMENTATION PLANS

1. With respect to all underground petroleum tank cases in this Region, the Regional Water Board's highest priority will be to eliminate pollutant sources through tank removal, free product removal, and removal of contaminated soil to the extent practicable. If required, the need for further remedial action will be based on impacts on the beneficial uses of affected waters as determined by reasonable monitoring or other investigation.
2. The Regional Water Board will then assign the highest priority to the resolution of underground petroleum tank cases where drinking water sources are being adversely impacted or are imminently threatened to be adversely impacted.
3. Where practicable, the Regional Water Board will schedule the investigation and cleanup of petroleum pollution by responsible parties to coincide with the availability of funds.
4. Where practicable, the Regional Water Board will recognize the use of alternative cleanup techniques such as in-situ bioremediation and passive remediation.
5. The Regional Water Board will assist the State Water Resources Control Board and claimants to the State Underground Storage Tank Cleanup Fund to further reduce investigative and cleanup costs while continuing to protect water quality:
 - a. through technology transfer;
 - b. through appropriate regulatory policy and legislative recommendations; and
 - c. through continuing coordination to implement regulatory policy and law.

INTERIM ACTION PLAN FOR CLEANUP OF GROUNDWATERS POLLUTED WITH PETROLEUM PRODUCTS AND HALOGENATED VOLATILE HYDROCARBONS

Discharges of waste from treatment facilities designed to remove pollutants from groundwaters polluted with petroleum products and halogenated volatile hydrocarbons shall be permitted to surface waters of

the North Coast Region year-round with no discharge flow limitations based on the flow of the receiving water provided that the following conditions are met:

1. The discharge from the treatment facility shall be pollutant-free.⁴
2. The discharge shall not adversely affect the beneficial uses of the receiving water.
3. The discharge is necessary because a polluted groundwater cleanup operation is required by an action of the Regional Water Board.
4. The discharge is necessary because no feasible alternative to the discharge (re injection, reclamation, evaporation, discharge to a community wastewater treatment and disposal system, etc.) is available.
5. The discharge is regulated by NPDES Permit/Waste Discharge Requirements.
6. The discharger has demonstrated consistent compliance with Provision 1, above.
7. The discharge is in the public interest.

POLICY ON THE CONTROL OF WATER QUALITY WITH RESPECT TO ON-SITE WASTE TREATMENT AND DISPOSAL PRACTICES

The following policy shall be implemented with respect to discharges from individual waste treatment and disposal systems.

⁴ For the purposes of this Interim Action Plan, pollutants are defined as those constituents and their breakdown products that were discharged to soils and/or groundwaters that necessitated a groundwater cleanup. Pollutant-free is defined as discharges that contain no detectable levels of pollutants as analyzed in currently approved EPA or State of California methodology. The Regional Water Board will define detectable levels in terms of numerical limits and shall specify such limits in individual NPDES permits or waste discharge requirements.

4. IMPLEMENTATION PLANS

I. OBJECTIVE

The North Coast Region is one of the fastest growing areas of California, with widespread and increasing dependence on on-site systems for sewage treatment and disposal. Due to ever-increasing costs, the ultimate construction of sewerage systems in developing areas can no longer be relied upon as a future solution to sewage disposal needs. More and more, on-site systems must be viewed as permanent means for waste treatment and disposal, capable of functioning properly for the life of the structure(s) served. The preponderance of adverse physical conditions throughout the Region necessitates careful evaluation of site suitability and design parameters in each instance. This policy sets forth uniform region-wide criteria and guidelines to protect water quality and to preclude health hazards and nuisance conditions arising from the subsurface discharge of waste from on-site waste treatment and disposal systems.

II. FINDINGS

1. On-site waste treatment and disposal can be acceptable and successful. The success of the on-site system is dependent on suitable site location, adequate design, proper construction, and regular maintenance. Failure of the on-site system can result in water pollution and the creation of health hazards and nuisance conditions.
2. Division 7 of the California Water Code grants to the Regional Water Board jurisdiction over all discharges of waste, including those from individual waste treatment and disposal systems or from community collection and disposal systems which utilize subsurface disposal. Local regulatory agencies, however, can most effectively control individual waste treatment and disposal systems, provided they strictly enforce ordinances and regulations designed to provide protection of water quality and the public health. Regulation of on-site systems on federal lands is beyond the jurisdiction of local agencies and must remain with the Regional Water Board.
3. The many variations in physical conditions throughout the Region may affect the propriety of

use of on-site water treatment and disposal systems. Adherence to the guidelines, criteria, and water conservation practices contained herein ordinarily will protect public health and water quality. Local regulatory agencies and the Regional Water Board are encouraged to adopt more stringent regulations when warranted by local conditions.

4. Factors may arise which will justify less stringent requirements than set forth in the guidelines and criteria contained herein. Provision for waiver is included in this policy to address such situations.
5. On-site waste treatment and disposal systems can be an excellent sanitation device in rural and rural-urban areas. In urban areas where population densities are generally high and the availability of land is limited, on-site systems are not desirable and should not be permitted if adequate community sewerage systems are available or feasible.
6. Water conservation practices may protect present and future beneficial uses and public health, and may prevent nuisance and prolong the effective life of on-site wastewater treatment and disposal systems.
7. The life of on-site wastewater treatment and disposal systems may be severely limited if improperly maintained. A means must be available to assure adequate maintenance of individual waste treatment and disposal systems. Management by public entities is encouraged wherever practicable.
8. Soil characteristics play a dominant role in the suitability of a site for subsurface sewage disposal. Increased emphasis on determining and utilizing soils information will improve site suitability evaluations.
9. The installation of many on-site disposal systems within a given area may result in hydraulic interference between systems and adverse cumulative impacts on the quality of ground and surface waters. Physical solutions or limitations on waste load densities for land developments and other facilities may be necessary to avert such eventualities.

4. IMPLEMENTATION PLANS

10. The need for the continued evolution of on-site waste treatment and disposal technology is evident. Means should be provided at the state and local level to allow for timely and orderly consideration of promising alternative methods of waste treatment and disposal.
11. All aspects of on-site waste treatment and disposal would benefit from improved professional training and public education programs.

III. SITE EVALUATION CRITERIA AND METHODS

A. Criteria

The following site criteria are considered necessary for the protection of water quality and the prevention of health hazards and nuisance conditions arising from the on-site discharge of wastes. They shall be treated as region-wide standards for assessing site suitability for such systems. Waiver of individual criterion may be made in accordance with the "Provision for Waiver" contained in this policy.

1. Subsurface Disposal

On-site waste treatment and disposal systems shall be located, designed, constructed, and operated in a manner to ensure that effluent does not surface at any time, and that percolation of effluent will not adversely affect beneficial uses of waters of the State.

2. Ground Slope and Stability

Natural ground slope in all areas to be used for effluent disposal shall not be greater than 30 percent. Where less than five feet of soil exists below the trench bottom (see 3. below), ground slope shall not exceed 20 percent.

Natural ground slope criteria for mounds is as follows: for percolation rates of 3 to 60 minutes per inch the maximum allowable slope is 12 percent and for percolation rates of 60 to 120 minutes per inch the maximum allowable slope is 6 percent. In addition, steeper ground slopes may be allowed for experimental systems approved by the Regional Water Board or the county Health Officer.

All soils to be utilized for effluent disposal shall be stable.

3. Soil Depth

Soil depth is measured vertically to the point where bedrock, hardpan impermeable soils or saturated soils are encountered.

Where ground slope is 20 percent to 30 percent, minimum soil depth immediately below the bottom of the leaching trench shall be five feet.

Where ground slope is less than 20 percent, a minimum soil depth of three feet immediately below the leaching trench shall be permitted.

Lesser soil depths may be granted only as a waiver or for alternative systems.

4. Depth to Groundwater

Minimum depth to the anticipated highest level of groundwater below the bottom of the leaching trench shall be determined according to soil texture and percolation rate as shown in Table 4-1.

5. Percolation Rates

Percolation test results in the effluent disposal area shall not be less than one inch per 60 minutes (60 MPI) for conventional leaching trenches and one inch per 30 minutes (30 MPI) for seepage pits. Percolation rates of less than one inch per 60 minutes (60 MPI) may be granted as a waiver or for Alternative Systems.

6. Setback Distances

Minimum setback distances for various features of individual waste treatment and disposal systems shall be as shown in Table 4-2.

7. Replacement Area

An adequate replacement area equivalent to and separate from the initial effluent disposal area shall be reserved at the time of site approval. Incompatible uses of the replacement area shall be prohibited.

4. IMPLEMENTATION PLANS

B. Methods of Site Evaluation

Site evaluations are required in all instances to allow proper system design and to determine compliance with the proceeding site suitability criteria prior to approving the use of on-site waste treatment and disposal systems. The responsible regulatory agency (local health department or Regional Water Board) should be notified prior to the conduct of site evaluations since verification by agency personnel maybe required. Site evaluation methods shall be in accordance with the following guidelines.

1. General Site Features

Site features to be determined by inspection shall include:

- a. Land area available for primary disposal system and replacement area.
- b. Ground slope in the effluent disposal and replacement area.

- c. Location of cut banks, natural bluffs, sharp changes in slope and unstable land forms within 50 feet of the disposal and replacement area.
- d. Location of wells, intercept drains, streams, and other bodies of water on the property in question and within 100 feet on adjacent properties.

2. Soil Profiles

Soil characteristics shall be evaluated by soil profile observations. One backhoe excavation in the primary disposal field and one in the replacement area shall be required for this purpose. A third profile shall be required if the initial two profiles show dissimilar conditions.

Augered test holes shall be an acceptable alternative, upon determination of the Health

TABLE 4-1

MINIMUM DEPTH TO GROUNDWATER
BELOW LEACHING TRENCH

<u>Soil Texture 1</u> <u>Percent Silt & Clay</u>	<u>Depth to Groundwater</u> <u>Below Leaching Trench (feet)</u>
5 or less	40
6 to 10	20
11 to 15	10
Greater than 15 ²	5
Greater than 15	2 ³

- 1 Must exist for a minimum of three continuous feet between the bottom of the leaching trench and groundwater.
- 2 Or a percolation rate slower than 5 MPI.
- 3 Granted only as a waiver or for Alternative Systems.

4. IMPLEMENTATION PLANS

Officer or Regional Water Board: (a) where use of a backhoe is impractical because of access, (b) when necessary only to verify conditions expected on the basis of prior soils investigations, or (c) when done in connection with geologic investigations. Where this method is employed, three test holes in the primary disposal field and three in the replacement area shall be required.

In the evaluation of new subdivisions, enough soil profile excavations shall be made to identify a suitable disposal and replacement area on each proposed parcel.

The following factors shall be observed and reported from ground surface to a depth of at

least five feet below the proposed leachfield system:

- a. Thickness and coloring of soil layers and apparent United States Department of Agriculture (USDA) classification.
- b. Depth to and type of bedrock, hardpan, or impermeable soil layer.
- c. Depth to observed groundwater.
- d. Depth to soil mottling.
- e. Other prominent soil features such as structure, stoniness, roots and pores, dampness, etc.

TABLE 4-2
MINIMUM SETBACK DISTANCES
(FEET)

Facility	Well	Perennially Flowing Stream 1	Ephemeral Stream 2	Ocean Lake or Reservoir 3	Cut Banks, Natural Bluffs and Sharp Changes in Slope	Unstable Land Forms
Septic Tank	100	100	50	50	25	50
Leaching Field	100	100	50	100	25 ⁴	50
Seepage Pit	150	100	50	100	25 ⁴	50

¹ As measured from the line which defines the limit of 10 year frequency flood.

² As measured from the edge of the water course.

³ As measured from the high-water line.

⁴ Where soil depth or depth to groundwater below the leaching trench are less than five feet, a minimum set back distance of 50 feet shall be required.

4. IMPLEMENTATION PLANS

3. Depth to Groundwater Determinations

The anticipated highest level of groundwater shall be estimated:

- a. As the highest extent of soil mottling observed in the examination of soil profiles; or
- b. By direct observation of groundwater levels during wet weather conditions.

Where a conflict in the above methods of examination exists, the direct observation shall govern.

In those areas which, because of parent materials, soils lack the necessary iron compounds to exhibit mottling, direct observation during wet weather conditions shall be required. Guidance in defining such areas shall be provided by the Regional Water Board for each county within the Region.

4. Soil Percolation Suitability

Determination of a site's suitability for percolation of effluent shall be either of the following methods:

a. Percolation Testing

Percolation testing shall be in accordance with methods specified by the local regulatory agency. Percolation testing of soils within Zone 3 and 4 shall be conducted during wet weather conditions.

Percolation testing of soils falling within Zone 1 and Zone 2 may be conducted in non-wet weather conditions provided presoaking of the test hole is accomplished with (a) a continuous 12 hour presoaking, or (b) a minimum of four complete refillings beginning during the day prior to that of the conduct of the test.

b. Soil Analysis

Soil from the limiting soil layer observed within the excavated soil profile shall be obtained and analyzed for texture and bulk

density according to methods prescribed by the Regional Water Board. The results shall be plotted on the soil textural triangle of Figure 4-1 as per the indicated instructions.

(1) Soils within Zone 1 shall be considered to have minimal filtration capabilities, requiring increased depths to groundwater as per Table 4-1.

(2) Soils within Zone 2 shall be considered suitable for effluent disposal without further testing.

(3) Soils within Zone 3 and 4 shall require percolation testing as per (a) above to verify suitability for effluent disposal.

5. Wet Weather Criteria

Wet weather testing periods shall be determined geographically by local regulatory agencies incorporating the following criteria as a minimum:

- a. Between January 1 and April 30; and
- b. Following 10 inches of rain in a 30-day period or after one-half of the seasonal normal precipitation has fallen.

Extension of wet weather testing beyond the limits of the above criteria may be made in accordance with a program of groundwater level monitoring instituted and conducted by the local regulatory agency.

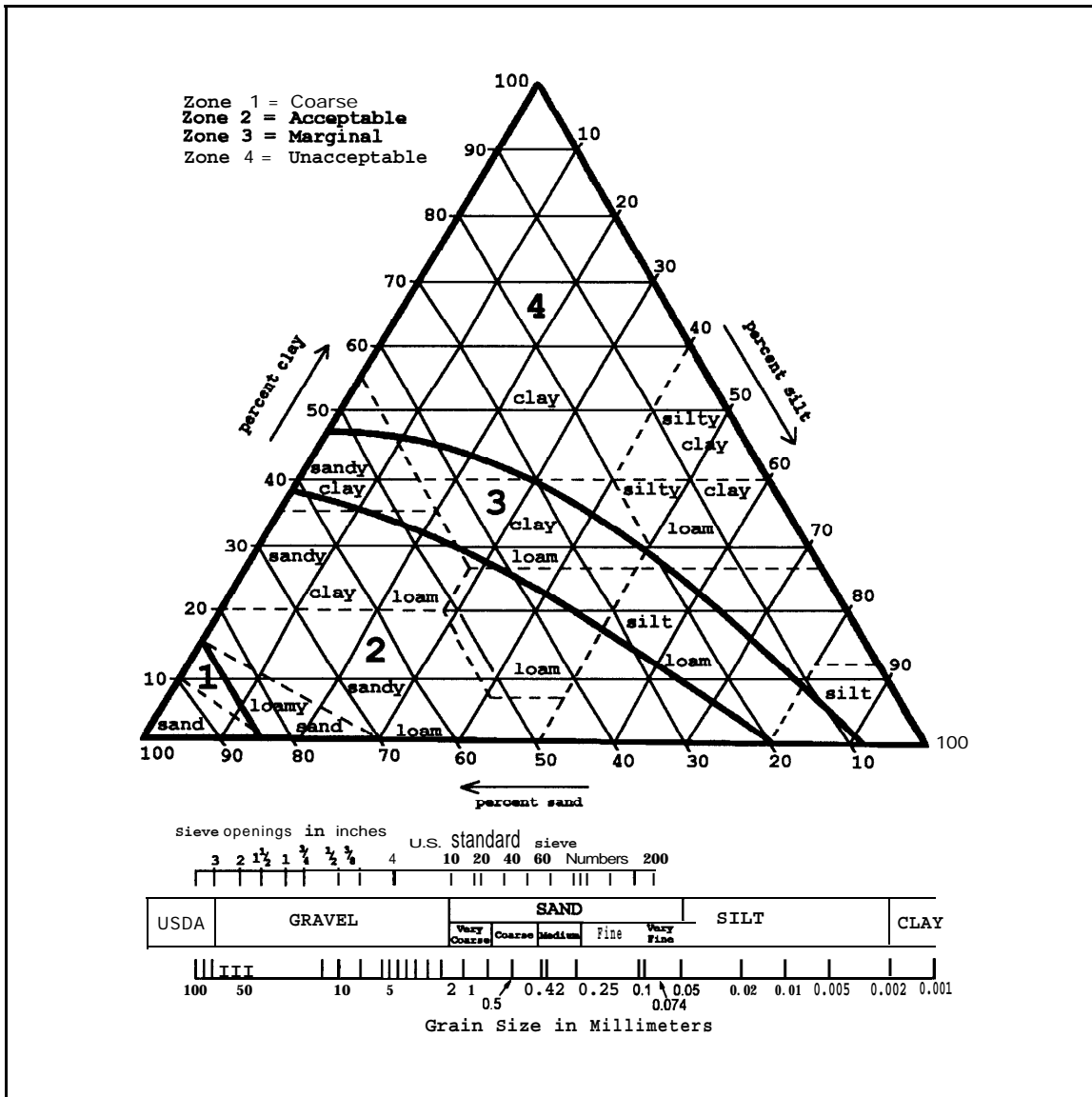
C. Provision for Waiver

Except for mounds, waiver of site suitability criteria and evaluation methods specified herein may be granted by the Regional Water Board or county Health Officer when it can be satisfactorily demonstrated that water quality will not be impaired and public health will not be threatened as a result of such waivers.

Waivers may be granted for:

- (1) Individual cases, or
- (2) Defined geographical areas.

4. IMPLEMENTATION PLANS



Instructions:

1. Plot texture on triangle based on percent sand, silt, and clay as determined by hydrometer analysis.
2. Adjust for coarse fragments by moving the plotted point in the sand direction an additional 2% for each 10% (by volume) of fragments greater than 2mm in diameter.
3. Adjust for compactness of soil by moving the plotted point in the clay direction an additional 15% for soils having a bulk-density greater than 1.7 gm/cc.

Note.* For soils falling in sand, loamy sand or sandy loam classification bulk density analysis will generally not affect suitability, and analysis is not necessary.

FIGURE 4-1 Soil Percolation Suitability Chart for Onsite Waste Treatment Systems

4. IMPLEMENTATION PLANS

The county Health Officer shall notify the Regional Water Board of the basis for each waiver. Prior to granting geographical area waivers, the county Health Officer shall submit technical justification to the Regional Water Board for review and concurrence.

D. Waiver Prohibitions

Where surveys conducted by the county Health Departments and/or Regional Water Board staff indicate that discharges from on-site waste treatment and disposal systems in specific geographical areas are resulting in or threatening to result in health hazards or water quality impairment, the Regional Water Board may prohibit the issuance of waivers in said areas. Identification of "waiver prohibition areas" are incorporated into Section VII of this policy.

Exemptions to such prohibitions shall be granted by the Regional Water Board only where an authorized public agency can provide satisfactory assurance that individual systems will be appropriately designed, located, sized, shaped, constructed, and maintained to provide adequate protection of beneficial uses of water and prevention of nuisance, pollution, and contamination.

E. Individual Systems Prohibitions

The discharge from existing or new individual systems utilizing subsurface disposal shall be prohibited by the Regional Water Board in accordance with Section 13280 of the California Water Code where substantial evidence shows that such discharges will result in violation of water quality objectives, will impair present or future beneficial uses of water, will cause pollution, nuisance, or contamination, or will unreasonably degrade the quality of any waters of the State. Identification of "individual systems prohibition areas" are incorporated into Section VIII of this policy.

IV. DESIGN CRITERIA AND TECHNICAL GUIDELINES

A. Septic Tank Sizing

At a minimum, septic tank size requirements shall be based upon the current edition of the International Association of Plumbing and Mechanical Officials Uniform Plumbing Code (1988 Edition), the United

States Public Health Service Manual of Septic Tank Practice (1973), or other local agency regulations approved by the Regional Water Board.

Individual treatment units other than septic tanks shall require certification by the National Sanitation Foundation (NSF) or the International Association of Plumbing and Mechanical Officials (IAPMO) prior to approval for use.

B. Leachfield System Design

For on-site systems of less than 1,500 gpd, leachfield design and disposal area requirements shall be based upon the United States Public Health Services Manual of Septic Tank Practice (1973) or other local agency regulations approved by the Regional Water Board. For on-site systems of greater than 1,500 gpd, sizing as a minimum shall be based upon the Manual of Septic Tank Practice (1973).

C. Cesspools

The use of cesspools for on-site waste treatment and disposal shall be prohibited.

D. Holding Tanks

The use of holding tanks shall be prohibited except where the Regional Water Board or county Health Officer determines that:

1. It is necessary to abate an existing nuisance or health hazard; or
2. The proposed use is within a sewer service area, sewers are under construction or contracts have been awarded and completion is expected within two years, there is capacity at the wastewater treatment plant and the sewerage agency will assume responsibility for maintenance of the tanks; or
3. It is for use at a campground or similar temporary public facility where a permanent sewage disposal system is not necessary or feasible and maintenance is performed by a public agency.

4. IMPLEMENTATION PLANS

E. Intercept Drains

The use of intercept drains to lower the level of perched groundwater in the immediate leachfield area shall be acceptable under the following conditions:

1. Natural ground slope is greater than 5 percent;
2. Site investigations show groundwater to be perched on bedrock, hardpan, or an impermeable soil layer;
3. The intercept drain extends from ground surface into bedrock, hardpan, or the impermeable soil layer.

In no case shall the pervious section of an intercept drain be located less than 15 feet upgradient or 50 feet laterally from any septic tank or leachfield, or 25 feet from any property line.

Where all of the above conditions cannot be met, detailed engineering plans must be supplied or actual performance of the intercept drain demonstrated prior to approval.

F. Fills

The use of fills to create a leachfield cover shall be acceptable under the following conditions:

1. Where the natural soils and the fill material meet the evaluation criteria as described in Section III of this policy;
2. Where the quantity and method of fill application is described;
3. Where the natural slope does not exceed 12 percent;
4. Where site investigations by a geologist, soil scientist, or registered civil engineer demonstrate that placement of fill will not aggravate slope stability or significantly alter drainage patterns or natural water courses. The investigations are to be included in a report which contains engineered plans as well as a specific evaluation of the suitability of the system to accept wastewater and protect water quality.

Leachfield sizing shall be based on the most limiting soil type within the filled area.

Leachlines for wastewater disposal shall be placed entirely within natural soils. Fill material shall not be used to create a basal area for alternative systems or mounds.

Local agencies shall provide specific criteria for the use of fill material which are compatible with the provisions of this policy.

G. Water Saving Devices

The use of water-saving devices may be incorporated into the on-site system design where maintenance of such devices is provided by a responsible entity.

Regional Water Board waste discharge regulation of on-site disposal systems may specify the use of water conservation.

H. Alternative Systems

1. Mounds

Where site conditions are determined to be suitable, use of mounds for wastewater disposal may be considered. The mound design shall be based on the Design and Construction Manual for Wisconsin Mounds, Small Scale Wastewater Management Project, University of Wisconsin (January 1990). Mound systems shall be subject to a program of maintenance provided by a legally responsible entity.

2. Pit Privies

Pit privies may be utilized for sewage disposal on sites which meet the criteria contained in Section III of this policy in rural areas which are designated by the local Health Officer for such use. In addition, the site must contain sufficient area for wastewater disposal by means of the septic tank/leachfield and/or seepage pit as described in this policy.

3. Other proposals for alternative systems shall be evaluated jointly by the local regulatory agency and Regional Water Board staff on a case by case basis.

4. IMPLEMENTATION PLANS

I. Cumulative Effects

Potential cumulative effects on ground and surface waters shall be evaluated and considered in the Regional Water Board's review of subdivision developments and other facilities utilizing on-site sewage disposal. The guidelines contained in the Final Report, Assessment of Cumulative Impacts of Individual Waste Treatment and Disposal Systems, RAMLIT Associates (February, 1982, or other guidelines approved by the Regional Water Board, shall be utilized for such purposes.

J. Septage Disposal

The location of septage disposal sites and the methodology for septage disposal shall as a minimum comply with the California Code of Regulations, Title 23, Division 3, Chapter 15 .

V. MAINTENANCE RESPONSIBILITIES

Maintenance, monitoring, and repair of individual waste treatment and disposal systems shall be the responsibility of:

1. The individual property owner; or
2. A legally responsible entity of dischargers empowered to carry out such functions. That legally responsible entity shall be a public agency, unless demonstration is made to the Regional Water Board that an existing public agency is unavailable and formation of a new public agency is unreasonable. If such a demonstration is made, a private entity must be established with adequate financial, legal, and institutional resources to assume responsibility for waste discharge.

For subdivision developments where waste discharge requirements are prescribed by the Regional Water Board, the existence or formation of a legally responsible entity of dischargers shall be required.

For specific geographical areas determined by the county Health Officer or Regional Water Board to be resulting in actual or threatened health hazards or water quality impairment from the use of individual waste treatment and disposal systems, the formation

of a legally responsible entity of dischargers may be considered in lieu of designation by the Regional Water Board as a "Waiver Prohibition Area".

VI. ABATEMENT

Abatement of failing individual waste treatment and disposal systems shall be obtained in accordance with local agency codes and procedures. When such remedies are ineffective and for systems subject to waste discharge requirements, abatement shall be obtained through Regional Water Board enforcement action.

Abatement of failing systems shall include short-term mitigation and permanent corrective measures. At a minimum, short-term mitigation shall include reduction of effluent flows and the posting of areas subject to the surfacing of inadequately treated sewage effluent.

VII. WAIVER PROHIBITION AREAS

Surveys conducted by specific county health departments with the assistance of the Regional Water Board staff indicate that discharges from septic tanks in specific areas are resulting in health hazards and water quality impairment. In accordance with the provisions of this policy, the Regional Water Board hereby prohibits the discharge of wastes from new septic tanks in the Jacoby Creek and Old Arcata Road areas in Humboldt County unless all provisions of the above policy are met without waiver.

(Note: This waiver prohibition exists by a prior Regional Water Board Order. The map has not been reproduced here in the interest of brevity.)

VIII. INDIVIDUAL SYSTEM PROHIBITIONS

In order to achieve water quality objectives, protect present and future beneficial water uses, protect public health and prevent nuisance, discharge of waste from new individual disposal systems may be prohibited forthwith and discharge of waste from existing individual disposal systems may be prohibited in defined areas.

4. IMPLEMENTATION PLANS

The Regional Water Board may grant an exemption to the prohibition for:

1. New individual disposal systems after presentation of geologic and hydrologic evidence by the proposed discharger that such systems will not individually or collectively result in a pollution or a nuisance; and
2. Existing individual disposal systems if it finds that the continued operation of such systems in a particular area will not individually or collectively directly or indirectly affect water quality adversely.

In accordance with the provisions of this policy, the Regional Water Board hereby prohibits the discharge of wastes from individual disposal systems in portions of the Larkfield area in Sonoma County, as described in Regional Water Board Resolution No. 83-3.

The Regional Water Board, in accordance with the provisions of this policy, hereby prohibits the discharge of wastes from new individual disposal systems forthwith, and from existing individual systems after October 1, 1988, in the unincorporated Willowside Estates area in Sonoma County as described in Resolution No. 87-59.

(Note: The maps have not been reproduced here in the interest of brevity.)

IX. EDUCATION AND TRAINING

Informational bulletins concerning construction, use, maintenance, and repair of individual waste treatment and disposal system shall be made available for public education by local regulatory agencies.

Professional training concerning site evaluations for subsurface effluent disposal shall be conducted periodically by Regional Water Board staff.

X. IMPLEMENTATION

1. Local agencies, shall, as necessary, revise existing sewage disposal ordinances to be compatible with the provisions of this policy. The

Regional Water Board shall be notified by local agencies of the revisions.

2. Local agencies shall submit for Regional Water Board approval a report describing:
 - a. The current program and methods for disposing of septic tank pumpage; and
 - b. Plans for meeting future septage disposal needs.
3. Proposals for on-site waste treatment and disposal systems shall be processed as follows:

- a. Processed entirely by the local regulatory agency:
 - i. Systems to serve a single dwelling unit within a recorded land development;
 - ii. Systems for less than 1,500 gpd domestic waste flows from commercial/industrial establishments;
 - iii. Land developments consisting of four or fewer parcels;
 - iv. Dwellings involving four or fewer family units.

The Regional Water Board shall be notified of waivers granted for any of the above.

- b. Reviewed by the Regional Water Board for possible establishment of waste discharge requirements:
 - i. Land developments consisting of five or more parcels;
 - ii. Dwellings involving five or more family units;
 - iii. Systems for commercial/industrial establishments with domestic waste flows equal to or greater than 1,500 gpd.
 - iv. All systems proposed for new construction or repairs on federal lands.

4. IMPLEMENTATION PLANS

- c. The Regional Water Board shall retain jurisdiction over any individual waste treatment and disposal systems which may in its judgment result in water pollution, nuisance and/or health hazards.
4. The Regional Water Board and county Health Officer shall develop working agreements concerning procedures and guidelines to be followed in the issuance of waivers as provided by this policy. The Executive Officer shall report annually to the Regional Water Board on the adequacy of waiver procedures through the Region.
5. The Regional Water Board shall, as necessary, request of each county Health Officer in the Region an identification of geographical areas that may qualify for establishment of:
 - a. On-site wastewater management district,
 - b. Waiver prohibition areas, or
 - c. Individual system prohibitions.

Designation of such areas by the Regional Water Board shall be made formal by incorporation into this policy.
6. Site evaluations in accordance with this policy shall be performed by individuals who by virtue of their education, training, and experience, are qualified to examine and assess soil, geologic, and hydrologic properties as related to subsurface effluent disposal. Credentials required of such individuals shall be specified by local regulatory agencies and shall include, as a minimum, education, training, and experience as geologist, soil scientist, registered civil engineer, or registered sanitarian.
7. Laboratory analysis of soils shall be conducted at commercial soils testing laboratories, or at other firms or establishments which can demonstrate to the satisfaction of the Regional Water Board the necessary equipment and personnel capabilities for performing the required tests. Procedures for laboratory analysis shall be provided by the Regional Water Board. Examination of soil testing

capabilities shall be conducted by the Regional Water Board according to the demand.

8. Alternative systems shall be evaluated as follows:
 - a. The Regional Water Board shall, as necessary, prepare a written report which summarizes the progress and findings of the Alternative Systems within the Region.
 - b. The local regulatory agency shall prepare a written report following the construction season which describes the number of mounds permitted and the operational status of the mound systems within its jurisdiction.

The Regional Water Board shall prepare annually a report which summarizes the status of mound systems within the North Coast Region.

- c. The Regional Water Board shall maintain a literature and information file which pertains to alternative systems.
9. The Regional Water Board shall maintain a literature and information file which pertains to water conservation.
10. The local regulatory agencies shall, as necessary, establish a time schedule for compliance of septage disposal sites to be compatible with the provisions of this policy.

XI. DEFINITIONS

The following definitions apply to this policy.

Alternative System. Any individual system that does not include a standard septic tank or an NSF or IAPMO certified device for treatment, or does not include standard leaching trenches or a seepage pit for effluent disposal, which has been demonstrated to function in such a manner as to protect water quality and preclude health hazards and nuisance conditions.

Bedrock. Solid rock, which may have fractures, that lies beneath soils and other unconsolidated material.

4. IMPLEMENTATION PLANS

Bedrock may be exposed at the surface or have an overburden several hundred feet thick.

Bulk Density. The mass of dry soil per unit bulk volume. The bulk volume is determined before drying to a constant weight of 105°.

Coarse Fragments. Rock or mineral particles greater than 2.0 mm in diameter.

Conventional On-Site Waste Treatment and Disposal System. Any system using a standard septic tank for treatment and standard leaching trenches or seepage pit for effluent disposal.

Cumulative Effects. The persistent and/or increasing effect of individual waste treatment and disposal systems resulting from the density of such discharges in relation to the assimilative capacity of the ground environment. Examples include salt or nitrate additions to groundwater, nutrient enrichment of surface water, and hydraulic interference with groundwater and between adjacent systems.

Cut Bank. A man-made excavation of the natural terrain in excess of three feet.

Dual Leachfield System. An effluent disposal system consisting of two complete standard leachfields connected by an accessible diversion valve and intended for alternating use on an annual or semiannual basis.

Entity of Dischargers. A public agency, or a party which can demonstrate to the Regional Water Board comparable, legal and financial authority and responsibility, for the purpose of monitoring, inspecting, and maintaining individual waste treatment and disposal systems.

Ephemeral Stream. Any observable water course that flows only in direct response to precipitation. It receives no water from springs and no long-continued supply from melting snow or other surface source. Its stream channel is at all times above the local water table. Any water course that does not meet this definition is to be considered a perennial stream for the purposes of this policy.

Failure. The ineffective treatment and disposal of waste resulting in the surfacing of sewage effluent and/or the degradation of ground and surface water quality.

Greywater. All waters generated in the household which do not contain toilet wastes.

Groundwater. Any subsurface body of water which is beneficially used or is usable. It includes perched water if such water is used or usable, or is hydraulically continuous with used or usable water.

Hardpan. An irreversibly hardened soil layer caused by the cementation of soil particles. The cementing agent may be silica, calcium carbonate, iron, or organic matter.

Impermeable Soil Layer. Any layer of soil having a percolation rate slower than 120 MPI or a Zone 4 Soil Texture according to Figure 4-I of this policy.

Incompatible Use. Any activity or land uses that would preclude or damage an area for future use as an effluent disposal site. Includes the construction of buildings, roads or other permanent structures and activities that may result in the permanent compaction or removal of existing soil.

Limiting Soil Layer. The portion of the soil profile that because of percolation characteristics, most restricts the successful operation of a leachfield.

Local Regulatory Agency. Any agency having authority as provided by county or city ordinances to control approval, installation, and use of individual waste treatment and disposal systems. May include county/city health department, building departments, or department of public works.

Mottles. Irregular spots of different colors that vary in number and size. Mottling in soils usually indicates poor aeration and lack of drainage.

On-Site Wastewater Disposal Zone. An area designated for operation and maintenance of individual waste treatment and disposal systems by a public agency entrusted with powers in accordance with the provisions of Chapter 3, Part 2, Division 6, of the State Health and Safety Code.

Perched Water. A subsurface body of water separated from the main groundwater body by a relatively impermeable stratum above the main groundwater body.

Perennial Stream. Any stretch of a stream that can be expected to flow continuously or seasonally. They are generally fed in part by springs.

Saturated Soil. The condition of soil when all available pore space is occupied by water and the soil is unable to accept additional moisture. In fine textured soils a free water surface may not be apparent. The extent of saturated soil conditions can be estimated by the extent of soil mottling.

Soil. The unconsolidated material on the surface of the earth that exhibits properties and characteristics that are a product of the combined factors of parent material, climate, living organisms, topography, and time.

Soil Depth. The combined thickness of adjacent soil layers that are suitable for effluent filtration. Soil depth is measured vertically to bedrock, hardpan, impermeable soil layer, or saturated soil.

Soil Horizon or Layer. A layer of soil approximately parallel to the land surface and differing from adjacent (underlying or overlying) layers in some property or characteristic. Differences include, but are not limited to, color, texture, pH, structure, and porosity.

Soil Texture (United States Department of Agriculture (USDA)). The relative amounts of sand, silt, and clay as defined by the classes of the soil textural triangle. Textural classes may be modified when coarse fragments are present in sufficient number, i.e., gravelly sandy loam, cobbled clay, etc.

Standard Leaching Trenches. Leaching trenches designed in accordance with the United States Public Health Service Manual of Septic Tank Practice or as specified as standard practice in local agency regulations.

Unstable Landform. An area which shows evidence of mass downslope movement such as debris flow, landslides, rockfills, and hummocky hillslopes with undrained depressions upslope.

Unstable landforms may exhibit slip surfaces roughly parallel to the hillside; landslide scars and curving debris ridges; fences, trees, and telephone poles which appear tilted; or tree trunks which bend uniformly as they enter the ground. Active sand dunes are unstable land forms.

POLICY ON DISPOSAL OF SOLID WASTES

Solid waste is discarded to land throughout the North Coast Region. Solid waste can adversely affect water quality through (1) direct contact with receiving waters, (2) production of leachate which can subsequently commingle with receiving waters, and (3) the production of carbon dioxide which can subsequently dissolve in receiving waters. The resulting adverse effects on water quality may include: bacterial contamination, toxicity, tastes and odors, oxygen depletion, discoloration, turbidity, and increases in mineral and organic compound concentrations.

The Regional Water Board's solid waste program focuses on the protection of water quality by implementing the following regulations, laws, and policies:

- 1) California Code of Regulations, Title 23, Division 3, Chapter 15, Discharges of Waste to Land;
- 2) The mandated tasks of the solid waste assessment testing (SWAT) program carried out pursuant to Section 13273 of the Water Code;
- 3) The federal regulations for municipal landfills under the Resource Conservation and Recovery Act (RCRA), Subtitle D, (Title 40, Code of Federal Regulations, Part 258 (40CFR258));
- 4) The State Water Board's Policy for Water Quality Control for Regulation of Discharges of Municipal Solid Waste (Resolution No. 93-62).

The laws and regulations governing the discharges of solid wastes have been revised and strengthened in the last few years.

The Regional Water Board policy on disposal of solid waste is to require the orderly implementation of

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Chapter 15 requirements for all activities which constitute a discharge of waste to land and the application of federal Subtitle D regulations for municipal landfills.

Chapter 15 of the California Code of Regulations provides the overriding framework for solid waste regulation in California. These regulations provide criteria for classifying wastes according to their potential to affect water quality, and establish appropriate siting, design, and containment standards and corrective actions for each waste category. Chapter 15 also specifies monitoring requirements for discharges of waste to land and describes the documentation that a discharger must submit to allow the Regional Water Board to develop appropriate waste discharge requirements for the discharge. For example, waste discharge requirements for a typical municipal landfill contain provisions for the siting, design, construction, water quality monitoring, closure, types of waste to be discharged, and financial responsibility requirements.

On October 9, 1991, the U.S. Environmental Protection Agency promulgated regulations pursuant to Subtitle D of the Resource Conservation and Recovery Act, that apply, in California, to dischargers who own and operate landfills which accept municipal solid waste on or after October 9, 1991. The majority of the federal regulations became effective on October 9, 1993. The U.S. EPA has identified several areas of Chapter 15 which are not adequate to ensure compliance with certain provisions of the federal regulations. To ensure adequate compliance, the State Water Board adopted the "Policy for Water Quality Control" (Resolution 93-62) on June 17, 1993. The Policy directs the Regional Water Boards to henceforth implement in waste discharge requirements for discharges at municipal solid waste landfills, both the Chapter 15 regulations and those applicable provisions of the federal regulations that are necessary to protect water quality. The Regional Water Boards shall revise existing waste discharge requirements to accomplish this by October 9, 1993.

The Regional Water Board continues to implement the SWAT program as resources become available. The primary goal of the SWAT program is to determine if disposal sites are discharging hazardous wastes into surface waters or groundwaters. The California Integrated Waste Management Board (CIWMB) is

currently providing funding to the State and Regional Water Boards to work on Ranks 1 through 5. These were the sites which were perceived to pose the greatest threat to water quality. Work on high priority SWAT sites in the North Coast Region is expected to be completed in 1994.

Any additional work required at disposal sites in order to evaluate the threat or impact on beneficial uses of waters will be addressed through the implementation of Chapter 15 requirements.

In carrying out its mandate to protect water quality and regulate solid waste, the Regional Water Board has significant interaction with the CIWMB permitting, compliance, closure, and remediation programs. The CIWMB is the lead agency for nonhazardous waste management in California. The Regional Water Board also interacts with the local enforcement agencies, which enforce the requirements of the CIWMB and issue solid waste facility permits.

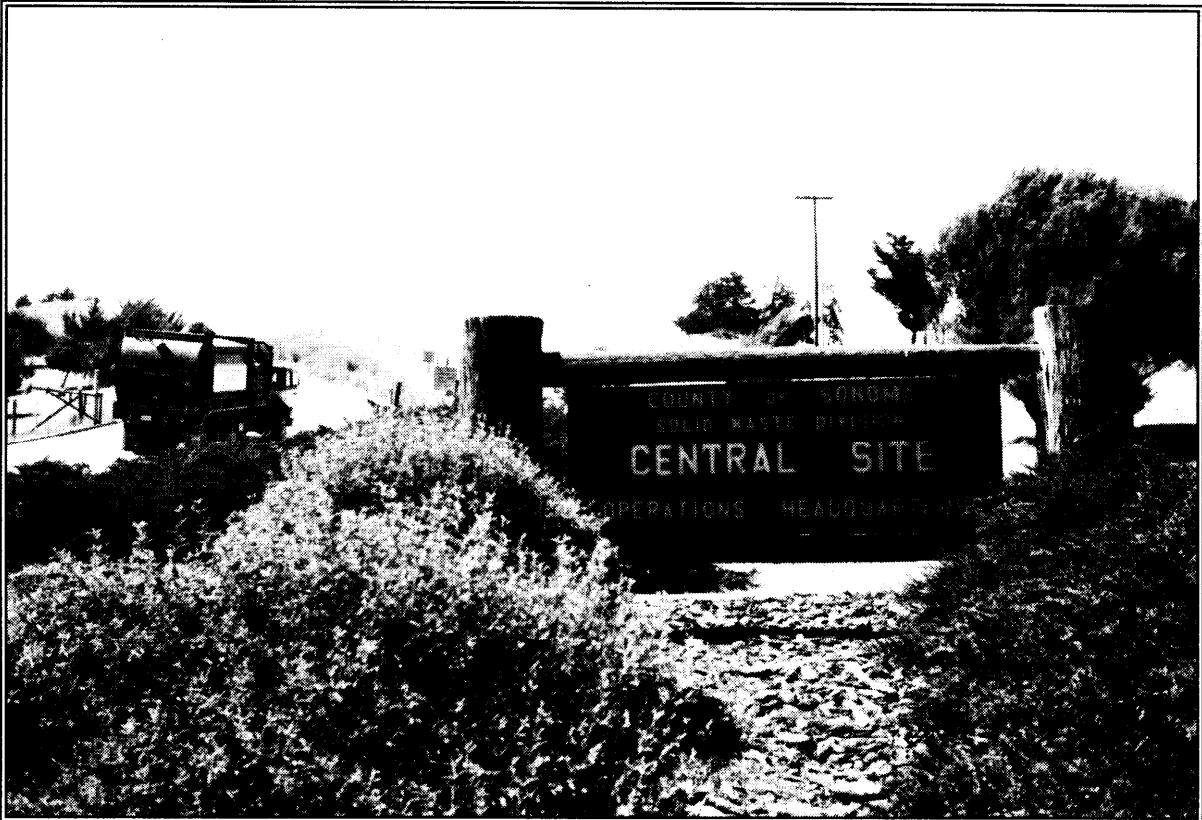
This policy describes the collaborative approach to the management of solid waste as required by federal and state regulations and policies. Implementation of this policy is necessary to protect beneficial uses of surface and ground waters in the North Coast Region.

POLICY FOR AGRICULTURAL WASTEWATER MANAGEMENT

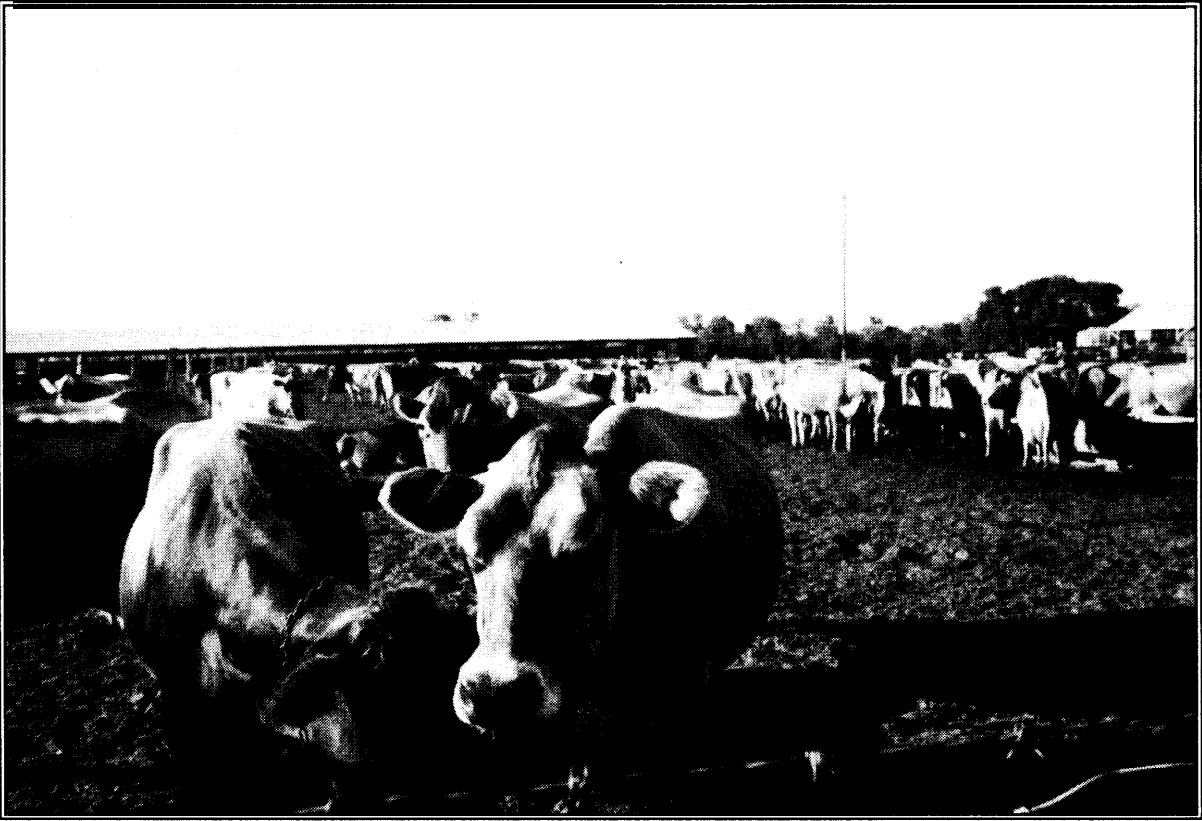
The regulation of wastewater resulting from confined animal facilities is described in the California Code of Regulations, Title 23, Division 3, Chapter 15.

In addition, the 1972 Amendments to Public Law 92-500 directed the U.S. Environmental Protection Agency to set up a permit system for all dischargers. The authority to administer the permit program was transferred to the State of California for waters within the State. Currently, federal regulations require permits only for point source surface water discharges from the following agricultural operations:

1. Feed lots with 1,000 or more slaughter steers and heifers.
2. Dairies with 700 head or more, including milkers, pregnant heifers, and dry mature cows, but not calves.



Entrance to Sonoma County Central Solid Waste Disposal Site, 1994 (C. Goodwin)



Sonoma County dairy, 1994 (C. Goodwin)

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3. Swine facilities with 2,500 or more 55-pound swine.
4. Sheep feedlots with 10,000 head or more.
5. Turkey lots with 55,000 birds unless the facilities are covered and dry.
6. Laying hens and broilers, with continuous flow watering and 100,000 or more birds.
7. Laying hens and broilers with liquid manure handling systems and 30,000 or more birds.
8. Irrigation return flow from 3,000 or more acres of land when conveyed to navigable waters from one or more point sources.

However, the state may prescribe waste discharge requirements for any point source discharger regardless of size.

ACTION PLAN FOR REGULATION OF MINING WASTES

Several hundred existing and abandoned mines are located within the north coastal area. Many of the mines in the Klamath River Basin are being reworked for gold as a result of rising world gold prices. Improper operation and in some cases poor location have resulted in turbidity and sediment discharges which adversely affect beneficial uses.

A number of mining operations, principally sand and gravel extraction, occur in the watersheds of the North Coastal Basin. In addition to sand and gravel, numerous other commodities such as manganese, copper, mercury, and crushed rock have been mined. The major potential problems relating to these operations are increased turbidity resulting from wash-off or discharge of tailings, and the toxic threat of heavy metals to aquatic organisms.

The regulation of mining waste is described in the California Code of Regulations, Title 23, Division 3, Chapter 15. To implement the Code and to protect the quality of waters from adverse effects resulting from mining waste discharges, the Regional Water Board shall (1) adopt waste discharge requirements on operations which could potentially adversely affect

water quality in the Region, (2) immediately issue cleanup and abatement orders to mining operations which are potentially or actually adversely affecting water quality, (3) immediately begin documentation of waste discharges for purposes of taking enforcement actions if necessary, (4) issue enforcement orders when appropriate, and (5) seek civil penalties and/or refer violations of cleanup and abatement orders and cease and desist orders to the Attorney General.

ACTION PLAN FOR ACCIDENTAL SPILLS AND CONTINGENCIES

On July 24, 1974, the Regional Water Board adopted Resolution No. 74-I 51 entitled "Contingency Planning and Notification Requirements for Accidental Spills and Discharges". The Order was formulated and adopted by the Regional Water Board when it became apparent that specific waste dischargers were unprepared for emergency situations.

The Order requires entities which discharge, convey, supply store, or otherwise manage wastes to (1) formulate and submit a contingency plan to the Regional Water Board, (2) immediately report to the Board by telephone any accidental discharge, (3) begin immediate cleanup and abatement activities, and (4) confirm the telephone notification in writing within two weeks of the incident. The written notification is to include the reason for the discharge, the duration and the volume of the discharge, steps taken to correct the problem, and steps taken to prevent the problem from recurring. In the event of a spill or discharge emergency, the Regional Water Board acts as a liaison with the discharger and other affected agencies and persons to provide assistance in clean-up and abatement activities.

Section 25180.7 of the Health and Safety Code requires designated employees of the Regional Water Board to inform local agencies of any illegal discharge or threatened illegal discharge of a hazardous waste.

Section 13271 (a) of the Porter-Cologne Water Quality Control Act requires immediate notification of illegal and accidental discharges of sewage or hazardous substances to the Office of Emergency Services and the Regional Water Board, and further requires that the Regional Water Board: 1) list all such notifications

at its next business meeting, and 2) notify appropriate local health officials.

POLICY ON THE REGULATION OF FISH HATCHERIES, FISH REARING FACILITIES, AND AQUACULTURE OPERATIONS

Fish hatcheries, fish rearing facilities, and aquaculture operations, if regulated, may enhance beneficial water uses. These operations characteristically require the utilization of large quantities of water on a continuous basis. Most of the water is used to satisfy the flow-through requirements of the fish, and is returned to the receiving waters without alteration of beneficial uses. Wastes generated during the care and feeding of fish may include suspended and settleable solids, salt (sodium chloride), antibiotics, anesthetics, and disease control agents. The following criteria shall apply to the discharge from fish hatcheries, rearing facilities, and aquaculture operations:

1. The discharge shall not adversely impact the recognized existing and potential beneficial uses of the receiving waters.
2. The discharge of waste resulting from cleaning activities shall be prohibited.
3. The discharge of detectable levels of chemicals used for the treatment and control of disease, other than salt (NaCl) shall be prohibited.
4. The discharge will be subject to review by the Regional Water Board for possible issuance of Waste Discharge Requirements/NPDES permit.
5. The Regional Water Board may waive Waste Discharge Requirements for fish hatcheries, fish rearing, and aquaculture facilities, provided that the discharge complies with applicable sections of the Water Quality Control Plan for the North Coast Region and satisfies the conditions for waiver which are described in Regional Water Board Resolution No. 87-I 13 (Appendix Section of this Plan).
6. The public interest is served by the fish hatchery, rearing facility, or aquaculture operation.

POLICY ON POWERPLANT COOLING

Utilization of fresh waters of the basin for powerplant cooling poses both quantity and quality problems. Approximately 25,000 acre-feet of water per year are required for cooling purposes for each 1,000 megawatts of installed generating capacity if evaporative cooling towers are used. Losses of cooling water through evaporation would be approximately 22,000 acre-feet per each 1,000 megawatts of generating capacity. Such losses for powerplant cooling could seriously affect the availability of water for other consumptive uses, and may impair the beneficial use of the water for such nonconsumptive uses as esthetic, fish and wildlife habitat, and recreation purposes.

The utilization of fresh inland waters of the Region for powerplant cooling is regulated by the State Water Resources Control Board's Thermal Plan, (Appendix Section of this Plan). In addition, the Regional Water Board can adopt waste discharge requirements on powerplant cooling operations which could potentially adversely affect water quality in the Region.

POLICY ON RESIDUAL WASTES

Residual wastes such as raw sludge from sewage treatment plants shall be disposed of only at sites approved by the Regional Water Board. In approving such sites the Board shall be guided by the regulations contained in the California Code of Regulations, Title 23, Division 3, Chapter 15.

NONPOINT SOURCE MEASURES

California has achieved considerable improvements in controlling point source discharges, such as wastewater from municipalities and industrial facilities. It is now recognized that in many areas nonpoint source discharges, such as stormwater runoff, are the principal sources of contaminant discharges to surface water and groundwater.

In contrast to point sources, which discharge wastewater of predictable quantity and quality at a discrete point (usually at the end of a pipe), nonpoint source discharges are diffuse in origin and variable in quality. Management of nonpoint source discharges

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is in many ways more difficult to achieve, since it requires an array of control techniques customized to local watershed conditions.

Section 319 of the 1987 amendments to the federal Clean Water Act establishes the framework for nonpoint source activities. Section 319 requires each state to develop nonpoint source management plans and to conduct an assessment of the impact nonpoint sources have on the State's waterbodies. In response to these requirements, the State Water Board adopted the Nonpoint Source Management Plan in 1988 and the Water Quality Assessment in 1990.

This section presents the actions intended to meet water quality objectives and protect beneficial uses with regards to nonpoint source discharges. The following measures shall be taken with respect to actual and potential nonpoint sources of water quality degradation. The action plans contained in this section are consistent with the State Water Board's Nonpoint Source Management Plan (see Section 5). The action plans emphasize cooperation with local governments and other agencies to promote the voluntary implementation of best management practices and remedial projects in a three-tiered approach: 1) voluntary implementation, 2) regulatory-based encouragement, and 3) effluent limitations.

ACTION PLAN FOR LOGGING, CONSTRUCTION, AND ASSOCIATED ACTIVITIES

The following waste discharge prohibitions pertain to logging, construction, and associated activities in the North Coast Region.

1. The discharge of soil, silt, bark, slash, sawdust, or other organic and earthen material from any logging, construction, or associated activity of whatever nature into any stream or watercourse in the basin in quantities deleterious to fish, wildlife, or other beneficial uses is prohibited.
2. The placing or disposal of soil, silt, bark, slash, sawdust, or other organic and earthen material from any logging, construction, or associated activity of whatever nature at locations where such material could pass into any stream or watercourse in the basin in quantities which could

be deleterious to fish, wildlife, or other beneficial uses is prohibited.

Similarly, the guidelines for implementation of the prohibitions have proven most helpful to the Regional Water Board and its staff as well as to potential waste dischargers.⁵ They reflect state regulations, objectives, and procedures, and are as follows:

GUIDELINES FOR IMPLEMENTATION AND ENFORCEMENT OF DISCHARGE PROHIBITIONS RELATING TO LOGGING, CONSTRUCTION, OR ASSOCIATED ACTIVITIES

These guidelines, which are hereby incorporated into the Water Quality Control Plan for the North Coast Region (Basin Plan), have been developed with the objective of (1) defining the criteria by which the Regional Water Board will consider that violations of the prohibitions have occurred or threaten to occur; (2) instructing the Regional Water Board staff of procedures and actions they will take in implementing the prohibitions; (3) advising all potential dischargers of the scope and intent of the prohibitions; and (4) advising all interested parties that it is the intent of this Regional Water Board to carry out its responsibilities in this matter in a reasonable and effective manner.

Criteria

- A. Section 3 of the Basin Plan contains water quality objectives, which specify limitations on certain water quality parameters that are not to be exceeded as a result of waste discharges. Accordingly, the Executive Officer of the Regional Water Board is directed to investigate and report to the Regional Water Board evidence of violations of the water quality objectives contained in the Basin Plan which result or threaten to result in unreasonable effects on the beneficial uses of the waters of the Region. When such

⁵ Since 1984 these guidelines have been applied to watershed disruptions which might be caused by small hydropower development projects, and the prohibitions are recognized by project sponsors as the water quality protection standard for these activities.

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investigation reveals that such violations are occurring or are threatened due to the discharge or threatened discharge of waste, the Executive Officer shall take all appropriate actions as directed by the Enforcement section of these guidelines.

The following water quality objectives, from Section 3 of the Basin Plan, are considered of particular importance in protecting beneficial uses from unreasonable effect due to discharges from logging, construction, or associated activities:

1. Waters shall be free of coloration that causes nuisance or adversely affects beneficial uses.
2. Turbidity shall not be increased more than 20 percent above naturally occurring background levels.
3. Waters shall not contain taste or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, that cause nuisance or adversely affect the beneficial uses.
4. Waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.
5. Waters shall not contain substances in concentrations that result in deposition of material that causes nuisance or adversely affect beneficial uses.
6. 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.
7. 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.
8. Waters shall not contain biostimulatory substances in concentrations that promote

aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

B. Definitions

1. Definitions for the following terms in these guidelines, are provided in Section 13050 of the Porter-Cologne Act:
 - a. **“Waste”** includes sewage and any and all other 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 such waste placed within containers of whatever nature prior to, and for purposes of, disposal.
 - b. **“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 of preserves.
 - c. **“Water quality objectives”** means 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.
 - d. **“Water quality control”** means the regulation of any activity or factor which may affect the quality of the waters of the State and includes the prevention and correction of water pollution and nuisance.
 - e. **“Water quality control plan”** consists of a designation or establishment for the waters within a specified area of (1) beneficial uses to be protected,

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(2) water quality objectives, and (3) a program of implementation needed for achieving water quality objectives.

f. **“Pollution”** means an alteration of the quality of the waters of the State by waste to a degree which unreasonably affects: (1) such waters for beneficial uses, or (2) facilities which serve such beneficial uses. “Pollution” may include “contamination”.

2. The definition for “stream or watercourse” as those terms are used in the waste discharge prohibitions relative to logging and construction activities shall be interpreted by the Regional Water Board to mean the following: Natural watercourse as designated by a solid line or dash and three dots symbol shown in blue on the largest scale United States Geological Survey Topographic Map most recently published.

C. The Regional Water Board acknowledges that it does not have jurisdiction for direct enforcement of the rules and regulations of other local, state, or federal agencies. However, the Regional Water Board directs the Executive Officer to investigate the violation or threatened violation of those rules and regulations of other agencies which have been adopted to protect the quality of the waters in the Region. The violation of the following rules, regulations, or provisions may be considered a threatened violation of the waste discharge prohibitions and accordingly the Executive Officer shall take appropriate action as directed by the Enforcement section of these guidelines.

1. A violation of current rules for forest practices relating to erosion control or water quality protection in any logging or related activity being conducted pursuant to regulations administered by the California Department of Forestry and Fire Protection.
2. A violation of the Best Management Practices designated in the U.S. Forest Service document entitled “Water Quality

Management for National Forest System Lands in California”, dated April, 1979.

3. A violation of the water pollution control provisions of the current California Standard Specifications in any highway project being constructed under contract entered into by the Department of Transportation, State Department of Public Works.
4. A violation of Sections 1601, 1602, 1603, 5650, and 5948 of the California Fish and Game Code when such violation involves activities or discharges enumerated in the aforesaid prohibition.

Investigative and Coordinating Activities

A. The Regional Water Board directs the Executive Officer to implement the following investigative activities. It is intended that, wherever possible, existing state reporting procedures and requirements will be utilized to minimize additional administrative burden on prospective waste dischargers.

1. The staff of the Regional Water Board is directed to investigate and review, on a continuing basis, logging operations, road building, and related construction activities within the Region to determine the effect, or potential effect, of such activities on water quality.
2. The staff shall consult with any individual associated with logging operations, road building or construction activities having an effect on the quality of waters in the Region, and shall investigate such activities when requested to do so.
3. The staff shall obtain from the California Department of Forestry and Fire Protection, the Board of Forestry, and the Department of Fish and Game copies of all notices received from timber operations, timber harvesting plans, and stream alteration activities within the Region.
4. The staff shall obtain from the Department of Transportation the names of all contractors

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performing work that could result in violation of the discharge prohibitions. The Forest Service, USDA and other federal agencies will be requested to furnish the Regional Water Board, as early as feasible, with the names, addresses, and location of anticipated operations of all private contractors who will be engaged in logging, construction or related activities on lands in the region which are under their control. In connection with these contracts, request will be made for copies of any special conditions or regulations for the control of erosion or protection of water quality.

5. Upon receipt and review of such information, the staff will transmit to the permittee or contractor copies of the discharge prohibitions and provisions as contained in the Regional Basin Plans and copies of this or subsequent implementation statements on this subject issued by the Regional Water Board.
6. The staff will request that the California Department of Forestry and Fire Protection notify the Regional Water Board's office of citations or of other notices issued by Forestry personnel for violation of erosion control sections of the Forest Practice Rules. The staff will request that the Department of Fish and Game advise the Regional Water Board's office of all violations of its code Sections 5650, 1601, 1602, and 5948 resulting from logging, road building, or associated construction activities. The staff will request that the Department of Transportation notify the Regional Water Board office of all violations of the water pollution control provisions of the California Standard Specifications and will request that the Forest Service, USDA, and other federal agencies, notify the Regional Water Board's office of all violations of rules and regulations for the control of erosion or protection of water quality.
7. The staff will notify the State Department of Fish and Game, the California Department of Forestry and Fire Protection, the State Department of Transportation, the Forest Service, USDA, and the violating timber

operator and/or land owner, of all violations of the discharge prohibitions and of all actions taken by the Regional Water Board with regard to such violations or threatened violations.

8. The staff may request additional information from any individual or firm engaged in timber operations, road building, or related construction activity in accordance with Water Code Section 13267(b) as may be necessary to implement their investigations and carry out the policy of this Regional Water Board.
- B. The Regional Water Board considers that implementation of the discharge prohibitions relating to logging, construction, or associated activities can provide appropriate protection to waters of the region from these sources of waste and, in the great majority of their activities, will waive the need for reports of waste discharge and waste discharge requirements. However, where investigations indicate that the beneficial uses of water may be adversely affected by waste discharges, the staff shall require the submission of Reports of Waste Discharge.

Enforcement Activities

When investigation by the staff reveals that violations as described in the Criteria section of these guidelines are occurring or are threatened due to the discharge or threatened discharge of waste, the actions to be taken by the Executive Officer are as follows:

- A. Cleanup and Abatement Order
1. If the discharge of waste can be cleaned up or its adverse effects abated, a cleanup or abatement order shall be issued to the discharger or other responsible persons.
 2. The order and all relevant information shall be transmitted to the discharger as provided in the Manual of Administrative Procedures. Copies of these materials shall be transmitted concurrently to all Regional Water Board members and all other interested agencies.
 3. The Regional Water Board may hold a public hearing for purposes of making the necessary

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findings under Water Code Section 13350(a) (2) with respect to a cleanup or abatement order or violation of waste discharge prohibition at any regular meeting of the Regional Water Board, or at a special meeting of the Regional Water Board called by the Chairman, on his own motion or at the request of the Executive Officer, or when called by two Regional Water Board members as provided in Water Code Section 13204.

B. Cease and Desist Order

If a cleanup or abatement order would not be the most expeditious means of achieving compliance with the prohibitions, the Executive Officer shall notify the Regional Water Board Chairman of his intention to bring the matter before the Regional Water Board, at either a regular or a special meeting, for consideration of evidence and recommendation that a cease and desist order be issued. The decision by the Executive Officer to recommend a cease and desist order hearing shall be made after consideration of the following factors:

1. The nature of the activity of the discharger.
2. The anticipated length of time the discharger will be carrying on the activity which results or threatens to result in a waste discharge.
3. The potential deleterious and unreasonable effect on beneficial uses of the waters during the time before the Regional Water Board will be able to take action on the violation of the prohibitions.
4. Other relevant factors considered applicable by the Executive Officer as necessary to bring before the Regional Water Board for their consideration and deliberation.

POLICY FOR THE CONTROL OF DISCHARGES OF HERBICIDE WASTES FROM SILVICULTURAL APPLICATIONS

It is the policy of this Regional Water Board to assure that the use and possible discharge of herbicide wastes be controlled to provide all necessary

protection of the beneficial uses of water. Accordingly, the Regional Water Board establishes a program to control the discharge of herbicides to waters of the State within the North Coast Region to protect water quality. It is the policy of this Regional Water Board to determine safe limits for the discharge of pollutants, including herbicides. All limits will be incorporated into the Action Plan as they are determined and self-monitoring programs will be developed and prescribed to assure compliance with all appropriate limits.

ACTION PLAN FOR CONTROL OF DISCHARGES OF HERBICIDE WASTES FROM SILVICULTURAL APPLICATIONS

The Regional Water Board acknowledges that it is not the lead agency in regulating pesticide use in the North Coast; the lead agency is the Department of Food and Agriculture (DFA). However, the Regional Water Board recognizes its obligation in regulating all wastes discharged to water and in protecting water quality. It is not the Regional Water Board's intent to prescribe waste discharge requirements for pesticide applications when the rules, regulations, and guidelines of other agencies adequately protect beneficial water uses. It is not the intent of the Regional Water Board to require the discharger to furnish information that has already been furnished to other agencies. Accordingly, the Executive Officer shall obtain the needed information from other governmental agencies to the maximum extent possible. Therefore, the Regional Water Board directs the Executive Officer to obtain information on proposed aerial herbicide application projects which will provide assurance that the proposed silvicultural herbicide use will protect water quality. Such information includes, but is not limited to, the following:

- a. Topographic map or other map scaled at not less than four inches equals one mile or other scale acceptable to the Executive Officer which clearly delineates the treatment areas and all nearby water courses, wells, ponds, irrigation ditches, or wet areas.
- b. Description of the application method and means employed to avoid discharge to water.

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- c. A water monitoring plan responsive to the need for an “early warning” capability.
- d. A spill contingency and control plan indicating downstream water users and the mechanism to provide “early warning” in the event of substantial water contamination.
- e. This information should be received by the Regional Water Board 45 days in advance of the operation.

The Executive Officer shall consult with the discharger and the lead agencies to mitigate threatened discharges which would violate any section of this Action Plan. Issues unable to be resolved shall be brought before this Regional Water Board for consideration of the need to adopt waste discharge requirements.

The Regional Water Board acknowledges that it does not have jurisdiction for direct enforcement of the rules and regulations of other local, state, or federal agencies. However, the Regional Water Board directs the Executive Officer to investigate the violation or threatened violation of those rules and regulations of other agencies which have been promulgated to protect the quality of the waters of the state within the North Coast Region and to appropriately enforce violations of the Water Code.

The violation of the following rules, regulations, or provisions may be considered a violation of the waste discharge prohibitions in this Action Plan and accordingly the Executive Officer shall take appropriate action.

- 1. A violation of current rules, regulations, or guidelines relating to water quality protection from any silvicultural herbicide application being conducted pursuant to permits issued by the County Agricultural Commissioners.
- 2. A violation of federal or state label requirements relating to water quality protection.
- 3. A violation of current rules, regulations, or guidelines of the DFA relating to water quality protection.

In accordance with this policy, limits have been determined for three herbicides. Accordingly, the following prohibitions apply to waste discharges from herbicide applications of 2,4,5-T, 2,4,5-TP, and 2,4-D:

- 1. There shall be no discharge of 2,4,5-T or 2,4,5-TP to waters of the State within the North Coast Region.
- 2. There shall be no discharge of 2,4-D PGBE ester to waters of the State within the North Coast Region that would cause the concentration of this substance in the receiving waters to exceed an instantaneous value of 40 parts per billion (ppb) acid equivalent or a 24-hour average of 2 ppb acid equivalent.

Monitoring programs will be designed to measure both the maximum instantaneous concentration and a statistically valid 24-hour average concentration of 2,4-D. Sampling locations for monitoring will be selected on the basis of the risk of discharge and the probable presence of beneficial water uses to be protected. Discharge monitoring will occur during and shortly after spraying and with stormwater.

Violations of water quality objectives contained in Chapter 4, particularly the objectives relating to pesticides and toxicity, shall be brought to the immediate attention of the County Agricultural Commissioner. In addition, the California Environmental Quality Act functional equivalent requirements of Section 21080.5 as adopted by the DFA and certified by the Resources Agency on November 1, 1979, require that the County Agricultural Commissioners meet quarterly with the Regional Water Board staff and other agencies concerned with resource protection. These quarterly consultations should develop needed mitigation to prevent violation of waste discharge prohibitions and Basin Plan objectives.

The United States Forest Service has developed Best Management Practices for the application of herbicides and other pesticides on public lands to ensure protection of water quality. Accordingly:

- 1. The North Coast Regional Water Quality Control Board hereby accepts United States Forest Service Practices 5.8-5.14 as Best Management

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Practices (BMPs) for water quality protection from aerial herbicide application on Forest Service lands within the North Coast Region, and recognizes the "Aerial Herbicide Application Handbook" (FSH 2109.21) as a management practice that best protects water quality.

2. Experience gained over the past several years by the United States Forest Service on implementation of these management practices has led the Regional Water Board to conclude that discharges from aerial spray applications can be controlled such that: (1) past or present standards for protection of water quality are not violated, (2) Basin Plan water quality objectives are met, (3) most (99 percent) United States Forest Service spray application monitored result in less than 2 ppb of 2,4-D or similar herbicides being detected in receiving waters.
3. The Basin Plan contains provisions (as specified in the Action Plan above) for adequate descriptions of treatment areas and application practices, monitoring programs, and spill contingency planning that, combined with the implementation of Best Management Practices by the United States Forest Service or other entity, will result in the waiver of issuance of waste discharge requirements (excluding issuance of requirements under No. 4 below).

Adoption of waste discharge requirements are hereby waived as not contrary to the public interest when the United States Forest Service Best Management Practices are implemented, relevant Basin Plan provisions are followed, and water quality is protected.

4. Waste Discharge Requirements shall be issued on a case-by-case basis where the implementation of Best Management Practices proposed for specific projects will be insufficient for protection of water quality.

The State Legislature, Department of Food and Agriculture, and the County Agricultural Commissioners have developed a body of laws, regulations, and permit conditions for the application of herbicides and other pesticides on forest lands to ensure protection of water quality. Accordingly:

1. The North Coast Regional Water Quality Control Board accepts the practices conducted pursuant to the state pesticide regulatory program and the County Agricultural Commissioner regulatory program as Best Management Practices (BMPs) for water quality protection from aerial herbicide application on private lands within the North Coast Region, and recognizes the mitigation measures developed through permit conditions set by the County Agricultural Commissioners as management practices that best protect water quality.
2. Experience gained over the past several years by private forest landowners on implementation of these management practices has led the Regional Water Board to conclude that discharges from aerial spray applications can be controlled such that: (1) past or present standards for protection of water quality are not violated, (2) Basin Plan water quality objectives are met, (3) most (98%) of private landowner spraying applications monitored result in less than 10 ppb of 2,4-D or similar herbicides being detected in receiving waters (92% result in less than 2 ppb.)
3. The Basin Plan (as specified in the Action Plan above) contains provisions for adequate descriptions of treatment areas and application practices, monitoring programs, and spill contingency planning that, combined with the implementation of Best Management Practices by private landowners, will result in the waiver of issuance of waste discharge requirements (excluding issuance of requirements under Number 4 below).

Adoption of waste discharge requirements are hereby waived as not contrary to the public interest when Best Management Practices are implemented, relevant Basin Plan provisions are followed, and water quality is protected.

4. Waste Discharge Requirements shall be issued on a case-by-case basis where the implementation of Best Management Practices proposed for specific projects will be insufficient for protection of water quality.

5. PLANS AND POLICIES

INTRODUCTION

The Regional Water Board is required to implement the provisions of several statewide plans and policies. These are listed below, and full copies are included in the Appendix Section of this Plan, unless otherwise indicated.

STATE WATER BOARD PLANS

Thermal Plan

The "Water Quality Control Plan for the Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California" adopted by the State Water Resources Control Board on May 18, 1972, specifies water quality objectives, effluent quality limits, and discharge prohibitions related to thermal characteristics of interstate waters and waste discharges.

Ocean Plan

The "Water Quality Control Plan for Ocean Waters of California" was adopted by the State Water Board on July 6, 1972 and revised in 1978, 1983, 1988, and 1990. This plan establishes beneficial uses and water quality objectives for waters of the Pacific Ocean adjacent to the California Coast outside of enclosed bays, estuaries, and coastal lagoons. Also, the Ocean Plan prescribes effluent quality requirements and management principles for waste discharges and specifies certain waste discharge prohibitions.

The Ocean Plan also provides that the State Water Board shall designate Areas of Special Biological Significance and requires wastes to be discharged at locations which will assure maintenance of natural water quality conditions in these areas.

Nonpoint Source Management Plan

On November 15, 1988, the State Water Board adopted the Nonpoint Source Management Plan pursuant to Section 319 of the Clean Water Act. This plan establishes the framework for statewide nonpoint source activities. The plan identifies nonpoint source control programs and milestones for their accomplishment. The plan emphasizes cooperation

with local governments and other agencies to promote the voluntary implementation of Best Management Practices and remedial projects in a three-tiered approach: 1) voluntary implementation, 2) regulatory-based encouragement, and 3) effluent limitations. A copy of the Nonpoint Source Management Plan is not included in the Appendix Section of this Plan. A copy of the Nonpoint Source Management Plan may be requested by contacting the North Coast Regional Water Quality Control Board.

STATE WATER BOARD POLICIES

Policy With Respect to Maintaining High Quality Waters in California (Resolution No. 68-16)

On October 28, 1968, the State Water Board adopted Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California". While requiring the continued maintenance of existing high quality waters, the policy provides conditions under which a change in water quality is allowable. A change must:

- be consistent with maximum benefit to the people of the state;
- not unreasonably affect present and anticipated beneficial uses of water; and
- not result in water quality less than that prescribed in water quality control plans or policies.

Sources of Drinking Water Policy (Resolution No. 88-63)

On May 19, 1988, the State Water Board adopted Resolution No. 88-63, a Policy Entitled "Sources of Drinking Water". This policy was set forth to provide full protection of current and potential sources of drinking water as well as realistic standards for the waters of the State. The policy states that all surface waters and ground waters are to be considered suitable or potentially suitable, for municipal or domestic water supply, and should be so designated by the regional water boards, with specific exceptions. The policy affirms the authority of the regional water boards to amend the use designations contained in

5. PLANS AND POLICIES

their basin plans, as long as consistency with all applicable regulations adopted by the U.S. Environmental Protection Agency is maintained.

Bays and Estuaries Policy

The "Water Quality Control Policy for the Enclosed Bays and Estuaries of California" adopted by the State Water Board on May 16, 1974, provides water quality principles and guidelines for the prevention of water quality degradation and to protect the beneficial uses of waters. Decisions by the Regional Water Board are required to be consistent with the provisions of this policy. This policy does not apply to wastes from vessels or land runoff except as specifically indicated for siltation and combined sewer flows.

Power Plant Cooling Policy

The "Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling" was adopted by the State Water Board on June 19, 1975. This policy describes the State Water

Board's position on power plant cooling, specifying that fresh inland waters should be used for cooling only when other alternatives are environmentally undesirable or economically unsound.

Reclamation Policy

On January 6, 1977, the State Water Board adopted Resolution No. 77-1, "Policy with Respect to Water Reclamation in California". This policy requires the regional water boards to conduct reclamation surveys and specifies reclamation actions to be implemented by the State and regional water boards as well as other agencies.

Shredder Waste Disposal Policy

On March 19, 1987, the State Water Board adopted Resolution No. 87-22, "Policy on the Disposal of Shredder Waste". This policy describes specific conditions to be enforced by the Regional Water Board with regards to disposal of mechanically destructed car bodies, old appliances, or other similar castoffs at landfills.

6. SURVEILLANCE AND MONITORING

The effectiveness of a water quality control plan cannot be judged without the information supplied by a strong and systematic surveillance and monitoring program. The overall objectives of an adequate water quality surveillance and monitoring program are:

1. To measure achievement of the plan's water quality objectives.
2. To measure effects of water quality changes on beneficial uses.
3. To measure water quality background conditions and long-term trends.
4. To locate and identify sources of water pollution that pose a threat to the environment.
5. To help relate receiving water quality to mass emissions of pollutants by waste dischargers.
6. To provide data for determining waste discharger compliance with permit conditions.
7. To measure waste loads discharged to a receiving water body and identify the limits of their effect as a necessary step in the development of waste load allocations.
8. To provide documentation to support enforcement of permit conditions required of waste dischargers.
9. To provide data needed to carry on the continuing planning process.
10. To measure the effects of water rights decisions on water quality to guide the State Water Board in its responsibility to regulate unappropriated water for the control of quality.
11. To provide a clearinghouse for water quality data gathered by other agencies and private parties cooperating in the program.
12. To report on water quality conditions as required by federal and state regulations or requested by others.

STATEWIDE MONITORING PROGRAMS

Toxic Substances Monitoring Program

The Toxic Substances Monitoring Program (TSMP) was initiated in 1976 by the State Water Board to provide a uniform statewide approach to the detection and evaluation of toxic substances in organisms found in fresh, estuarine, and marine waters of the State. The California Department of Fish and Game (DFG) carries out the statewide TSMP for the State Water Board under an interagency agreement by collecting and analyzing fish and other aquatic organisms from selected sampling stations. Station selection is based primarily on requests from the regional water boards, but requests from other agencies are also considered. In many instances, the regional water boards request that stations be monitored to meet specific monitoring needs. If no problems are found, or if a problem has been sufficiently studied, that station is dropped to make way for new stations elsewhere. In this way the program can monitor as many locations as possible over time. In addition, a number of stations are sampled on a regular basis to monitor trends or changes in the levels of toxic substances over time.

In the North Coast Region, sampling under TSMP has led to information indicating potential threats to human health and wildlife. Sampling priorities are directed towards areas of immediate concern.

State Mussel Watch Program

The California State Mussel Watch (SMW) Program is a long-term monitoring program administered by the State Water Board. Actual sampling and analysis are performed by the Department of Fish and Game. SMW provides the State Water Board and the six coastal regional water boards with an indication of geographical and temporal (year-to-year) trends in toxic pollutants along the California coast.

Mussels (the common bay mussel, *Mytilus edulis*, and the California mussel, *M. californianus*) have been shown to be efficient bioaccumulators of many toxic substances in their water environment. Further, the sedentary nature of mussels, whether native or transplanted, permits a time integrated sampling of toxic pollutants at one location. The merits of

6. SURVEILLANCE AND MONITORING

employing mussels as water quality indicators are well established in the scientific literature, previous SMW reports, and other scientific publications. The North Coast Region will continue to participate in existing SMW monitoring and the development of freshwater applications.

The North Coast Region has been involved in developing freshwater applications of SMW methodology, using freshwater clams, *Corbicula sp.* The North Coast Region has required that some discharges be monitored using these techniques. There are current plans to expand the use of these organisms as indicators in sensitive areas.

In the North Coast Region sampling under the SMW program has led to the detection and mitigation of controllable releases of toxic substances. Sampling priorities are directed toward areas of immediate concern.

Bay Protection and Toxic Cleanup Program

The Bay Protection and Toxic Cleanup Program (BPTCP) is a statewide program for the investigation of coastal waters. Specific goals of the BPTCP include: (1) protection of existing and future beneficial uses of bay and estuarine waters; (2) identification and characterization of toxic hot spots; (3) planning for the prevention of further pollution and the remediation of existing hot spots; and (4) development and maintenance of a comprehensive information source (database) to provide for future assessment and regulatory efforts, accessible public information, and to facilitate management decisions.

In the North Coast Region, monitoring under BPTCP is directed toward areas of known or potential contamination.

Water Quality Assessment

The Water Quality Assessment (WQA) is a catalog of the state's water bodies and their water quality condition. The WQA identifies the water quality condition as good, intermediate, impaired, or unknown. The data used to categorize water bodies in the WQA are obtained from the various monitoring programs described in this section. All regional water boards adopt their regional WQA at public meetings

and submit them to the State Water Board for inclusion in the state WQA. In addition, for impaired and high priority waters, fact sheets are prepared to provide additional detail. The State Water Board intends the WQA to be updated on a regular basis, generally every two years.

The WQA serves many different purposes. The WQA, a public document, reports the condition of the state's water bodies in a summary format. The lists of impaired water bodies included in the WQA satisfy several Clean Water Act listing requirements.

Water Quality Inventory

The 305(b) Report, also known as the National Water Quality Inventory Report, is a summary of all states' water quality reports compiled by the U.S. Environmental Protection Agency. The report is prepared biennially from information the states are required to submit pursuant to Section 305(b)(1) of the Clean Water Act.

The State Water Board prepares the state report using information taken from the WQA. The state 305(b) Report includes: (a) a description of the water quality of major navigable waters in the state during the preceding years; (b) 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; (c) an analysis of the extent to which elimination of the discharge of pollutants has been achieved; and (d) an estimate of the environmental impact, the economic and social costs necessary to achieve the "no pollutant discharge" objective of the CWA, the economic and social benefits of such achievement, and the date of such achievement; and (e) a description of the nature and extent of nonpoint sources of pollutants and recommendations as to the programs which must be taken to control them, with estimates of cost.

Inland Surface Waters Toxicity Testing Program

This program was started in 1990, the most recent program to be initiated by the State Water Board. The goal of the program is to evaluate the extent, magnitude, nature, and sources of toxicity in surface waters. Emphasis is on those waters where toxicity is associated with unregulated discharges such as runoff

6. SURVEILLANCE AND MONITORING

from agriculture, mining, or urban areas. As part of this program a toxicity testing facility at the University of California, Davis, was established to conduct State and Regional Water Board studies. The Regional Water Board performs the sampling of the water bodies in the Region and supplies the testing facility with the samples.

The toxicity testing measures the combined effects of toxicants in the water and is not used to separate and identify a specific toxic substance. Toxicity is determined by using water column samples from a water body under lab conditions. Appropriate test organisms are observed for their response by using growth, reproduction, or mortality as indicators in both acute and chronic tests.

REGIONAL MONITORING PROGRAMS

Surface Water Monitoring

The Surface Water Monitoring Network was a program of surface water monitoring at selected locations throughout the Region. It included analyses for physical, chemical, and biological parameters such as minerals, heavy metals, turbidity, coliform bacteria, phytoplankton, zooplankton, and biochemical oxygen demand. The results of the sampling provided the basis for data summaries and baseline information which was coordinated by the State Water Resources Control Board to comply with federal regulations.

The State Water Board and the Monitoring Coordinating Committee (MCC) have discontinued the Surface Water Monitoring Network as a formal program. However, the North Coast Region is committed to the development of a comprehensive and rigorous surface water monitoring program, concentrating especially on investigations and monitoring of water bodies with important or threatened beneficial uses, and where data is not sufficient for sound regulatory decision making.

Discharger Self-Monitoring

All self-monitoring information generated as a result of National Pollutant Discharge Elimination System (NPDES) permits and waste discharge requirements is collected and screened for overall assessment of operations and instances of compliance and

noncompliance. Self-monitoring reports are submitted by the discharger as required by the permit conditions.

Compliance Monitoring

Compliance monitoring is carried out by the Regional Water Board staff to check the discharger self-monitoring work and to provide data for enforcement actions. Its scope depends on the number and complexity of waste discharge requirements (NPDES and other permits) issued by the Regional Water Board. Waste discharge requirements may or may not include specific discharger self-monitoring and reporting requirements.

Each discharger is periodically visited by Regional Water Board personnel on both announced and unannounced "facility inspections". The intent of announced visits is to work with the discharger through personal contact and communication to review his procedures in order to assure quality control. The intent of the unannounced inspections is to survey the operation, inspect the waste facilities, discharge area, and collect check or reference samples.

Complaint Investigations

Complaint investigations are carried out by Regional Water Board staff in response to complaints of citizens and public or governmental agencies regarding the discharge of pollutants or creation of nuisance conditions. Regional Water Board responsibilities may include field and telephone investigations, documentation of observed conditions (reports, letters, photographs), and enforcement actions as appropriate.

Special Studies/Intensive Surveys

Special studies and intensive surveys are usually performed to obtain detailed information about a specific water quality problem. They usually involve localized, intermittent sampling at a higher than normal frequency. Special situations requiring intensive monitoring range from studies of industrial discharges to watershed-wide inventories to characterize water quality conditions. Special studies and intensive surveys are conducted on an as-needed basis and often involve coordination with other regulatory and governmental agencies.

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Aerial Surveillance

Aerial surveillance is used primarily to gather photographic records of discharges and water quality conditions. Aerial surveillance is particularly effective because of the overall view of a watershed or facility that is obtained and because many facilities can be observed in a short period of time.

Water Quality Models

Water quality models are useful tools to:

- provide a framework for organizing knowledge about a water body;
- reveal gaps in the knowledge and data on a water body;
- formulate baseline and trend monitoring programs;
- simulate water quality changes in response to point and nonpoint discharges to receiving waters; and
- assess potential conformance to proposed and existing water quality objectives.

Water quality models currently available to the staff of the North Coast Region include: a Water Quality Model for the Russian River, prepared by the Center for Environmental and Water Resources Engineering, Department of Civil Engineering, University of California, Davis, and; a Santa Rosa Plains Ground Water Model, prepared by the California Department of Water Resources.

Groundwater Monitoring

Regional Water Board staff investigate the quality of groundwater in response to complaints, as a part of the Well Investigation Program, and through other specifically-funded groundwater quality investigations.

Most of the groundwater investigations in the Region are performed by dischargers, by order of the Regional Water Board. This type of discharger-funded groundwater investigation falls within discharger self-monitoring addressed earlier in this section.

Groundwater has been impaired at various locations regionwide particularly as a result of agricultural, industrial, and commercial chemical handling, storage, and disposal practices. Particular problems are known to exist in several groundwater basins within the Region, including the Santa Rosa Plains, Smith River Plain, and Eureka Plain. Monitoring contract funds have been requested in recent years for the acquisition of data with which to more effectively understand and address the impairment of these and other groundwater basins. Very little funding has been available for this purpose, and data is suggestive of more extensive problems. Further groundwater data will continue to be sought by the North Coast Region through all avenues to address problems resulting from contamination by pesticides, nitrates, solvents, fuel, and other chemicals.

Nonpoint Source Investigations

Nonpoint source investigations are conducted on an as-needed basis and as funding allows. Typical sources of funding include Clean Water Act 205(j), 208, and 319(h) funds. The objectives of nonpoint source investigations are to identify the location(s) of the nonpoint source pollutant sources; develop information on the quantity, strength, character and variability of nonpoint source pollutants; evaluate the impact on receiving water quality and biota; provide information useful in management of nonpoint source pollutants; and to monitor the results of any control plan. Investigations are typically undertaken on a statewide priority basis.

Laboratory Support and Quality Assurance

In response to federal requirements, the State Water Board has developed a Quality Assurance Program to ensure that data generated from environmental measurement studies are technically sound and legally defensible. The State Water Board Quality Assurance Program Plan (QAPP) summarizes procedures to be followed by the State Water Board and Regional Water Boards in administering state and federally funded programs that involve measurement of environmental parameters. The QAPP applies to special water quality studies involving surface, ground, or marine waters, State Mussel Watch Program, State Toxic Substances Monitoring Program, as well as to surveillance and compliance monitoring of discharges.

6. SURVEILLANCE AND MONITORING

Dischargers must use laboratories approved by the Regional Water Board's Executive Officer and/or certified by the State Department of Health Services. The Regional Water Board's contract laboratories have approved quality assurance/quality control programs, and Regional Water Board staff follow a standard chain of custody process in the collection, transport, and handling of samples.

The methods employed for sample collection, handling, preservation, transport, analysis, and results reporting must be such that the results of the analyzed sample accurately represent the conditions in the sampled water body. Federal regulations require the establishment of criteria and standard methods to assure that quality is maintained throughout the work from sample collection to reporting of the results.

Briefly, these regulations require that (a) physical and professional capabilities be adequate to perform the analysis for all parameters in the sampling plan; (b) sample collection, handling, and preservation be conducted according to U.S. EPA manuals; (c) time-sensitive samples be transported and analyzed within specific holding times; (d) sample integrity be provided for a legal chain of custody of samples collected for support of enforcement actions; (e) analytical methods be in accordance with standardized methods; and (f) analytical quality control procedures be established for intra-laboratory checking of reference samples. Laboratory records including reference sample results, are to be available for U.S. EPA review.