

000 ABSTRACT



WATER QUALITY CONTROL PLAN

Klamath River Basin (1A)

State of California
The Resources Agency
STATE WATER RESOURCES CONTROL BOARD

ABSTRACT REPORT ON
WATER QUALITY CONTROL PLAN
for the
KLAMATH RIVER BASIN 1-A

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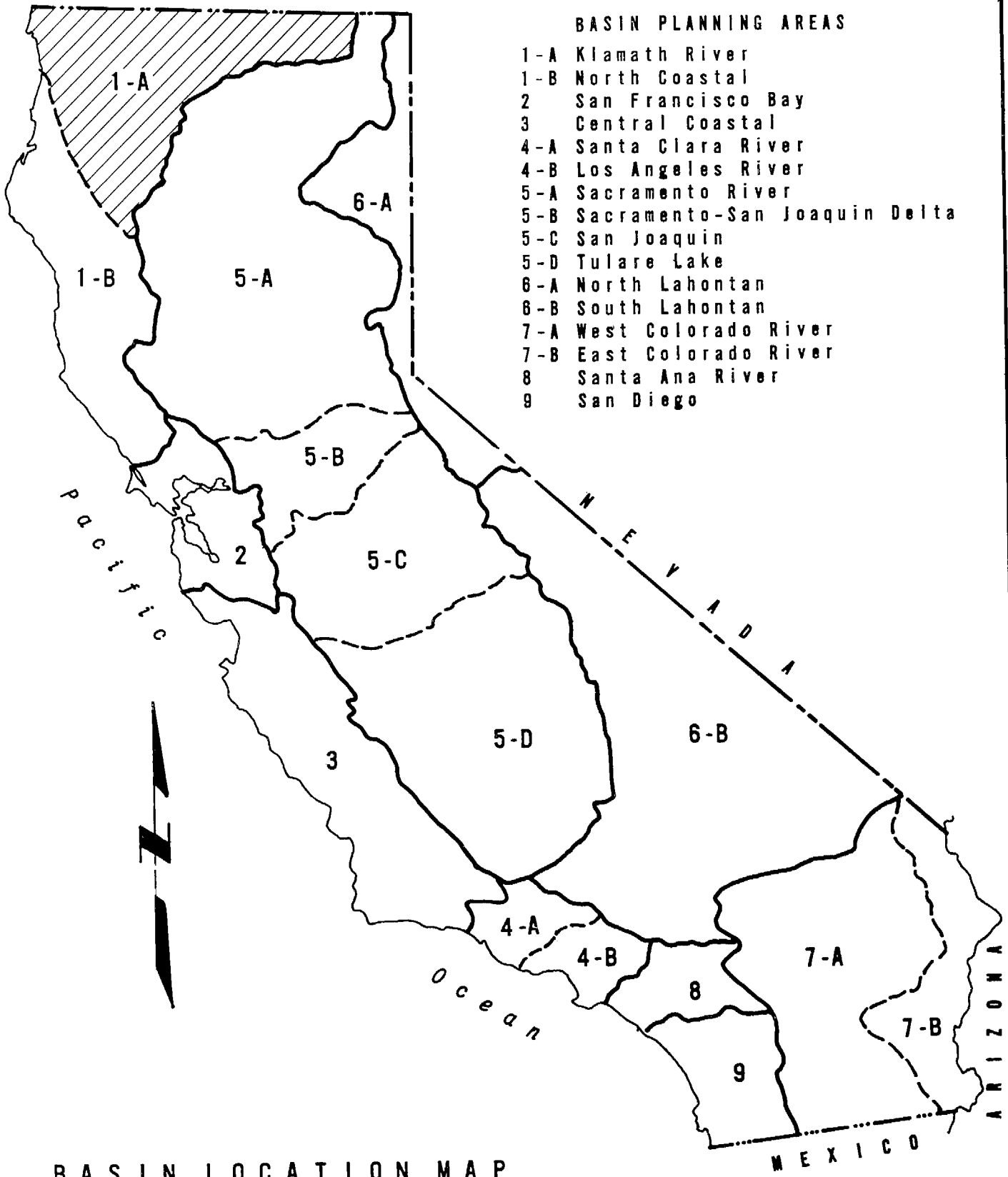
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O R E G O N

BASIN PLANNING AREAS

- 1-A Klamath River
- 1-B North Coastal
- 2 San Francisco Bay
- 3 Central Coastal
- 4-A Santa Clara River
- 4-B Los Angeles River
- 5-A Sacramento River
- 5-B Sacramento-San Joaquin Delta
- 5-C San Joaquin
- 5-D Tulare Lake
- 6-A North Lahontan
- 6-B South Lahontan
- 7-A West Colorado River
- 7-B East Colorado River
- 8 Santa Ana River
- 9 San Diego



BASIN LOCATION MAP

FOREWORD

California's Porter-Cologne Water Quality Control Act and the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) both require that comprehensive water quality control plans be developed for all waters of the State. To meet these requirements, the State Water Resources Control Board conducted a 3-year planning program which began in July 1971. The planning effort was based on the 16 planning basins delineated on the frontispiece. Separate plans were prepared for each basin, except that Basins 5-A, 5-B, and 5-C were treated together. The result is a set of 14 plans which together cover the entire State.

This abstract report summarizes the comprehensive water quality control plan for Klamath River Basin 1-A. Its purpose is to provide the public a concise, understandable description of the comprehensive plan. This preliminary edition of the abstract report is being made available prior to adoption of the plan by the California Regional Water Quality Control Board, North Coast Region. The Regional Board will hold public hearings on the comprehensive plan at the time and place to be announced. Public comments on the plan are invited. Oral statements may be presented at the meeting or written comments may be submitted to the Regional Board at the address shown on the title page.

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CHAPTER 1. THE PLANNING FRAMEWORK

GOALS, OBJECTIVES, AND SCOPE OF PLAN

The basin plan abstracted in this report is intended to provide a definitive program of actions designed to preserve and enhance Klamath River Basin 1-A water quality and to protect beneficial uses in a manner which will result in maximum benefit to the people of the State for the next 25 to 30 years. The plan is concerned with all factors and activities which affect water quality but it emphasizes actions to be taken by the State Water Resources Control Board (State Board) and the Regional Water Quality Control Board, North Coast Region (Regional Board) because they have primary responsibility for maintenance of water quality in the State.

Although the comprehensive planning is intended to provide positive and firm direction for water quality control for many years into the future, it is recognized that adequate provision must be made for change. Thus, a major premise in development of the basin plans was that they would be maintained current. The comprehensive water quality control plans will be updated at least annually, as needed to maintain pace with technology, policies, laws, and physical changes in the basin.

PLANNING PROGRAM ORGANIZATION

Preparation of water quality management plans for all basins of the State was carried out simultaneously by seven public and private contractors under the State Board's direction. The California Department of Water Resources was the prime contractor for planning in Basins 1-A, 6-B, 7-A, and 7-B.

To help furnish information to the basin planning contractors, the State Board also contracted with the California Departments of Conservation, Fish and Game, Health, and Water Resources to prepare task reports on water quality-related aspects within their purview. The regional boards and their staffs participated throughout the planning

process on an informal basis and were responsible for organizing and conducting the public meetings and workshops.

POLICIES AND GUIDELINES

The comprehensive basin planning studies were carried out within a general framework established by federal and state laws, together with the administrative regulations and guidelines which accompany the laws. The principal federal laws which affected the planning work are the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) and the National Environmental Policy Act of 1969. The most pertinent state laws are the Porter-Cologne Water Quality Control Act and the California Environmental Quality Act of 1970.

General guidance for planning was provided by the State Board in its "State Policy and Water Quality Control" (1972). More specific guidance is contained in the State Board's Resolution No. 68-16, which is commonly known as the "non-degradation policy". The non-degradation policy notes that the quality of some of the waters of the State is higher than that required by adopted policies; it provides that such high quality will be maintained unless any change will be consistent with maximum benefit to the people of the State and will not unreasonably affect present or anticipated beneficial uses of such water.

The State Board adopted water quality control plans in 1971 and 1972 which apply to ocean waters and to the control of temperature in coastal and interstate waters, bays, and estuaries. These plans are known as the "Ocean" and "Thermal" Plans; their provisions have been incorporated into the water quality control plan for Basin 1-A to the extent that they are applicable. Detailed guidelines were provided to the basin planning contractors in a series of more than 25 management memoranda issued by the State Board. These covered planning objectives as well as specifying criteria and procedures.

PLANNING RELATIONSHIPS

The water quality control plan described by this report is but one element of a broad spectrum of plans which deal with the State's water resources.

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. On the state level, the "State Development Plan Program Report" (1968) treats growth characteristics, resources management, and development implications. In addition, the Governor's Office of Planning and Research has prepared a report which provides environmental goals and policies for all levels of government planning.

The California Water Plan is a plan for the orderly and coordinated control, protection, conservation, development, and use of the State's water resources. When the basin water quality control plans are adopted by the regional boards and approved by the State Board, they will become part of the California Water Plan.

Several state agencies are involved in planning related to water resources. Completed plans which are pertinent to water quality control planning include the California Fish and Wildlife Plan (1966) and the California Comprehensive Ocean Area Plan (1967). Still under preparation are the California Outdoor Recreation Resources Plan and the California Coastal Zone Conservation Plan.

All of the Basin 1-A counties have prepared general plans which include water and sewage disposal elements. These plans are used by the counties for establishing priorities for meeting current and future water and sewerage needs. The counties are currently preparing solid waste management plans in response to the Nejedly-Z'berg-Dills Solid Waste Management and Resource Recovery Act of 1972. These county solid waste plans must be completed by January 1, 1976.

PUBLIC PARTICIPATION

Provisions for public participation in the water quality control planning program were incorporated into the contracts between the State Board and the basin contractors. The State Board guidelines required four specific public meetings to fulfill the requirements of the Porter-Cologne Water Quality Control Act and the Federal Water Pollution Control Act Amendments of 1972.

The first meeting was held in Crescent City on February 21, 1973. The purpose was to report to local interests on the progress of the study and to obtain local input. Twenty-eight people attended. The general comments reflected fear of loss of local control and concern over lack of funds for plan implementation. Del Norte County also requested special consideration be given to its unique climatic and hydrologic conditions.

The second opportunity for public participation was at a regular meeting of the Regional Board in Santa Rosa on March 28, 1973. The contractor reported on study progress and alternative plans being considered. The Regional Board expressed concern that municipal wastewater problems were being overemphasized, at the expense of problems associated with logging and construction. The audience was concerned with the lack of solid waste disposal sites which meet State Board requirements.

The third exposure of the plan to the public took place at a pair of meetings in Crescent City and Yreka on May 3 and 4, 1973. A total of 54 people attended. The general reaction was the same as that at the February 21 meeting -- fear of loss of local control and concern over funding.

The fourth meeting will be in the form of a Regional Board hearing. The final plan and its justification will be presented. The public will be encouraged to comment upon the recommended plan at that time. Details of the hearing are presented in the Foreword of this abstract report.

CHAPTER 2. THE BASIN

GEOGRAPHIC SETTING

The 10,883-square-mile Klamath River Basin 1-A includes the areas within California tributary to the Klamath, Smith, Applegate, Illinois, and Winchuck Rivers, as well as the closed Lost River and Butte Valley drainage areas. The basin includes 16 hydrographic subunits (Figure 1).

The Lost River and Butte Valley subunits 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 subunit 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 remainder 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 and 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.

POPULATION

Table 1 summarizes the recent and projected population of Basin 1-A. Very modest growth is presently foreseen for the remainder of the century.

The largest incorporated cities in the basin are Yreka (5,400), Weed (3,000), and Crescent City (2,600). An additional 4,300 persons live in the principal unincorporated areas near Crescent City, making it the largest urban area of the basin.

TABLE 1
RECENT AND PROJECTED POPULATION: BASIN 1-A^{a/}

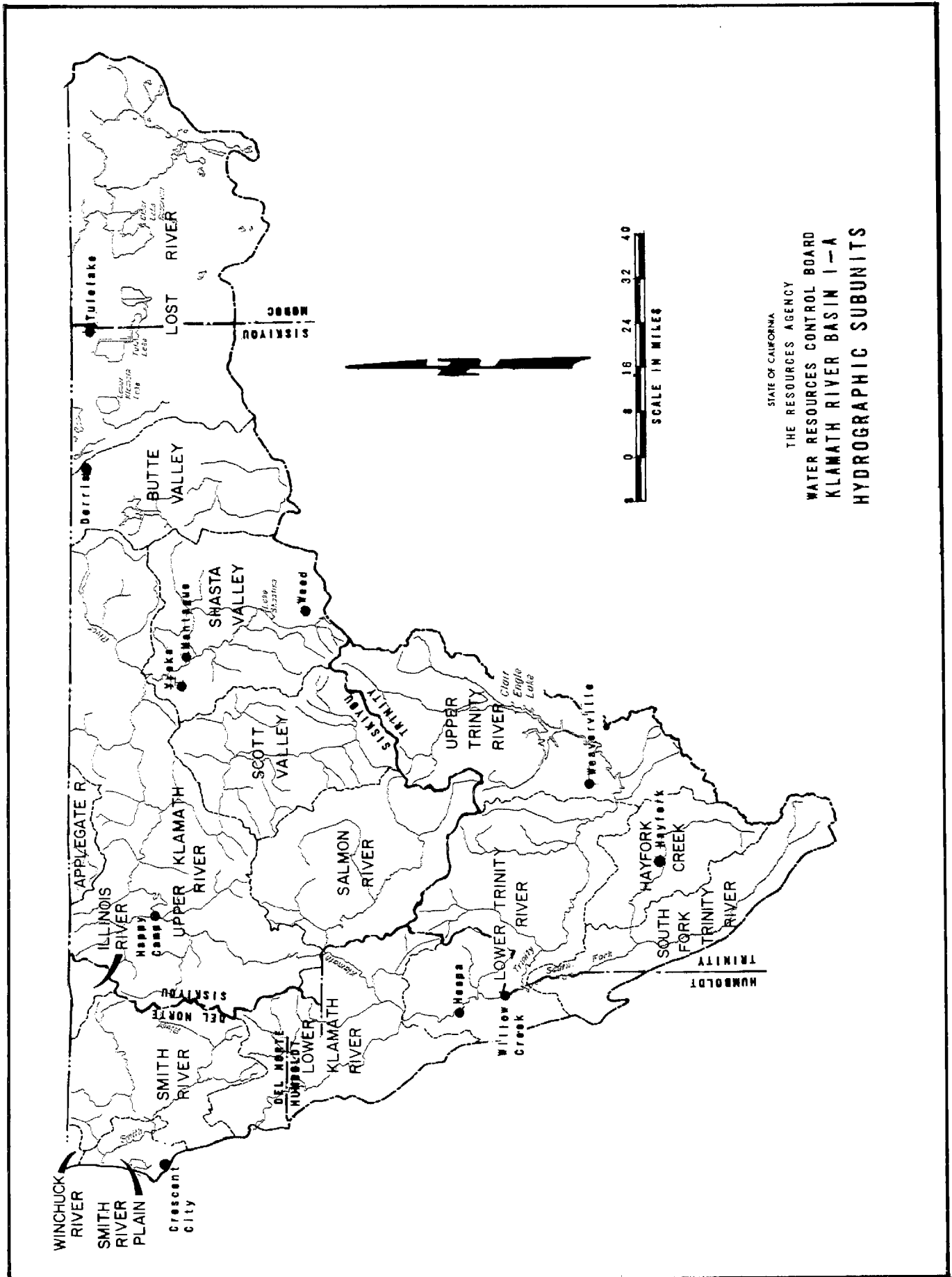
Hydrographic Subunit	1960	1970	1975	1980	1990	2000
Lost River	3,100	2,800	2,900	2,900	3,000	3,000
Butte Valley	2,000	1,800	1,800	1,800	1,800	1,800
Shasta Valley	12,700	13,900	14,100	14,700	15,800	16,700
Scott Valley	3,000	3,300	3,300	3,400	3,500	3,600
Upper Klamath River ^{b/}	3,700	3,900	3,900	4,000	4,200	4,400
Salmon River	200	200	200	200	200	200
Upper Trinity River	5,100	3,300	3,500	3,600	3,700	3,800
Lower Trinity River	3,800	3,500	3,600	3,700	3,800	4,000
Hayfork Creek	2,200	2,200	2,300	2,400	2,500	2,600
South Fork Trinity River	300	100	100	100	100	100
Lower Klamath River	4,400	2,900	2,800	3,100	3,400	3,800
Illinois River	<u>c/</u>	<u>c/</u>	100	100	100	100
Winchuck River	200	300	300	400	500	500
Smith River	500	400	400	500	600	800
Smith River Plain	<u>14,400</u>	<u>12,600</u>	<u>12,600</u>	<u>12,800</u>	<u>14,300</u>	<u>14,500</u>
Basin 1-A Total	<u>55,600</u>	<u>51,200</u>	<u>51,900</u>	<u>53,700</u>	<u>57,500</u>	<u>59,900</u>

^{a/} Basis: Department of Finance series "D plus 150,000".

^{b/} Includes Applegate River subunit population.

^{c/} Less than 50.

Figure 1



LAND USE

Table 2 summarizes recent and projected land use in Basin 1-A. A vast majority of the basin area remains in near-natural conditions and is devoted to forest and range uses. Less than one-fourth of 1 percent of the basin land is used for urban development. About 3 percent of the basin area is devoted to irrigated agriculture, primarily in the Lost River area, and Butte, Shasta, and Scott Valleys. Most of the irrigated area is related to beef production, being used either as pasture or to grow alfalfa. Potatoes and grain are the other major irrigated crops, concentrated in the Lost River subunit. Very little growth in irrigated agriculture is foreseen, primarily because of economic constraints.

TABLE 2

RECENT AND PROJECTED LAND USE
BASIN 1-A

Land Use	Square Miles	
	1970	2000
Urban	23	24
Irrigated	363	394
Remaining Irrigable	472	440
Other	10,025	10,025
Total Basin Area	10,883	10,883

ECONOMY

The economy of the basin is founded on the forest products industry, agriculture, and tourism. Only the latter is expected to increase significantly during the next 30 years. Table 3 shows recent and projected employment within Basin 1-A.

Employment directly associated with lumbering and forest products presently represents about 22 percent of the basin total. No change is foreseen because the industry is operating essentially on a sustained-yield basis. The annual timber harvest from Basin 1-A represents about 20 to 25 percent of the recent state total.

Agriculture, which is defined to include forestry, fishing, and mining, currently provides about 12 percent of the employment within the basin. Modest growth in forestry and fishing is expected to offset a continued decline in actual farm employment so the total in this category should remain essentially constant.

The trade and services categories currently account for about 44 percent of the employment in the basin. Moderate increases in trade and services employment are projected, in response to an expected doubling of recreation and tourism by 2000.

TABLE 3

RECENT AND PROJECTED EMPLOYMENT: BASIN 1-A

Category	1970	1975	1980	1990	2000
Agriculture (includes mining employment of less than 100)	2,200	2,200	2,100	2,100	2,100
Construction	1,300	1,300	1,400	1,400	1,400
Manufacturing					
Food	200	200	200	200	200
Fabricated metals	100	100	200	200	200
Other (primarily lumber and forest products)	4,000	4,000	4,000	4,000	4,000
Transportation	1,100	1,100	1,200	1,300	1,400
Trade	3,400	3,700	4,000	4,600	5,000
Finance	500	500	500	600	700
Services	4,200	4,500	4,800	5,400	6,000
Government	1,000	1,000	1,100	1,100	1,200
Basin 1-A Total	18,000	18,600	19,500	20,900	22,200

WATER RESOURCES DEVELOPMENT AND USE

Table 4 shows the drainage areas and natural runoff of the principal streams of Basin 1-A. The major natural lakes of the basin are Lower Klamath Lake (16,600 acres) and Tule Lake (12,400 acres) in the Lost River subunit. Meiss Lake (4,000 acres) is the natural drain sump of the closed Butte Valley subunit. The main groundwater basins are located in the Lost River, Butte Valley, Shasta River, Scott River, and Smith River Plain subunits.

Net consumptive water use within Basin 1-A is presently about 440,000 acre-feet per year, about 99 percent of which is used for irrigated agriculture. The gross amount applied to achieve the net use is about 690,000 acre-feet per year. Approximately 100,000 acre-feet per year is obtained from groundwater withdrawal and the remainder comes from surface developments. Almost three-fourths of the total groundwater withdrawal is made within the Butte Valley subunit. In addition to developments for local use, approximately 1 million acre-feet per year is exported from the basin to the Central Valley.

The Bureau of Reclamation's Klamath Project is the foremost irrigation development in the basin. It serves irrigation water to about 225,000 acres in Oregon and the Lost River subunit of California. The project's water supply is derived from the Klamath River in Oregon and the Lost River. The principal feature within Basin 1-A is the 527,000 acre-foot Clear Lake Reservoir on the Upper Lost River. As part of the project, runoff and drainage reaching Tule Lake is pumped to the Lower Klamath Lake area for irrigation and wildlife refuge use. Excess water in Lower Klamath Lake is pumped to the Oregon portion of the Klamath River via the Klamath Straits Drain. The Klamath Project serves a majority of the 112,000 irrigated acres in the Lost River subunit, which account for about 46 percent of the applied water use in Basin 1-A. Tulelake Irrigation District, Basin 1-A's largest, serves 62,000 acres with Klamath Project water.

Water use in Butte Valley, mostly from groundwater, represents approximately 13 percent of Basin 1-A applied water use. Butte Valley Irrigation District, the subunit's major supplier, serves

TABLE 4
DRAINAGE AREAS AND RUNOFF OF PRINCIPAL STREAMS: BASIN 1-A

Stream	Drainage Area Within Basin 1-A Boundaries (Square Miles)	Mean Natural Runoff Reaching Pacific Ocean (Acre-Feet per Year)
Lost River	1,711	Closed basin
Butte Valley Stream System	612	Closed basin
Klamath River		
Entering Basin 1-A from Oregon	---	1,400,000
Shasta River	793	160,000
Scott River	809	550,000
Salmon River	746	1,200,000
Trinity River	2,972	4,250,000
Other Tributaries	2,370	4,940,000
Subtotal	10,013	12,500,000
Smith River	632	2,900,000
Applegate River	91	
Illinois River	59	600,000
Winchuck River	18	
Minor Coastal Streams	70	
Basin 1-A Total	10,883	16,000,000

only 5,100 of the 28,000 acres irrigated in the subunit. Excess water is pumped from Meiss Lake to the Klamath River via drainage facilities operated by Meiss Lake Ranch.

The principal water service agency in the Shasta Valley subunit is the Montague Water Conservation District, which serves 11,000 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 districts in Shasta Valley serve from 1,500 to 3,500 acres each. The total of 130,000 acre-feet per year of applied irrigation water in the subunit is 19 percent of the Basin 1-A total.

Approximately 33,000 acres are irrigated in the Scott Valley subunit. Total applied water use is about 100,000 acre-feet per year, 14 percent of the Basin 1-A total. The Scott Valley Irrigation District, largest in the subunit, serves some 5,100 acres.

Four Pacific Power and Light Company hydroelectric reservoirs regulate Klamath River flows in the Upper Klamath River subunit. The uppermost is John Boyle Dam, located in Oregon about 10 miles upstream from the border; 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 base-load plant.

The largest water development in Basin 1-A is the Trinity River Division of the Central Valley Project. The 538-foot-high Trinity Dam forms 2.5 million acre-foot Clair Engle Lake. Releases pass through the 100,000 kw Trinity power plant

to Lewiston Reservoir (14,000 acre-feet), from which approximately 1 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 284,000 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 projected minor increase in irrigated agriculture by 2000 would increase the total use of applied water by only about 10 percent; this increase is expected to be met largely from groundwater sources.

WATER QUALITY PROBLEMS

The present water quality within Basin 1-A generally meets or exceeds the water quality objectives set forth in the following chapter. However, there are a number of present or potential water quality problems which may interfere with beneficial uses or create nuisances or health hazards.

Table 5 summarizes the principal water quality problems of the basin. These present and potential problems were compiled with the aid of the Departments of Conservation, Health, Fish and Game, and Water Resources; county health departments; and other local agencies and officials. Most of the reported present problems are intermittent or transitory; hence, they are not all supported by water quality data, but are based upon observations of field personnel.

PROBLEM ASSESSMENT

Two of the community wastewater disposal problems listed in Table 5 are being solved at present. Construction of secondary treatment facilities is under way at Weaverville, and Crescent City's treatment facilities are being upgraded to meet Regional Board requirements.

TABLE 5
DIGEST OF PRESENT AND POTENTIAL WATER QUALITY-RELATED PROBLEMS IN BASIN 1-A

Source of Water Quality Impairment	Present Problems	Potential Problems
Domestic, municipal, & industrial wastewaters	<p>Newell: ineffective treatment due to deterioration of facilities.</p> <p>City of Tulelake: direct discharge of primary-treated effluent to a drain ditch tributary to Tule Lake.</p> <p>City of Montague: occasional overflow from percolation ponds to Oregon Slough, a Shasta River tributary.</p> <p>City of Weed-Shastina Sanitary District: direct discharges from treatment plants to Boles and Beaughton Creeks, tributaries of the Shasta River and Lake Shastina.</p> <p>City of Etna: occasional direct discharge of pond effluent to Johnson Creek, a Scott River tributary.</p> <p>Weaverville: seepage from percolation ponds to Weaver Creek, a Trinity River tributary.</p> <p>City of Crescent City: discharge from treatment plant to near-shore ocean waters.</p> <p>Abnormal rates of septic tank-leaching system malfunctions: Campbell Tract and Pines areas south of Yreka; Hornbrook; Happy Camp; Trinity Center; unsewered areas near Weaverville; area east of fairgrounds in Mayfork; unincorporated areas around Crescent City.</p>	<p>Widespread dependence will continue to be placed on septic tank-leaching systems, leading to continual hazards from malfunctions.</p> <p>Grenada: potential health problem from possible public contact with community septic tank effluent which discharges to roadside disposal pond.</p>
Domestic, municipal, & industrial solid wastes	<p>Unauthorized refuse disposal adjacent to the Klamath River near Weitchpec and upstream from Klamath Glen</p>	<p>Impairment of ground or surface water quality by leachate from operating or abandoned solid waste disposal operations.</p> <p>Littering and illegal dumping in or near streams.</p>
Logging, roads, construction, & related activities	<p>Excessive turbidity, sedimentation, and debris at scattered locations throughout the mountainous western portion of the basin.</p>	<p>Continued threat from future activities such as logging, and construction and maintenance of roads, levees, dams, channels, etc.</p>
Mining wastes	<p>None definitely identified.</p>	<p>Sedimentation and turbidity from surface mining, erosion of tailings, and sand and gravel extraction operations.</p> <p>Impairment of quality by heavy metals or other minerals in mine drainage or leachate from tailings, primarily in Trinity, Lower Klamath, and Smith River areas.</p>
Agricultural wastes	<p>Occasional discharge of poor quality drainage water to Klamath River from Butte Valley via Meiss Lake drainage facilities.</p>	<p>Discharge of poor quality drainage water from agricultural operations, especially the discharge from the Klamath Project via Klamath Straits Drain.</p> <p>Increased mineralization of ground or surface waters by fertilizers and soil additives.</p> <p>Sediment and turbidity associated with agricultural drainage.</p> <p>Warming of streams by irrigation return flows.</p> <p>Pesticides and herbicides reaching surface and groundwaters.</p>
Emergency spills	<p>None.</p>	<p>Any sudden and unexpected release of pollutants such as oil spills from ships or trucks, rupture of petroleum or chemical tanks, accidents involving trucks hauling toxic materials, and acts of vandalism or sabotage involving toxic substances.</p>
Well construction, operation, & maintenance	<p>None definitely identified.</p>	<p>Inadvertent interconnection of aquifers.</p> <p>Introduction of surface pollutants to groundwater.</p> <p>Increasing salt concentration in groundwater due to overdrafting.</p>
Flow depletion & alteration	<p>Heavy irrigation diversions detrimental to fishery in Butte Valley, Scott Valley, and Hayfork Creek subunits.</p> <p>Flow alteration and reduction (coupled with sediment from mining, road construction, and natural causes) are blamed for reduction of Trinity River steelhead runs downstream from Lewiston Dam and adverse changes in channel morphology and stream vegetation.</p> <p>Severe flow fluctuations in Klamath River upstream from Copco Reservoir due to operation of John Boyle Power Plant in Oregon.</p>	<p>Adverse effects on fisheries due to increased diversions of surface waters.</p> <p>Increased concentrations of salts in surface waters caused by increased consumptive use, particularly on lower Lost River, upper Klamath River, and Shasta River.</p>
Natural causes	<p>Nuisance algae blooms in Lower Klamath Lake, Tule Lake, Lake Shastina, Copco and Iron Gate Reservoirs, and Klamath and Shasta Rivers.</p> <p>Excessive turbidity and sedimentation at scattered locations throughout the mountainous western portion of the basin.</p> <p>High concentrations of iron, boron, or arsenic at scattered locations in the groundwater in Butte Valley, Shasta Valley, Smith River Plain, and Lower Klamath River subunits.</p>	<p>None definitely identified.</p>

Plans are well advanced for eliminating the direct discharges to surface waters from the two systems serving about 3,000 persons in the Weed area. Local voters have approved a plan to combine the City of Weed and Shastina Sanitary District facilities and to construct new treatment and land disposal works. Construction is expected to begin in late 1974 or early 1975.

Engineers retained by the City of Tulelake (population 900) recently completed a study of possible solutions to wastewater problems. The consultant's January 1974 report recommends construction of aerated lagoons with discharge to the Tulelake Irrigation District system. Completion by 1976 is proposed.

The City of Montague (population 900) has given some consideration to a wastewater reclamation (irrigation) project which would prevent the occasional effluent overflows to Oregon Slough. As yet, no definite plans have been adopted. The problem is not considered to be serious, but a solution should be undertaken reasonably soon.

The basin's most serious problems with individual wastewater disposal systems are those in Happy Camp and in the unincorporated areas near Crescent City. The remainder of the septic tank system problems mentioned in Table 5 are considered much less severe; however, the water quality control plan should attempt to solve these problems as well as to minimize future problems with individual wastewater disposal systems.

The 900 residents of Happy Camp are served by individual septic tank-leaching systems. Numerous systems are damaged or malfunctioning and sewage pollution of the adjacent Indian Creek has been documented. To seek a solution, the Happy Camp Sanitary District was formed. A consulting engineer's study, completed in 1971, recommended community collection and treatment facilities estimated to cost \$2,100,000. The district rejected the proposed plan in 1972, primarily because of high cost. No further action

has been taken and problems continue, compounded by additional flood damage to individual wastewater disposal systems in early 1974.

Approximately 4,300 people depend on individual septic tank-leaching systems in unincorporated areas near Crescent City. System malfunctions, caused both by poor soil conditions and a high water table, are reported in Crescent North, Bertsch-Oceanview, and the Filkins Tract. Del Norte County has adopted a plan to collect wastewater from these areas and convey it to the Crescent City treatment plant. Del Norte County Service Area No. 1 has been formed to implement this plan and application has been made for state and federal financial assistance for the \$2,650,000 project.

Table 5 lists no urgent problems related to domestic, municipal, and industrial solid wastes. Under recent state law, each county must prepare a solid waste management plan by January 1, 1976. The current trend is toward consolidation of solid waste disposal operations and elimination of local dumps. The principal present need from a water quality viewpoint is to assure that management practices continue to adequately protect water quality.

Because of their widespread occurrence and actual interference with beneficial uses, sedimentation, turbidity, and debris are the basin's most serious present water quality problems. About 40 percent of the basin's sediment production is attributed to man's activities, primarily logging and road construction and maintenance. The current powers of the State and Regional Boards appear adequate to control water quality impairment from logging and roads; the major need is to determine how these powers can be used most effectively. To explore this question, the State Board contracted with Jones and Stokes Associates to prepare a report entitled "A Method for Regulating Timber Harvest and Road Construction Activity for Water Quality Protection in Northern California" (1973). The report recommends a pilot control

method to identify critical operations which deserve special attention. The Regional Board tested the proposed system in 1973 and is developing a modified system to overcome the shortcomings which were discovered.

Table 5 notes a number of potential water quality problems related to mining, although no instances of current problems are known. The Regional Board has adequate powers to deal with problems from mining wastes; the principal present need is for a method of obtaining adequate information on the constantly changing mining operations. There also is a need for a thorough survey of the approximately 140 known operating or abandoned mining operations in the basin to ascertain their potential for water quality impairment.

Agricultural wastes are causing no serious water quality problems in the basin at present. Occasional discharges of poor quality drainage water from Butte Valley are reported to have degraded the quality of the Klamath River in the past and discharge requirements should be established to prevent future recurrences. Similar problems have occurred from discharges from the Klamath Straits Drain, but the Bureau of Reclamation will begin project modifications in 1974 to overcome this problem. Regular water quality surveillance would be adequate to deal with the other potential agricultural waste problems described in Table 5.

The primary defense against water quality impairment by emergency spills is a good emergency plan. Numerous such plans are already in effect; the principal present need is to understand them and their relationship to one another rather than to produce an additional plan. A second need is to make clear, concise information on emergency spill plans available to the local authorities who form the first line of defense when emergencies occur.

As Table 5 notes, there are no known present water quality problems in the basin related to well construction,

operation, and maintenance. Nevertheless, full advantage should be taken of practices which can provide additional protection to groundwater resources; this can be accomplished through county well standard ordinances.

The basin's most prominent problem related to flow depletion and alteration is the decline in the numbers of steelhead reaching the hatchery at Lewiston Dam. Approximately 90 percent of the flow of the Trinity River is diverted from Lewiston Lake to the Sacramento River to serve the Central Valley Project. The resulting impact on Trinity River flow patterns appears to be a major factor in the steelhead decline, although many other factors are involved. A substantial amount of study has been devoted to the Trinity River fishery problem, but no solution is yet in sight. Additional major studies are now beginning; from the standpoint of water quality management, only a very limited range of action is applicable to the Trinity River fishery problem until these studies are completed.

The problem of Klamath River flow fluctuations mentioned in Table 5 involves primarily the interests of the Department of Fish and Game rather than those of water quality control agencies. The fishery detriments described as due to irrigation diversions have continued for many years and any changes would be considered enhancement rather than problem solutions; the emphasis of the water quality control plan should be on prevention of future problems rather than restoration of fisheries.

The final portion of Table 5 identifies algae, turbidity, and sedimentation, and groundwater quality problems attributed primarily to natural causes. Practical solutions to these problems are unlikely to be available and the water quality control plan should stress minimizing the impact of the problems and avoiding actions which would aggravate them.

CHAPTER 3. THE RECOMMENDED PLAN

BENEFICIAL USES

A key part of a water quality control plan is an assessment of the beneficial uses which are to be protected. Table 6 summarizes the present and potential beneficial uses of the principal classes of Basin 1-A waters.

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, and Smith Rivers 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 subunits and an abundance of deer and other wildlife throughout the basin.

TABLE 6
EXISTING AND POTENTIAL BENEFICIAL USES: BASIN 1-A WATERS

Waters/Hydrographic Subunit	MUN	AGR	IND	PROC	CWR	FRSH	NAV	POW	REC 1	REC 2	COMM	WARM	COLD	BIOL	SAL	WILD	RARE	MAR	MIGR	SPAWN	SHELL
Inland Surface Waters																					
Lost River	P	E	P	P	E	E		P	E	E		F	E			E	E				E
Butte Valley	E	E	P	P	E	E		P	E	E		E				E					E
Shasta Valley	E	E	P	P	E	E		P	E	E		E				E			E		E
Scott Valley	E	E	P	P	E	E		P	E	E			E			E			E		E
Salmon River	E	E	P	P		E		P	E	E			E			E			E		E
Upper Klamath River	E	E	E	E	E	E		E	E	E		F	E			E	E			E	E
Applegate River	E	E	E	E	P	E		P	E	E			E			E			E		E
Upper Trinity River	E	E	E	E	E	E		E	E	E			E			E			E		E
Hayfork Creek	E	E	E	E	E	E		P	E	E		E	E			E			E		E
South Fork Trinity River	E	E	P	P		E		P	E	E			E			E			E		E
Lower Trinity River	E	E	E	E	E	E		P	E	E			E			E			E		E
Lower Klamath River	E	E	P	P	E	E		P	E	E		F	E			E			E		E
Illinois River	E	E	E	P		E		P	E	E			E			E			E		E
Winchuck River	E	E	E	P		E		P	E	E			E			E			E		E
Smith River	E	E	E	P	E	E			E	E			E			E			E		E
Smith River Plain	E	E	E	E	E	E			E	E		E	E			E			E		E
Groundwater																					
Lost River	E	E	E	E		E															
Butte Valley	E	E	E	E		E															
Shasta Valley	E	E	E	E		E															
Scott Valley	E	E	E	E		E															
Upper Klamath River	E	E	E	E		E															
Upper Trinity River	E	P	P	P		E															
Hayfork Creek	E	E	E	P		E															
Lower Trinity River	E	E	P	P		E															
Lower Klamath River	E	E	P	P		E															
Smith River Plain	E	E	E	E		E															
Crescent City Harbor			P	P			E		E	E	F					E		F	F	F	F
Coastal Streams*	E	P							E	E			F			E			E	E	F
Ocean Waters			P	P			E		E	E	F			P		E	E	E	E	E	F
Estuaries			P	P			E		E	E	P			P	E	E	P	E	E	E	E

E	Existing beneficial use.	REC 1	Water contact recreation
P	Potential beneficial use.	REC 2	Non-contact water recreation
*	Permanent or intermittent streams and their tributaries not listed above, which flow directly into the ocean.	COMM	Commercial and sport fishing in ocean, bays, estuaries, and similar non-freshwater areas
MUN	Municipal and domestic supply	WARM	Warm freshwater habitat
AGR	Agricultural supply	COLD	Cold freshwater habitat
IND	Industrial service supply - uses insensitive to water quality such as cooling, gravel washing, etc.	BIOL	Areas of special biological significance
PROC	Industrial process supply - all uses related to the manufacture of products	SAL	Inland saline water habitat
CWR	Groundwater recharge	WILD	Wildlife habitat
FRSH	Freshwater replenishment of lakes and streams	RARE	Habitat for rare and endangered species
NAV	Navigation, commercial and naval shipping	MAR	Marine habitat
POW	Hydropower generation	MIGR	Migration route for anadromous fish
		SPAWN	Fish spawning area
		SHELL	Shellfish harvest area

WATER QUALITY OBJECTIVES

Water quality objectives are limits or levels of water constituents or characteristics which are established for the reasonable protection of beneficial uses or the prevention of nuisance. They form the basis for establishment of waste discharge requirements for specific dischargers or general waste discharge prohibitions applicable to all dischargers.

The water quality objectives for Basin 1-A refer to several classes of waters. Ocean waters are waters of the Pacific Ocean outside of bays and estuaries 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; in Basin 1-A, this definition of bay includes only Crescent City Harbor. 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 the open ocean. The principal estuarine areas of Basin 1-A are at the mouths of the Smith and Klamath Rivers and Lakes Earl and Talawa. Inland waters include all surface waters and groundwaters of the basin not included in the definitions of ocean waters, bays, or estuaries. Interstate waters include all rivers, streams, and lakes which flow across or form part of a state boundary.

The State Board adopted water quality objectives applicable to all ocean waters of the State in "Water Quality Control Plan for Ocean Waters of California" (1972). It also adopted water quality objectives relating to temperature in certain waters in "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California" (1971). The applicable portions of the water quality objectives of these two

State Board plans have been incorporated into the Basin 1-A water quality objectives, although in reworded form.

The water quality objectives for Basin 1-A are presented in three groups. First are the objectives for ocean waters, which are summarized in Table 7. These were adopted directly from the applicable existing State Board plans. Some of the ocean water quality objectives are defined by statistical distribution. The percentile values establish an acceptable distribution for any 30 consecutive days. The term "significant" is used in some of the ocean objectives to refer to increases or decreases; a significant change is defined as one in which the mean of sampling results for any 30 consecutive days falls more than one standard deviation from the mean natural level for the same period.

The second group are general objectives for all waters of the basin except ocean waters. These are presented in Table 8. These general objectives are mostly those previously adopted in the 1967 water quality control policies for interstate waters or in the 1971 interim water quality control plan. Wording changes have been made to clarify the earlier objectives and to make them consistent with the objectives for ocean waters. To the extent of any conflict, the specific numerical objectives described in the following paragraph prevail over the general water quality objectives.

The third group of objectives, presented in Table 9, establish numerical limits of several key water quality parameters for the principal waters of the basin (except ocean waters). These specific objectives generally reflect existing water quality in accordance with the State Board policy of maintaining such quality when it exceeds the standards required for protection of existing and potential beneficial uses. Both these specific objectives and the general objectives of Table 8 are consistent with those being adopted by the State of Oregon for interstate waters.

TABLE 7

WATER QUALITY OBJECTIVES FOR OCEAN WATERS OF BASIN 1-A

<p>Apply to Pacific Ocean waters outside bays and estuaries and within 3-mile limit, insofar as quality is affected by waste discharges other than from vessels or dredging activities.</p>	
<ol style="list-style-type: none"> 1. Marine communities, including vertebrate, invertebrate, and plant species shall not be degraded. 2. Natural taste, odor, and color of fish, shellfish, and other marine resources used for human consumption shall not be altered. 3. Floating particulates and grease and oil shall not be visible. Surface concentration of floating particulates of waste origin in area of maximum impact shall not exceed 1.0 mg dry weight/m² more than 50 percent of time or 1.5 mg dry weight/m² more than 10 percent of time. Surface concentration of grease and oil (hexane extractables) in area of maximum impact shall not exceed 10 mg/m² more than 50 percent of time or 20 mg/m² more than 10 percent of time. 4. Ocean surface shall not be discolored to a degree that is esthetically undesirable. 5. Transmittance of natural light shall not be significantly reduced outside initial dilution zone (zone near discharge point within which waste immediately mixes with ocean water due to momentum and density differences). 6. Rate of deposition of inert solids and characteristics of inert solids in sediments shall not be changed such that benthic communities are degraded. 7. Radioactivity of ocean waters shall not exceed limits in Title 17, Chapter 5, Section 30269, California Administrative Code. 8. Dissolved oxygen concentration shall not be depressed more than 10 percent from natural levels, as determined from samples representative of areas within the waste field where initial dilution is completed. (Allowance may be made for effects of induced upwelling.) 9. The pH shall not be changed more than 0.2 units from natural levels, as determined from samples representative of areas within the waste field where initial dilution is completed. 10. Dissolved sulfide concentration of waters in and near sediments shall not be significantly increased above natural levels. 11. In marine sediments, concentrations shall not be significantly increased above natural levels for: arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, 	<ol style="list-style-type: none"> zinc, cyanide, phenolic compounds, chlorine, ammonia, chlorinated hydrocarbons, other toxic materials, and radioactivity. 12. Concentrations of organic materials in sediments shall not be increased to levels which degrade marine life. 13. Nutrient materials shall not be present in quantities which cause objectionable aquatic growths or degrade indigenous biota. 14. Final toxicity concentration shall not exceed 0.05 toxicity units. 15. Within a zone bounded by the shoreline and a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is farther from the shoreline, and in areas outside this zone used for body-contact sports, the following bacterial objective shall be maintained throughout the water column: <p style="margin-left: 40px;">A concentration of coliform organisms less than 1,000 per 100 ml provided that not more than 20 percent of samples from any station, in any 30-day period, may exceed 1,000 per 100 ml and provided further that no single sample when verified by a repeat sample taken within 48 hours shall exceed 10,000 per 100 ml.</p> 16. In shellfish harvest areas, median total coliform concentration throughout water column shall not exceed 70 per 100 ml and not more than 10 percent shall exceed 230 per 100 ml. 17. Wastes warmer than receiving waters shall be discharged away from shore to achieve dispersion through the vertical water column. 18. Natural temperatures shall be maintained in designated areas of special biological significance. 19. Maximum temperature of discharges of cooling water and industrial process water transporting waste heat shall not exceed receiving water natural temperature by more than 20° F. 20. Waste discharges shall not increase natural water temperature by more than 4° F. at (a) shoreline, (b) surface of any ocean substrate, or (c) ocean surface more than 1,000 feet from discharge system. (Surface temperature limitation shall be maintained for at least 50 percent of any complete tidal cycle.)

TABLE 8

GENERAL OBJECTIVES FOR INLAND WATERS, BAYS, AND ESTUARIES OF BASIN 1-A

Apply to all basin waters except ocean waters, insofar as water quality may be influenced by waste discharges, wastes from land management or cultural practices, or other human activities.

- | <u>Background</u> | <u>Increase</u> |
|-------------------|-----------------|
| 0-30 JTU | 5 JTU |
| 30-50 JTU | 10 JTU |
| Over 50 JTU | 20% |
1. Waters shall not be discolored to a degree that is esthetically undesirable.
 2. Turbidity increases shall not exceed:

<u>Background</u>	<u>Increase</u>
0-30 JTU	5 JTU
30-50 JTU	10 JTU
Over 50 JTU	20%
 3. Waters shall have no tastes and odors other than those from natural causes.
 4. Waters shall be free of visible floating solids, foams, liquids, and oil or grease films.
 5. Waters shall be free of bottom deposits other than those of natural origin.
 6. The natural sediment regime shall not be altered so as to adversely affect fish and wildlife habitat values of waters or water courses, or any other beneficial use.
 7. Waters shall be free of toxic substances, including pesticides, which would produce immediate or cumulative deleterious effects on human, animal, plant, or aquatic life.
 8. Waters shall be free of biostimulants in amounts which promote aquatic growths that cause nuisance or interfere with any beneficial use.
 9. Bacterial quality of waters shall not be degraded beyond background levels.
 10. Levels of radioactivity shall not exceed the maximum permissible limits prescribed in Chapter 5, Title 17, of the California Administrative Code.
 11. For cold inland streams and lakes, which are those whose present temperatures are generally suitable for trout and salmon:
 - (a) Cold interstate waters shall not be subjected to any waste discharges warmer than their natural temperature, except that this objective shall not apply to irrigation return flow.
 - (b) Temperature of all cold water streams and lakes shall be maintained at levels necessary to assure protection of beneficial uses.
 12. For warm inland streams and lakes, which are those whose present temperatures are generally suitable for warm water fishes such as bass and catfish:
 - (a) Insofar as it is affected by waste discharges other than irrigation return water, the temperature of warm interstate waters shall not be increased by more than 5° F. above natural temperature at any time or place. For the Lost River, the maximum increase due to waste discharges other than irrigation return water shall be 2° F. with no increase above 62° F. permissible.
 - (b) Warm interstate waters shall not be subjected to discharges of cooling water (or industrial process water used to transport waste heat) whose temperature is more than 5° F. above receiving water temperature.
 - (c) Temperature of warm intrastate waters shall be maintained at levels necessary to assure protection of beneficial uses.
 13. Waste discharges to bays which are warmer than the receiving waters shall comply with limitations necessary to assure protection of beneficial uses. Bays shall not be subjected to any new waste discharge whose temperature is more than 20° F. above receiving water temperature nor to any new discharge of cooling water (or industrial process water used to transport waste heat) whose temperature is more than 4° F. above receiving water temperature.
 14. For estuaries, insofar as their water temperatures are affected by waste discharges other than irrigation return flows:
 - (a) Waste discharges, either alone or in combination, shall not create a zone, defined by water temperatures of more than 1° F. above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of the main river channel at any point.
 - (b) The surface temperature of receiving waters shall not be increased by more than 4° F. above natural levels at any time or place.
 - (c) Estuaries shall not be subjected to any waste discharge whose temperature is more than 20° F. above receiving water temperature nor to any new discharge of cooling water (or industrial process water used to transport waste heat) whose temperature is more than 4° F. above receiving water temperature.

TABLE 9
SPECIFIC OBJECTIVES FOR INLAND WATERS, BAYS, AND ESTUARIES OF BASIN 1-A

Hydrographic Subunit	Specific											
	Conductance (micromhos @ 77° F.)	Dissolved Oxygen (mg/l)		Phosphate (as PO ₄) (mg/l)		Nitrate (as NO ₃) (mg/l)		Hydrogen Ion (pH)		Hardness (mg/l)	Boron (mg/l)	
	90th Percen- tile	Med	Min	Med	Med	Med	Max	Min	Med	90th Percen- tile	Med	
<u>Lost River</u>												
Clear Lake Reservoir & Upper Lost River	300	200	5.0	8.0	-	1.1	9.0	7.0	60	0.5	0.1	
Lower Lost River	1000	700	5.0	-	1.4	3.0	9.0	7.0	-	0.5	0.2	
Other Streams	250	150	7.0	8.0	-	0.5	8.4	7.0	50	0.2	0.1	
Tule Lake	1300	900	5.0	-	-	7.6	9.0	7.0	400	-	-	
Lower Klamath Lake	1150	850	5.0	-	-	1.6	9.0	7.0	400	-	-	
Groundwaters	1100	500	-	-	-	0.3	8.5	7.0	250	0.3	0.2	
<u>Butte Valley</u>												
Streams	150	100	7.0	9.0	-	0.3	8.5	7.0	30	0.1	0.0	
Meiss Lake	2000	1300	7.0	8.0	-	1.3	9.0	7.5	100	0.3	1.1	
Groundwaters	800	400	-	-	-	1.8	8.5	6.5	120	0.2	0.1	
<u>Shasta Valley</u>												
Shasta River	800	600	7.0	9.0	0.50	0.8	8.5	7.0	220	1.0	0.5	
Other Streams	700	400	7.0	9.0	-	0.5	8.5	7.0	200	0.5	0.1	
Lake Shastina	300	250	6.0	9.0	0.09	0.7	8.5	7.0	120	0.4	0.2	
Groundwaters	800	500	-	-	-	9.0	8.5	7.0	180	1.0	0.3	
<u>Scott Valley</u>												
Scott River	350	250	7.0	9.0	0.04	1.2	8.5	7.0	100	0.4	0.1	
Other Streams	400	275	7.0	9.0	-	0.6	8.5	7.0	120	0.2	0.1	
Groundwaters	500	250	-	-	-	2.5	8.0	7.0	120	0.1	0.1	
<u>Salmon River</u>												
All Streams	150	125	9.0	10.0	0.04	0.2	8.5	7.0	60	0.1	0.0	
<u>Upper Klamath River</u>												
Klamath River above Iron Gate Dam in- cluding Iron Gate & Copco Reservoirs	425	275	7.0	10.0	0.40	2.7	8.5	7.0	60	0.3	0.2	
Klamath River below Iron Gate Dam	350	275	8.0	10.0	0.37	2.5	8.5	7.0	80	0.5	0.2	
Other Streams	300	150	7.0	9.0	-	0.4	8.5	7.0	60	0.1	0.0	
Groundwaters	750	600	-	-	-	8.0	8.5	7.5	200	0.3	0.1	
<u>Applegate River</u>												
All Streams	250	175	7.0	9.0	-	-	8.5	7.0	60	-	-	

TABLE 9 (Continued)
 SPECIFIC OBJECTIVES FOR INLAND WATERS, BAYS, AND ESTUARIES OF BASIN 1-A

Hydrographic Subunit	Specific										
	Conductance (micromhos @ 77° F.)	Dissolved Oxygen (mg/l)	Phosphate (as PO ₄) (mg/l)	Nitrate (as NO ₃) (mg/l)	Hydrogen Ion (pH)		Hardness (mg/l)	Boron (mg/l)			
	90th Percentile	Med	Min	Med	Med	Med	Max	Min	Med	90th Percentile	Med
<u>Upper Trinity River</u>											
Trinity River	200	175	7.0	10.0	0.04	0.3	8.5	7.0	80	0.1	0.0
Other Streams	200	150	7.0	10.0	-	0.4	8.5	7.0	60	0.0	0.0
Lake Engle and Lewiston Reservoir	200	150	7.0	10.0	-	0.4	8.5	7.0	60	0.0	0.0
<u>Hayfork Creek</u>											
Hayfork Creek	400	275	7.0	9.0	-	0.7	8.5	7.0	150	0.2	0.1
Other Streams	300	250	7.0	9.0	-	0.3	8.5	7.0	125	0.0	0.0
Ewing Reservoir	100	75	7.0	9.0	-	0.3	8.0	6.5	40	0.1	0.0
Groundwaters	350	225	-	-	-	2.3	8.5	7.0	100	0.2	0.1
<u>S.F. Trinity River</u>											
S. F. Trinity River	275	200	7.0	10.0	-	0.4	8.5	7.0	100	0.2	0.0
Other Streams	250	175	7.0	9.0	-	0.6	8.5	7.0	100	0.0	0.0
<u>Lower Trinity River</u>											
Trinity River	275	200	8.0	10.0	0.08	0.5	8.5	7.0	100	0.2	0.0
Other Streams	250	200	9.0	10.0	-	0.2	8.5	7.0	100	0.1	0.0
Groundwaters	200	150	-	-	-	-	8.5	7.0	75	0.1	0.1
<u>Lower Klamath River</u>											
Klamath River	300*	200*	8.0	10.0	0.2 *	0.6*	8.5	7.0	75*	0.5*	0.2*
Other Streams	200*	125*	8.0	10.0	-	0.8*	8.5	6.5	25*	0.1*	0.0*
Groundwater	300	225	-	-	-	0.9	8.5	6.5	100	0.1	0.0
<u>Illinois River</u>											
All Streams	200	125	8.0	10.0	-	-	8.5	7.0	75	0.1	0.0
<u>Winchuck River</u>											
All Streams	200*	125*	8.0	10.0	-	0.3	8.5	7.0	50	0.0	0.0
<u>Smith River</u>											
Smith River—Main Forks	200	125	8.0	11.0	0.03	0.1	8.5	7.0	60	0.1	0.1
Other Streams	150*	125*	7.0	10.0	-	0.2	8.5	7.0	60	0.1	0.0
<u>Smith River Plain</u>											
Smith River	200*	150*	8.0	11.0	0.03*	0.1*	8.5	7.0	60*	0.1*	0.0*
Other Streams	150*	125*	7.0	10.0	-	0.5*	8.5	6.5	60*	0.1*	0.0*
Lakes Earl & Talawa	-	-	7.0	9.0	-	0.4	8.5	6.5	-	-	-
Groundwaters	350	100	-	-	-	4.5	8.5	6.5	75	1.0	0.0
Crescent City Harbor	-	-	-	-	-	-	-	-	-	-	-

*Does not apply to estuarine areas.

RECOMMENDED POINT SOURCE MEASURES

Waste Discharge Prohibitions

Section 13243 of the Porter-Cologne Water Quality Control Act authorized the Regional Boards -- 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.

While the act does not so state specifically, the California Regional Water Quality Control Board, North Coast Region, believes that appropriate situations for waste discharge prohibitions fall generally into two categories:

1. The first are those situations where experience, judgment, and knowledge indicate a strong probability that water quality objectives cannot or will not be continuously met. In Basin 1-A, failure to meet water quality objectives would threaten very significant beneficial uses.

Therefore, in order to achieve water quality objectives, protect present and future beneficial water uses, protect public health, and prevent nuisance, the Regional Board declares that waste discharges, except as stipulated by the Thermal Plan, are prohibited in the following locations:

- A. All surface, freshwater impoundments and their tributaries.
- B. Water-contact recreation areas.
- C. All coastal streams and natural drainage ways that flow directly to the ocean.
- D. Crescent City Harbor.
- E. All intertidal reaches of the coast, all bays, and all estuaries.

- F. Areas of special biological significance.
 - G. 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.
2. The second general category of situations that the Regional Board believes warrants waste discharge prohibitions is where the proposed receiving water or its beneficial uses have unique or exceptional cultural, esthetic, historical, scientific, or ecological values. The public's need and concern for these values is so important that no risk of degradation from wastes should be accepted. Therefore, all domestic waste discharges are prohibited in the following locations within Basin 1-A in California:
 - A. Smith River and its tributaries.
 - B. Klamath River and its tributaries, including but not limited to the Trinity, Salmon, Scott, and Shasta Rivers and their tributaries.
 - C. The Applegate, Illinois, and Winchuck Rivers and their tributaries.

Policy on the Control of Water Quality with Respect to Individual Waste Treatment and Disposal Facilities

The Interim Plan for the Klamath River Basin contained the following prohibitions on individual sewage disposal systems:

1. Individual sewage disposal systems are prohibited at all locations not in conformance with those regulations contained in the Uniform

Plumbing Code or local county ordinances, whichever is the most restrictive.

2. Individual sewage disposal systems are prohibited in all new subdivisions until such time as the developer demonstrates to the satisfaction of the Regional Board that the geologic and hydrologic conditions are such that the quality of the underlying groundwater or adjoining surface water will not be impaired and that the proposed lot size provides sufficient space to permit additional leach lines to be constructed on the lot should it become necessary.

Prohibition No. 1 has not proved to be effective because: (1) regulations contained in the Uniform Plumbing Code (UPC) are not adequate, in most instances, to protect water quality and public health in this region; (2) to date, local county ordinances are not more stringent than the UPC; and (3) local health authorities have not consistently enforced their existing ordinances.

Prohibition No. 2 regarding new subdivisions has proved to be very effective with respect to the protection of water quality and public health. Its major shortcomings, as viewed by local health authorities and potential subdivision developers, are: (1) it does not provide local health authorities with guidelines that they can use to evaluate new developments at the county level; (2) it does not provide local health authorities with criteria with which to strengthen and implement county ordinances; and (3) it does not provide special guidance to potential subdivision developers to enable them to foresee actions required to meet Regional Board requirements.

Over the past 2 years the Regional Board staff has developed and implemented guidelines which tend to eliminate the shortcomings of Prohibition No. 2.

To eliminate without question the shortcomings of both existing prohibitions, a new policy will be implemented, based on the following principles:

1. Individual waste treatment and disposal systems which are improperly constructed or operated or are located in unsuitable areas can result in pollution of the State's waters and in the creation of health hazards and nuisance conditions.
2. While Division 7 of the California Water Code grants to the Regional Board jurisdiction over discharges from individual waste treatment and disposal systems, local regulatory agencies 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.
3. The many variations in physical conditions throughout the region may affect the propriety of use of individual waste treatment and disposal systems. Adherence to the guidelines and criteria contained herein ordinarily will protect public health and water quality.
4. It is recognized that in certain cases factors may arise which will justify less stringent requirements to protect water quality and public health than set forth in the guidelines and criteria contained herein. These instances must be evaluated on a case by case basis after adequate data have been provided by the potential discharger.
5. Individual waste treatment and disposal systems can be an excellent rural sanitation device. In urban areas where population densities are generally high and the

availability of land is limited, individual systems are not desirable and should not be permitted if adequate community sewerage systems are available or feasible.

6. The life of individual waste treatment and disposal systems may be quite limited if improperly maintained. A means must be available to assure adequate maintenance of individual waste treatment and disposal systems.

Guidelines and Criteria

1. Individual waste treatment and disposal systems shall be located in a manner to ensure that effluent does not surface at any time, and that percolation of effluent will not adversely affect activities on property owned or under the control of others.
2. Minimum distances between various features of individual waste treatment and disposal systems shall be as shown in Table 10.
3. The percolation rate in the disposal area shall not be less than 1 inch per hour (60 minutes per inch). If seepage pits are used, the percolation rate shall not exceed 30 minutes per inch.
4. Minimum soil depth immediately below the bottom of the leaching trench or seepage pit shall not be less than 5 feet.
5. Depth to the anticipated highest level of groundwater below the bottom of the leaching trench or seepage pit shall not be less than 5 feet. Trenches or pits shall be prohibited where highly porous soils or fractured bedrock provide direct transmittal of effluent to groundwaters without adequate filtration. Where soils, logs, or percolation tests show porous soils exhibiting minimum filtration capability (percolation rates less than 5 minutes per inch), minimum depth to groundwater below the bottom of the trench or pit shall be not less than 40 feet.
6. All percolation tests shall be conducted during periods which will be representative of the period of usage of an individual waste treatment and disposal system. Wintertime or wet weather testing shall be required.
7. Ground slope in the disposal area shall not be greater than 30 percent.

TABLE 10
MINIMUM DISTANCES FROM RECEIVING WATERS
(in feet)

Facility	Well	Perennially	Drainage Course	Lake or
		Flowing Stream <u>a/</u>	or Ephemeral Stream <u>b/</u>	Reservoir <u>c/</u>
Septic tank	50	50	50	50
Leaching field	100	100	100	200
Seepage pit	150	100	100	200

a/ As measured from the line which defines the limit of a 10-year frequency flood.

b/ As measured from the edge of the watercourse.

c/ As measured from the high-water line.

8. At a minimum, septic tank requirements shall be based upon the current U. S. Department of Health Education and Welfare's "Manual of Septic Tank Practice" or in accordance with methods approved by the Executive Officer of the Regional Board.
9. Absorption system requirements shall be based upon the "Manual of Septic Tank Practice" or methods otherwise approved by the Executive Officer of the Regional Board.
10. Except as specifically set forth herein, disposal area requirements shall be based on the "Manual of Septic Tank Practice" or on other methods approved by the Executive Officer of the Regional Board. Disposal area shall be calculated on the basis of sidewall area only.
11. An adequate replacement area equivalent to the initial disposal area shall be required at the time of design of the initial installation, and incompatible uses of the replacement area shall be prohibited.
12. Seepage pits shall not be used in areas where the anticipated highest groundwater level extends to within 12 feet of the ground surface.
13. Discharge from cesspools shall be prohibited.
- B. Construction of community sewers to replace individual waste treatment and disposal systems when necessary.
- C. Implementation of an adequate program requiring disposal of septic tank pumpage at sites approved by the Regional Board.

3. The Regional Board will prohibit the discharge of wastes from all new individual waste treatment and disposal systems within delineated areas declared by a county health officer, and substantiated by surveys, to constitute hazards to public health as a result of such discharges.
4. The Regional Board may prohibit the discharge of wastes from all new individual waste treatment and disposal systems within delineated areas where surveys indicate that water quality is being impaired as a result of such discharges.
5. In prescribing waste discharge requirements for subdivisions, the Regional Board shall require the existence or formation of an entity of dischargers empowered to conduct a program of regular monitoring, maintenance, and repair. Waste discharge requirements shall prescribe appropriate programs of monitoring of potentially affected receiving waters and of the integrity of individual waste treatment and disposal systems.
6. When existing individual waste disposal systems require repair or addition, they shall become subject to the provisions of this policy.
7. In those areas which have adopted ordinances compatible with this policy, the following shall apply:
 - A. Land developments consisting of five or fewer family units

Implementation

1. The Regional Board requests local agencies to adopt ordinances which are compatible with this policy within 1 year of the adoption of this policy by the Regional Board.
2. Before approval of any local ordinances is given, the Regional Board must find that, at a minimum, the local ordinance provides for:
 - A. Formation of an entity of dischargers to implement an adequate program of regular monitoring, maintenance, and repair.

will be processed by the local agency having jurisdiction.

- B. Land developments with a density less than one dwelling unit per 2.5 acres shall be processed by the local agency having jurisdiction. Density shall be computed based on the total area set aside for residential use, excluding streets, sidewalks, and open space and any other area designated to be used in common.
- C. Tentative maps for land developments containing more than five units and densities greater than one dwelling unit per 2.5 acres shall be transmitted to the Regional Board along with sufficient information to demonstrate clearly that the proposed development complies with this policy.
- D. Individual waste treatment and disposal systems to serve a single-dwelling unit and to be installed within recorded land developments shall be processed entirely by the local agency having jurisdiction.
- E. The Regional Board shall retain jurisdiction over any waste treatment and disposal system which may in the judgment of the Executive Officer result in water pollution, nuisance, and/or health hazards.

Provision for Waiver

The Executive Officer of the Regional Board may waive specific guidelines and criteria contained herein in specific cases when it can be shown to his satisfaction that water quality will not be impaired and public health will not be threatened as a result of such waivers.

Unsewered Areas

In accordance with the provisions of the above policy, the Regional Board will

consider the prohibition of discharges from new individual waste treatment and disposal systems in the following unsewered areas.

Happy Camp

This Siskiyou County community of about 900 persons does not have a community sewage collection system or treatment plant. Individual waste treatment and disposal system failures are common throughout most of the community along Indian Creek. Health hazards and contamination of Indian Creek, a tributary of the Klamath River, have been and will continue to be documented. Regional Board and local efforts to eliminate water quality problems by construction of adequate treatment facilities have been unsuccessful. State and federal funds have been available for a sewage treatment project, but local efforts to schedule a bond election to fund the remainder of a project have failed.

Happy Camp is currently on the municipal project list for fiscal year 1974-75 for a \$2,500,000 collection system and treatment plant. A grant-funded project should require secondary treatment and land disposal of effluent for a maximum population of about 1200. This level of treatment and method of disposal would meet water quality objectives and prohibitions established for the Klamath River.

In the interim, the Regional Board, in cooperation with Siskiyou County, should ban the discharge of waste from all new individual waste disposal systems by December 1974, within an area delineated by the county. Individual waste disposal systems outside the delineated area should be allowed only if they meet all provisions of the Regional Board's policy on the control of waste discharges with respect to individual waste treatment and disposal systems. The Siskiyou County Health Department should conduct a detailed survey of septic tank failures during wet and dry weather conditions. Results of the dry weather survey should be submitted to the Regional Board by November 1974. A program to mitigate

the adverse effects of existing dischargers should be jointly formulated by the Siskiyou County Health Department and the Regional Board. The program should consider at least the following: (1) prohibition of discharges from all known failing systems according to specific time schedules, (2) regulations of water usage at locations where individual waste treatment and disposal facilities are failing, and (3) adequate disinfection of any surfaced effluent.

Crescent City Fringe Areas

Individual waste treatment and disposal system failures are prominent throughout three general areas adjacent to Crescent City. In all three areas (Crescent North, Bertch-Oceanview Tract, and Filkins Tract) discharges from the failing systems have resulted in health hazards through direct contact and potential pollution of groundwater which is currently pumped from private wells in these areas.

Population of the three areas combined exceeds 4,000. As a result of State and Regional Board and County action, the County of Del Norte, as the agency representing these unincorporated areas, has been placed on the municipal project list for 1974-75 for \$2,650,000 to construct a collection system and interceptor to the City of Crescent City's treatment plant. Treatment capacity will have to be purchased from the City.

In the interim, prior to construction of the collection system, the Regional Board, in cooperation with the County of Del Norte, should ban the discharge of waste from new septic tanks within specific fringe areas of Crescent City by December 1974. Results of county studies, delineating areas within which bans should be imposed, should be submitted to the Regional Board by November 1974. The County of Del Norte should formulate a program to mitigate the adverse effects of existing discharges. The program should consider (1) the prohibition of discharge from known failing systems according to specific time schedules,

(2) adequate disinfection of any surfaced effluent, (3) the prohibition of use of water from public or private wells which have been shown by surveys to be contaminated, and (4) strict enforcement of county and state standards for the construction or abandonment of water wells.

Yreka Fringe Areas

Individual waste treatment and disposal system failures have been documented by state and county health authorities in the "Campbell Tract" area and other areas south of the City of Yreka in Siskiyou County. Septic tank system failures in the Campbell Tract area have been attributed to unsuitable soil conditions and excessive effluent discharges to inadequately sized disposal areas. Discharges from failing systems have resulted in health hazards through direct contact and pollution of groundwater which is pumped from privately owned wells.

A \$335,000 project for the construction of an interceptor to convey waste from the area to the City of Yreka's treatment plant is currently on the 1974-75 municipal project list. A county service area must be formed in order for the project to be certified for grant funds.

The Siskiyou County Health Department, in cooperation with the Regional Board, should complete a survey of failing septic tanks in the southern fringe areas of Yreka by November 1974. The survey should delineate areas where septic tank discharges should be banned and should identify water wells that are or threaten to be contaminated. The Regional Board and the County of Siskiyou should ban the discharge of waste from new septic tanks within specifically delineated areas by December 1974. The County of Siskiyou should implement a program to mitigate the adverse effects of existing discharges. The program should consider (1) the prohibition of discharge from known failing systems according to specific time schedules, (2) adequate disinfection of surfaced effluent, (3) prohibition of use of water from public and

private wells which have been shown to be contaminated, and (4) strict enforcement of county and state standards for the construction or abandonment of water wells.

Hornbrook, Trinity Center, Weaverville South, Hayfork, and Grenada

Septic tank failures of magnitudes creating potential public health hazards have been reported in the above areas by the State Health Department. Regional Board action on discharges from septic tanks in these areas should be preceded by surveys conducted by Trinity and Siskiyou County health authorities. The surveys should delineate specific areas where septic tank discharges should be banned to protect water quality and public health. The results of such surveys should be submitted to the Regional Board by May 1975.

Sewered Communities

Crescent City

Existing treatment at this Del Norte County community of 3,000 persons consists of sedimentation and disinfection. Effluent is presently discharged to the Pacific Ocean through a short outfall. Crescent City received a Clean Water Grant during fiscal year 1971-72 for a two-stage improvement of treatment facilities. Stage two, now under construction, will provide secondary treatment for 1,860,000 gallons per day of wastewater and will include modification of the present ocean outfall. Based on available population projections and per-capita flow rates, it does not appear that treatment capacity will be adequate through the planning period (year 2000) if outlying areas adjacent to the city are to be served. The Regional Board recommends that Crescent City assess its sewage treatment capacity needs through the year 2000, provide its conclusions to the Board as soon as practicable, and commence implementation of an expansion program, if found necessary.

City of Etna

Etna is a Siskiyou County community of about 800 persons. Present facilities consist of a series of ponds which were originally designed to impound all wastes without discharge. During the winter of 1973, effluent from the ponds was discharged to Johnson Creek, a tributary of the Scott River. The City of Etna should conduct a study to determine the necessary plant improvements required to achieve consistent compliance with the provisions of this plan. The results of the study should be submitted to the Regional Board by November 1974. If the results of the study indicate the need for grant funds to correct the identified problems, Etna should be placed on the 1975-76 municipal project list.

Cities of Fort Jones and Dorris

Existing waste treatment and disposal facilities at these Siskiyou County communities appear to be capable of providing treatment required to meet water quality objectives specified for Basin 1-A.

Grenada

Septic tank effluent from this Siskiyou County community of about 200 persons is occasionally discharged to a drainage ditch tributary to the Shasta River. By November 1974, the Regional Board staff in cooperation with the Siskiyou County Health Department will determine the extent of the discharge and, if possible, implement measures to eliminate it. If appropriate, the County of Siskiyou will be placed on the 1975-76 municipal project list on behalf of Grenada for a project to permanently eliminate waste discharges to surface waters.

City of Montague

A septic tank and ponds provide sewage treatment for this Siskiyou County community of about 900 persons. Wastes

are occasionally discharged from the ponds to Oregon Slough, a tributary of the Shasta River. Montague has been placed on the 1974-75 municipal project list for \$100,000 to be used for upgrading treatment and eliminating all discharges to surface waters through the year 2000. In the interim prior to construction, the City of Montague, in cooperation with the Regional Board staff, should investigate the extent of discharge to Oregon Slough and if possible implement temporary measures to reduce or eliminate such discharges or provide adequate effluent disinfection.

Newell

Existing facilities at this Modoc County community of about 200 persons consist of an Imhoff tank and percolation ditches. However, the discharge is essentially raw sewage as the Imhoff tank has deteriorated beyond use. Newell will be placed on the 1975-76 municipal project list for construction of a facility capable of providing treatment and disposal for a projected year 2000 population of 500. In the interim prior to construction, the Modoc County Health Department should further restrict access to the already isolated treatment plant site.

City of Tulelake

Tulelake, Siskiyou County, is on the current year municipal project list for a grant to provide secondary treatment for a population of 1,000. The grant-funded project should provide adequate treatment and capacity through the year 2000.

Weaverville Sanitary District

Construction of a secondary treatment facility and percolation ponds for the community of Weaverville, Trinity County, is nearing completion. The facility will be capable of providing treatment for 1,900 persons, which is the community's projected population for the year 2000.

City of Weed - Shastina Sanitary District

Two waste treatment and disposal systems currently serve the community of Weed, Siskiyou County. Approximately 1,900 persons are served by the City of Weed treatment plant which provides sedimentation, filtration, and ponding prior to discharge to Boles Creek. The Shastina Sanitary District's facilities consist of four sewage stabilization lagoons that serve a population of about 1,100. Construction of a consolidated facility capable of treating 1,900,000 gallons per day is scheduled to commence in 1974 with the benefit of Clean Water Grant funds. Effluent discharges to surface waters will be prohibited. The completed facility should not require expansion prior to the year 2000.

City of Yreka

Waste treatment and disposal facilities for the City of Yreka, Siskiyou County, were upgraded in 1973. The new facility is capable of providing secondary treatment for a flow of approximately 1,000,000 gallons per day. Treated wastes are discharged to percolation ponds adjacent to Yreka Creek. The city's present population of less than 6,000 is projected to increase to over 10,000 by 1990. The present treatment facility can be expanded to treat 1,900,000 gallons per day. Expansion of the facility beyond 1,900,000 does not appear to be necessary prior to the year 2000.

Solid Wastes

Solid wastes 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 gas 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 hardness and mineral and nutrient concentrations.

Recognizing the potential water quality problems associated with the improper disposal of solid wastes, the State Water Resources Control Board added Subchapter 15 to Chapter 3, Title 23, of the California Administrative Code. Subchapter 15 will be used by the Regional Board as the basis for disposal site and waste classification and for the prescription of waste discharge requirements necessary to protect water quality.

Additional actions required to protect water quality are described herein for the specific counties in Klamath River Basin 1-A.

Del Norte County

Four solid waste sites are presently in use in the County of Del Norte. Three of these sites, Fort Dick, Gasquet, and Klamath, have limited remaining capacity and are located such that positive protection of water quality is not provided. Del Norte County proposes to convert these sites to transfer stations at some future date. Wastes deposited at these stations would be conveyed to the Crescent City site.

The Regional Board recommends that Del Norte County discontinue the use of the Fort Dick and Gasquet sites by mid-1975, and discontinue the use of the Klamath site within 3 years of the adoption of this plan. The Regional Board further recommends that, upon abandonment, each site be covered and graded to mitigate any potential adverse effects on water quality.

The Crescent City site meets all the provisions of Subchapter 15 for classification as a Class II-2 site. Its anticipated useful life is about 25 years. The site is capable of receiving all but toxic wastes.

Humboldt County

Three solid waste disposal sites are in use in that portion of Humboldt County lying within Basin 1-A. These sites, located at Orick, Orleans, and Willow

Creek, are scheduled for conversion to transfer stations upon the development of a regional solid waste disposal site by Humboldt County.

The Regional Board recommends that Humboldt County discontinue the use of the Orick, Orleans, and Willow Creek sites by July 1976, and that these sites be covered and graded at that time to preclude any adverse effects on water quality.

The Regional Board further recommends that the county coordinate its efforts toward selection of a regional site with the Board's staff to assure that all provisions of Subchapter 15 are met.

Modoc County

The Casuse Mountain solid waste disposal site is the only site now in use in that portion of Modoc County lying within Basin 1-A. The site, which has been classified as a Class II-2 site, has a projected life of 30 years based on a service population of 2,000. Proper operation of the site will result in adequate protection of water quality.

Siskiyou County

At present there are 11 transfer stations in Siskiyou County and 9 operating solid waste disposal sites. All transfer station wastes are conveyed to the solid waste disposal site at the City of Yreka. Existing solid waste disposal sites at Tennant, Cecilville, Happy Camp, Forks of Salmon, Somes Bar, and Sawyers Bar are scheduled for conversion to transfer stations in the near future at which time solid wastes will be conveyed for disposal to Yreka. Ultimately, Siskiyou County plans to utilize only the Tulelake, City of Weed, and City of Yreka sites.

The Regional Board recommends that the sites located at Tennant, Cecilville, Happy Camp, Forks of Salmon, Somes Bar, and Sawyers Bar be abandoned within a period of 1 year of adoption of this plan and be covered and graded to mitigate potential adverse effects on water quality.

The waste disposal site at the City of Weed is expected to accommodate wastes for a period of up to 5 years. At that time there will be a need for additional solid waste capacity to serve the area around Weed, Mt. Shasta, McCloud, and Dunsmuir. The Regional Board recommends that the County of Siskiyou commence planning to develop a site to accommodate wastes from the above-described locations that will be consistent with requirements of Subchapter 15.

The possibility exists that a permanent solid waste disposal site may be required for the community of Happy Camp. The Regional Board recommends that the County of Siskiyou determine whether such a site will be required within the planning period and develop a potential location or locations that will meet the provisions of Subchapter 15. Solid waste disposal sites at Tulelake and Yreka have capacities that will allow the disposal of wastes well beyond the year 2000. At present both sites can be classified as Class II-2. With proper operation of both sites, no water quality problems are anticipated.

Trinity County

Ten of the 11 operating Trinity County sites are scheduled for abandonment in the near future. The abandoned sites will be converted to transfer stations and all wastes will be conveyed to the Weaverville site, a potential Class II-2 site which has an estimated remaining useful life of approximately 25 years. The Regional Board recommends that Trinity County discontinue by mid-1975 the use of all solid waste disposal sites in the county, with the exception of the Weaverville site, and that all abandoned sites be covered and graded to protect water quality.

Emergency Spills

On February 27, 1974, this Regional Board adopted Resolution Number 74-38 entitled "Contingency Planning and Notification Requirements for Accidental Spills and Discharges". The order was

formulated and adopted by the Regional Board when it became apparent that specific waste dischargers were unprepared for emergency situations. The order requires entities which discharge, store, or manage wastes to (1) formulate and submit a contingency plan to the Regional 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 2 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.

The action of the Regional Board has proven to be effective. Virtually all entities affected have submitted emergency plans and plans have been successfully implemented in cases of specific accidental discharges.

Mining

Several hundred existing and abandoned mines are located within the north coastal area. Many of the mines in Basin 1-A 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.

To protect the quality of basin waters from adverse effects resulting from mining waste discharges, the Regional Board shall (1) adopt waste discharge requirements for those mining operations which could potentially adversely affect water quality in Basin 1-A, (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 cease and desist actions if necessary, (4) issue cease and desist orders when appropriate, and (5) refer violations of cleanup and abatement orders and

cease and desist orders to the Attorney General for his action.

RECOMMENDED NONPOINT SOURCE MEASURES

Logging, Construction, and Associated Activities

On October 25, 1972, the Regional Board revised the Interim Water Quality Control Plan for Klamath River Basin 1-A to include the following waste discharge prohibitions pertaining to logging, construction, and associated activities.

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

Guidelines for implementing the prohibitions were adopted by the Regional Board on the same date.

In consideration of the experience gained in implementing the above-stated prohibitions, the Regional Board declares that:

1. The October 25, 1972, waste discharge prohibitions pertaining to logging, construction, and associated activities shall remain in effect.
2. A risk analysis system based on the evaluation of specific

parameters shall be implemented to predict potential threats to water quality resulting from the discharge of logging, construction, and associated wastes. To most effectively utilize staff resources of the Regional Board, a risk analysis system shall be implemented that will result in a priority ranking of delineated areas within the region according to (1) the potential for generation of logging, construction, or associated wastes within the areas and (2) the beneficial uses of water within those areas that could be adversely affected by the discharge of such wastes.

3. Waste discharge requirements shall be adopted for logging, construction, or associated activities to be conducted in areas where risk analyses indicate that established beneficial uses of water may be adversely affected. The requirements shall include a program of monitoring and reporting. Maps delineating areas of high risk shall be made available to prospective waste dischargers.
4. To assure proper evaluation of logging, construction, or associated activities for which waste discharge requirements may be appropriate, timber harvesting plans, construction or associated activity plans, or Reports of Waste Discharge containing specific information shall be submitted to the Regional Board for review well in advance (at least 120 days) of the commencement of the planned activity.
5. Actual or potentially adverse effects on water quality may also occur unpredictably as a result of negligent operation in areas where the risk of discharge is not indicated to be high. In these instances enforcement action should commence with the issuance of cleanup and abatement orders.

6. The State Board and the Regional Board shall continue to assume lead roles in the protection of water quality from waste discharges associated with logging, construction, and associated activities.

Guidelines for Implementation of Waste Discharge Prohibitions and Policy Relating to Logging, Construction, or Associated Activities

This chapter contains water quality objectives which specify limitations on specific water quality parameters that are not to be exceeded as a result of waste discharges. Accordingly, the Executive Officer of the Regional Board is directed to investigate evidence of violations of the water quality objectives contained in this plan which result or threaten to result in unreasonable effects on the beneficial uses of waters of the region.

The Regional 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 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 waters in the region. The violation of the following rules, regulations, or provisions may be considered a threatened violation of waste discharge prohibitions.

1. Current rules for forest practices relating to erosion control in any logging or related activity being conducted pursuant to regulations administered by the Division of Forestry, including rules to be promulgated by the Board of Forestry.
2. Current rules for forest practices relating to water quality management or erosion control in any logging or related activity being conducted pursuant to current

contracts, and permits and regulations administered by the Forest Service, U. S. Department of Agriculture, the Bureau of Land Management, U. S. Department of Interior, or other federal agencies.

3. 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.
4. Sections 1602, 1602, 5650, and 5948 of the California Fish and Game Code, when such violation involves activities or discharges enumerated in the aforesaid prohibitions.

When investigations reveal that violations are occurring or are threatened due to discharge or threatened discharge of waste, the Executive Officer shall take the appropriate actions specified in the enforcement section of these guidelines.

The Regional Board directs the Executive Officer to implement the following investigative and coordinating activities. These activities are intended to preclude an additional administrative burden on prospective waste dischargers by utilizing existing state reporting requirements.

1. The staff of the Regional Board is directed to investigate and review, on a continuing basis, logging operations, road construction, and related construction or earth-disturbing activities within the region to determine the effect, or potential effect, of such activities on water quality. Such investigations and reviews shall be conducted on a priority basis. Priority shall be based on the risk of discharge within delineated watersheds or sub-watersheds and the beneficial uses of water within such watersheds.

2. The staff shall require the submission of Reports of Waste Discharge from prospective dischargers when investigations indicate that beneficial uses of water may be adversely affected by waste discharges. Reports of Waste Discharge must be submitted at least 120 days in advance of the commencement of discharge and may be incorporated as parts of timber harvesting plans or construction or associated activity plans.
3. 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 whenever necessary.
4. The staff shall obtain from the Division of Forestry, the Board of Forestry, and the Department of Fish and Game copies of all notices received for timber operations, timber harvesting plans, and stream alteration activities within the region.
5. The staff shall obtain from the Department of Transportation the names of all contractors 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 Board, as early as is feasible, 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, a request will be made for copies of any special conditions or regulations for the control of erosion or protection of water quality.
6. 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 basin plans and copies of this or subsequent implementation statements on this subject issued by the Regional Board.
7. The staff will request that the State Division of Forestry notify the Regional 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 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 Board's 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 Board's office of all violations of rules and regulations for the control of erosion or protection of water quality.
8. The staff will notify the State Department of Fish and Game, the State Department of Conservation, Division of Forestry, the State Department of Transportation, and the Forest Service, USDA, of all violations of the discharge prohibitions and of all actions taken by the Regional Board with regard to such violations or threatened violations.
9. 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 the Regional Board.

When investigation by the Executive Officer 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:

1. Cleanup or Abatement Order

- A. 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 person.
- B. 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 Board members and all other interested agencies.
- C. The Regional Board may hold a public hearing for purposes of making the necessary 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 Board, or at a special meeting of the Board called by the Chairman, on his own motion or at the request of the Executive Officer, or when called by any two Regional Board members as provided in Water Code Section 13204.

2. Cease and Desist Order

If waste discharge requirements

have been adopted by the Regional Board and 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 Board Chairman of his intention to bring the matter before the Regional 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:

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

Agriculture

The following actual or potential problems shall be assessed by the Regional Board in coordination with appropriate local, state, and federal agencies during fiscal year 1974-75.

- 1. Discharges of agricultural drainage water to the Klamath River from the Lost River system via the Klamath Straits Drain. Such

discharges may result in increased temperature and mineralization, sedimentation, turbidity, and pesticide toxicity.

2. Discharges of agricultural drainage water to the Klamath River from Butte Valley via the Meiss Lake drainage facilities. Such discharges may result in effects similar to those described above.
3. Increased mineralization of groundwater.
4. Potential contamination of groundwater by pesticides.

The 1975 update of the Comprehensive Water Quality Control Plan for Klamath River Basin 1-A shall include appropriate Regional Board recommendations with respect to agriculture.

Flow Depletion and Alteration

The following actual or potential problems shall be assessed by the Regional Board in coordination with appropriate local, state, and federal agencies during fiscal year 1974-75.

1. Fisheries decline in the Trinity River resulting in part from reduction and alteration of Trinity River flows.
2. Fisheries decline in the Butte Valley, Scott Valley, and Hayfork Creek subunits apparently resulting from large agricultural diversions of water from natural streams.
3. Nuisance algal blooms in Lower Klamath Lake, Tule Lake, Lake Shastina, Copco and Iron Gate Reservoirs, and the Klamath and Shasta Rivers.
4. Potential adverse increases in mineral concentrations in surface waters in the Lower Lost River, Upper Klamath River, and Shasta River.

The 1975 update of the Comprehensive Water Quality Control Plan for Klamath River Basin 1-A shall include appropriate Regional Board recommendations pertinent to flow depletion and alteration.

SURVEILLANCE

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 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 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.

The present program of surveillance and monitoring does not meet the objectives as heretofore set forth. The establishment of an optimal program will require considerable study and will require time and funds to implement. The optimum in surveillance and monitoring cannot be defined specifically and it may well be a changing thing as the water quality control plan is implemented. The following program is recommended for 1974-75; experience gained from each year of operation will lead to a better system and an approach to the optimum.

Primary Monitoring Network

The primary monitoring network for the basin consists of 13 freshwater sampling stations and the sampling of 6 groundwater basins, as outlined in Table 11. The surface water stations listed are presently being monitored by the California Department of Water Resources (DWR). These stations will be used as the foundation of the surveillance network for the first year and, contingent upon funding, will be increased each year thereafter. For all surface water stations shown in Table 11, physical parameters will be obtained, including dissolved oxygen, temperature, appearance, turbidity, odor, and electrical conductivity. Other parameters shown will be analyzed when significant changes justify.

Groundwater basins and the groundwater basin numbering system used in Table 11 are indicated in DWR Bulletin No. 130,

"Hydrologic Data, Volume I: North Coastal Area". Specific wells will be selected after field checks of their availability, suitability, and access. Annual inventory reports and other data summaries, as needed, will be prepared in accordance with federal regulations.

Discharger Self-Monitoring

All self-monitoring information generated as a result of National Pollutant Discharge Elimination System (NPDES) permits and waste discharge requirements will be collected, screened for instances of noncompliance, and entered into the data bank. Self-monitoring reports are submitted by the discharger on a monthly or quarterly basis as required by the permit conditions. Currently, self-monitoring information is required only from the cities of Yreka and Crescent City, Shastina, and Weaverville Sanitary Districts, and the International Paper Company near Weed. The list will be expanded as additional self-monitoring requirements are imposed.

Compliance Monitoring

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

Specific details of this program will be developed as the waste discharge requirements are issued by the State and after federal regulations are completed.

In the interim, each discharger will be periodically visited by Regional Board personnel on both announced and unannounced "facility inspections". The intent of announced visits will be to work with the discharger through personal contact and communication to review his procedures in order to assure quality

TABLE 11
WATER SAMPLING STATIONS, BASIN 1-A

		Coordinates		USGS Number	In Store	Starting Date of Record		No. of Analyses in DWR Data Bank	Sample Frequency		Parameters Analyzed ^{1/}		
		Latitude	Longitude			Qty.	Qual.		Qty.	Qual.	Min- erals	Nutri- ents	Trace Ele- ments ^{2/}
<u>Surface Water Stations</u>													
<u>Number</u>	<u>Name</u>												
F-0-1300.00	Smith River near Crescent City	41-47.3	124-03.3	11-5325.00	Yes	10-31	4-51	91	Cont.	Mon.	X	X	X
F-1-6200.00	Meiss Lake	41-50.3	122-04.7	--	No	-52	--	--	Cont.	Bi Mon.			
F-2-1050.00	Shasta River Near Yreka	41-49.2	122-35.6	11-5175.00	Yes	11-33	6-65	77	Cont.	Bi Mon.	X	X	X
F-2-5250.00	Scott River Near Fort Jones	41-38.5	123-00.9	11-5195.00	Yes	12-41	12-58	67	Cont.	Bi Mon.	X	X	X
F-3-1100.00	Klamath River Near Klamath	41-30.7	123-58.5	11-5305.00	Yes	10-10	4-51	100	Cont.	Mon.	X	X	X
F-3-1220.01	Klamath River at Orleans	41-18.2	123-32.0	11-5230.00	Yes	--	5-65	88	--	Mon.	X	X	X
F-3-1430.00	Klamath River Nr Seiad Valley	41-51.3	123-13.8	11-5205.00	No	11-12	12-58	76	Cont.	Mon.	X	X	X
F-3-1470.00	Klamath River Above Hamburg Reservoir Site	41-50.4	122-55.2	11-5178.00	No	9-60	12-58	56	Max. Disch	Bi Mon.	X	X	X
F-3-1599.01	Klamath River Below Iron Gate Dam	41-55.7	122-26.6	11-5165.30	Yes	8-60	12-61	92	Cont.	Mon.	X	X	X
F-3-4100.00	Salmon River at Somesbar	41-22.8	123-28.0	11-5225.00	No	9-11	10-58	30	Cont.	Sem. Ann.	X	X	X
F-4-1080.00	Trinity River at Hoopa	41-03.0	123-40.2	11-5300.00	Yes	10-11	4-51	90	Cont.	Mon.	X	X	X
F-4-1376.00	Trinity River Nr Burnt Ranch	40-47.3	123-26.3	11-5270.00	No	10-31	4-58	53	Cont.	Bi Mon.	X	X	X
F-4-1640.00	Trinity River at Lewiston	40-43.2	122-48.1	11-5255.00	Yes	8-11	4-51	67	Cont.	Bi Mon.	X	X	X
<u>Groundwater Basins</u>													
<u>Well No.</u>	<u>Name</u>												
1-01.00-18	Smith River Plain				No						X		X
1-02.00-02	Klamath River Basin				No						X		X
1-03.00-59	Butte Valley	Specific Sampling Wells Not Yet Selected		Not Applicable	No	Specific Sampling Wells Not Yet Selected					X		X
1-04.00-13	Shasta Valley				No						X		X
1-05.00-11	Scott River Valley				No						X		X
1-06.00-04	Hayfork Valley				No						X		
<u>Water Quality Class Segments</u>													
(None)													

1/ Only when field observations or preliminary testing detect significant changes.

2/ Cadmium, copper, iron, lead, manganese, and zinc.

Note: Water quantity measurements are by the U. S. Geological Survey in cooperation with the California Department of Water Resources. Water quality measurements and laboratory analyses (except for Station F-3-1100.00 by USGS) are by DWR.

control. The intent of the unannounced inspections (either to the plant or to the discharge point in the receiving waters) will be to survey the operation, inspect the discharge area, and collect check or reference samples.

Intensive Surveys

Intensive surveys are usually performed to obtain detailed information about a specific water quality problem. By federal regulation, intensive surveys are required every 5 years in waters classified as water quality segments. Thirty-one water quality segments have been identified throughout the State. None are located in this basin.

Nonpoint Source Investigations

The available information on nonpoint sources of pollution and abatement thereof is scarce and indicates wide ranges of variability. The objective in this element is to (a) develop information on the strength, character, and variability of nonpoint source pollutants, (b) provide information useful in the management of nonpoint source pollution, and (c) monitor the results of any control plan. Areas needing study were identified previously in this chapter.

Aerial Surveillance

The need and usefulness of aerial surveillance has been demonstrated in a pilot study carried out by the State Board over the past 2 years. As a result, the State Board has established an aerial surveillance program which will provide a total of 800 air-hours per year, with activities scheduled as follows:

	<u>Hours</u>
Routine Surveillance for	
Regional Boards	425
Special Studies for Regions	200
Special State Board Functions	125
Emergency Responses	25
Development of Aerial	
Surveillance Methods	25

Flights are made primarily to gather low-altitude photographic records of discharges and water quality conditions. Procedures will be developed to catalog photographs and records for rapid retrieval, both at the Regional Board and State Board offices. The program includes the development and use of remote-sensing methods.

Classification of Inland Lakes

Public Law 92-500 requires the State to identify and determine the present eutrophic condition of all publicly owned freshwater lakes. The inventory must be updated on a regular basis.

A preliminary inventory has identified about 5,000 freshwater lakes in California, without information on eutrophic level. During the first year of this surveillance and monitoring program, the State and Regional Board staffs, in cooperation with other state agencies, will determine the status of access and make an initial estimate of their eutrophic level. This information will be reported in the first annual inventory report to be submitted to the Environmental Protection Agency (EPA) on January 1, 1975.

Subsequently, the State will develop specific criteria for determining the eutrophic level of its freshwater lakes. Lakes which exhibit noticeable eutrophy or other water quality problems will be given the highest priority.

Annual Water Quality Inventory

Public Law 92-500 requires the State to prepare and submit an Annual Inventory Report with (a) a description of the water quality of major navigable waters in the State during the preceding year; (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; (d) an estimate of the environmental impact, the economic and social costs necessary to achieve the objective of the Act, 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.

Information with which to develop the annual water quality inventory will be obtained from the data gathered under all of the preceding program elements and will be published in a single report by the State Board covering the entire State.

Laboratory Support and Quality Assurance

Sample collection handling, preservation, transport, analysis, and results reporting are included in this element. The methods employed must be such that the results of the analyzed sample accurately represent the conditions in the sampled water body. A requirement is the establishment of criteria and standard methods to assure that quality is maintained throughout the work from sample collection to reporting of the results. Federal regulations set forth specific requirements that must be met in this regard.

The State of California has had, for many years, a program of laboratory certification administered by the Department of Health. In general, this program is considered to be appropriately conceived but has been criticized because the enforcement provisions are not strong enough and the program is underfunded. It is intended that the State Board will support expansion and upgrading of the present program to meet the intent of the federal regulations.

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

Data Storage, Retrieval, and Reports

The surveillance and monitoring program set forth above will generate considerable data. The magnitude of the problem of data handling, storage, and retrieval, of routine data checking, and of the preparation of routine data summaries and reports leads directly to consideration of electronic data processing methods. This type of system is amenable to receiving, checking, storing, and retrieving data, and through programming, it can be used to carry out routine data manipulation and prepare data summaries.

It is recommended that the State Board establish, for State and Regional Board use, such a system, provide for standardization of data input formats, and establish programs that will provide the routine data checking, manipulation, and preparation of reports. The data to be submitted to EPA are required to be in a format suitable for direct insertion into the EPA data handling system.

CHAPTER 4. ASSESSMENT OF RECOMMENDED PLAN

This chapter assesses the environmental effects of the recommended plan presented in Chapter 3. The assessments cover both the overall effects of each measure and comparisons of the recommended measures with the "no-action" condition. The "no-action" condition is assumed as a continuation of the policies and activities being carried out under the Interim Water Quality Control Plan. Present environmental conditions in Basin 1-A are described in Chapter 2.

The control measures recommended in Chapter 3 have been grouped as follows for the purposes of assessing their environmental impacts:

1. Waste discharge prohibitions.
2. Guidelines for implementing waste discharge prohibitions.
3. Policy on individual wastewater treatment and disposal facilities.
4. Construction or completion of community wastewater treatment and disposal facilities presently under construction or in the advanced planning stage.
5. Measures to deal with wastewater disposal problems of the community of Happy Camp.
6. Construction of improved wastewater treatment and disposal facilities for the community of Newell and the City of Montague.
7. Extension of sewerage service from the cities of Yreka and Crescent City to specified adjacent unincorporated areas.
8. Plans for development of regional solid waste disposal sites in each county.
9. Waste discharge requirements for mining activities.
10. Formulation of an emergency contingency plan to deal with accidental spills or discharges.
11. Recommendations for further study.

Table 12 assesses the environmental effects of each of the preceding categories of control measures in accordance with the requirements of the National Environmental Policy Act and the California Environmental Quality Act.

TABLE 12

ENVIRONMENTAL ASSESSMENT OF RECOMMENDED CONTROL MEASURES

RECOMMENDED MEASURES

1. Continue the general waste discharge prohibitions from the interim plan.
2. Continue the waste discharge prohibitions pertaining to logging, construction, and associated activities which were amended to the interim plan in October 1972.

ENVIRONMENTAL IMPACT

These measures provide the foundation for enforcement actions by the Regional Board to protect surface waters of the basin from degradation by direct discharges of wastes and to reduce the quantities of sediment and organic debris entering the streams. The result would be elimination of health hazards and nuisances and enhancement of environmental conditions for fish and wildlife, esthetics, and other beneficial uses. Quantitative assessment of the extent of such benefits is impossible at this time. These measures represent no change from the "no-action" condition.

UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

Prohibition of direct discharge to surface waters requires land disposal, which usually results in buildup of pollutants in the soil and/or groundwater. In areas of heavy rainfall, land disposal may prove unreliable, with consequent uncontrolled releases of pollutants. The restrictions on logging increase costs and lead to higher lumber prices.

ALTERNATIVES

Alternatives range from abolishment of all waste discharge prohibitions through a variety of possible alternative wording of prohibitions.

RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

The general concept of eliminating direct waste discharges focuses on achievement of high quality of surface waters immediately, with an indeterminable risk from long-term accumulation of pollutants in other parts of the environment.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

There is no direct effect but the discharge prohibitions would indirectly lead to commitments of greater areas of land for waste treatment and disposal facilities than might otherwise be used.

MITIGATION MEASURES TO MINIMIZE ADVERSE IMPACTS

The adverse impacts are primarily related to the alternative means of waste disposal which will be required; these impacts may be minimized by using care and following good practices in the selection and employment of alternative waste disposal methods.

GROWTH-INDUCING ASPECTS

The discharge prohibition affecting logging may result in a temporary reduction in the amount of lumber production. Since it would also tend to require more effort to log a given area, the overall effect on logging employment cannot be estimated at this time. The other prohibitions will have little influence on basin population or economic growth.

TABLE 12 (Continued)

RECOMMENDED MEASURES

Adopt revised guidelines for implementing the waste discharge prohibitions pertaining to logging, construction, and associated activities. The revisions incorporate a risk analysis system.

ENVIRONMENTAL IMPACT

The goal of this recommended measure is protection of basin waters from excessive sediment and organic debris loads caused by man's activities. No quantitative assessment is possible at this time of its ability to meet associated water quality objectives. The revised guidelines will result in no substantial change from the "no-action" condition, because they affect only the administrative procedures used to achieve the same goal.

UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

The revised guidelines are part of a system of regulations aimed at improving environmental conditions in areas disturbed by man and in the streams to which they are tributary. The principal adverse effects are increases in the cost of logging operations (which increase the cost of forest products), roads, other construction activities, and associated maintenance work. To the extent that the guidelines are used to prevent sidcasting of spoil in road maintenance operations, some undetermined adverse environmental effects will be occasioned by the alternative means selected for spoil disposal.

ALTERNATIVES

Alternatives include continuation of present guidelines and innumerable alternative administrative approaches which would vary the stringency and cost of implementing the waste discharge prohibitions.

RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

The revised guidelines themselves would have no significant effect on this relationship. Overall, the regulations affecting logging practices may reduce net lumber production in the short term, but should contribute to improvement of long-term timber yield by reducing watershed damage and its effects on sustained productivity. Reduction of stream habitat degradation will improve fishery habitat and thus create conditions favorable to long-term increases in fishery productivity.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Regulations which result in less adverse environmental impact from logging, construction, and related activities may well reduce the efficiency of such operations, leading to increased consumption of petroleum resources to accomplish a given result. At this time, such an impact is highly speculative and not subject to quantification.

MITIGATION MEASURES TO MINIMIZE ADVERSE IMPACTS

The principal defense against the potential adverse impacts is judicious and considered use of the revised guidelines. Their wording permits substantial flexibility in their application.

GROWTH-INDUCING ASPECTS

The indeterminate overall effect of regulation of logging operations is discussed on the previous page. No other effects are foreseen.

TABLE 12 (Continued)

RECOMMENDED MEASURE

Adopt new policy on individual wastewater treatment and disposal facilities.

ENVIRONMENTAL IMPACT

The goal of the recommended policy is the prevention of pollution, health hazards, and nuisance conditions associated with construction of new individual wastewater treatment and disposal facilities. (Measures to deal with existing problems with such systems are treated separately in this table.) The recommended policy replaces the two generalized waste discharge prohibitions of the interim plan with specific rules for system siting. The net impact of the new policy is to more clearly limit the conditions under which individual wastewater treatment may be installed. It also lays the groundwork for mandatory inspection and maintenance of systems installed in new subdivisions.

UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

Although the new policy sets no specific requirements on lot area, its provisions will tend to increase the lot size in new subdivisions. This will have the effect of increasing the cost of community wastewater collection if and when it becomes necessary. It will also effectively ban development on an undetermined number of presently subdivided lots, with attendant financial losses to the owners of those lots.

ALTERNATIVES

An endless variety of alternative policies could be formulated, either more or less stringent than the recommended policy. The new policy represents only a moderately more restrictive approach than the present one, which has demonstrable deficiencies.

RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

On balance, the new policy will increase the initial cost of individual wastewater treatment and disposal systems, but will provide long-term benefits to owners by reducing maintenance and repair costs.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Since the new policy will tend to increase lot sizes in new subdivisions, it will result in lower population densities than might otherwise result, and consequently increase the commitment of land area to urban uses.

MITIGATION MEASURES TO MINIMIZE ADVERSE IMPACTS

The new policy incorporates provision for waiver, under which the Executive Officer of the Regional Board may adjust the criteria to avoid adverse impacts where it can be demonstrated that water quality will not be impaired or the public health threatened as a result.

GROWTH-INDUCING ASPECTS

The recommended policy will not exert a significant effect on total growth, but it will tend to influence growth patterns. Growth will be encouraged within or near areas with community wastewater collection systems and population density in the more remote areas will be somewhat lessened.

TABLE 12 (Continued)

RECOMMENDED MEASURES

Continue with construction of improved wastewater treatment and disposal facilities as planned or under way in:

1. City of Tulelake
2. City of Weed-Shastina Sanitary District
3. Weaverville Sanitary District
4. City of Crescent City

ENVIRONMENTAL IMPACT

Construction of these facilities will alleviate problems associated with present wastewater treatment and disposal operations. The new facilities will operate in conformance with the water quality objectives of both the interim plan and this water quality control plan. These recommended measures represent no change from the "no-action" condition.

UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

The unavoidable adverse impacts are loss of a few acres of land for other uses, odors, and short-term impacts associated with project construction such as noise, dust, unsightliness, and minor interference with traffic flow. None of these adverse effects is considered to be of more than very minor significance.

ALTERNATIVES

Alternatives to the recommended facilities are principally matters of design variations and are discussed in the individual project reports prepared by the dischargers. The "no-action" alternative was considered and rejected previously as unacceptable in light of existing problems.

RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

The money, land, and other resources devoted to construction of these wastewater treatment and disposal facilities will result in long-term improvements in the quality of the waters which are receiving direct or indirect discharges of effluent from the facilities being replaced or improved. These improvements will protect the public health, prevent nuisance, and either prevent future damage to, or allow restoration of, the biologic productivity of these waters.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The resources irretrievably committed to construction of these plants include a few acres of land and relatively small amounts of building materials such as steel, cement, and aggregates. Operation will require more electrical energy than is presently being used.

MITIGATION MEASURES TO MINIMIZE ADVERSE IMPACTS

Land requirements for all but the Crescent City facilities could be reduced by switching to more costly treatment and disposal processes. Standard procedures are available to minimize the adverse short-term impacts associated with construction. Odor problems are minimized by locating facilities away from developed areas as much as possible.

GROWTH-INDUCING ASPECTS

All of the recommended facilities would be sized to accommodate only modest growth of their service areas. However, these projects to improve existing wastewater treatment and disposal facilities would not exert any significant influence on growth.

TABLE 12 (Continued)

RECOMMENDED MEASURES

Prohibit discharges from new individual wastewater disposal systems in Happy Camp, pending construction of wastewater collection, treatment, and disposal facilities. Meanwhile, the Regional Board and county health department will act to mitigate the adverse effects of presently malfunctioning septic tank-leaching systems.

ENVIRONMENTAL IMPACT

These measures will eliminate problems of chronic violation of water quality criteria and discharge prohibitions due to damaged and malfunctioning individual wastewater treatment and disposal facilities. For the most part, the plan formalizes measures that are presently being taken and thus does not represent any great change from the "no-action" condition.

UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

The unavoidable effects of construction and operation of wastewater collection, treatment, and disposal facilities are the loss of a few acres of fairly scarce valley land, odors, and short-term construction impacts such as noise, dust, unsightliness, and interference with community services and traffic flow. These effects will be thoroughly evaluated as a part of the project implementation studies.

ALTERNATIVES

Alternatives to construction of a community sewerage project in Happy Camp include repair of offending septic tank-leaching systems, smaller sewerage projects encompassing only the greatest problem areas, and truck hauling of wastes from individual systems. The "no-action" alternative is not acceptable in view of the serious present problems.

RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

The money, land, and other resources devoted to construction of wastewater collection, treatment, and disposal facilities in Happy Camp will represent a significant burden on the community; however, the facilities will eliminate sources of contamination of Indian Creek and the Klamath River, protect the public health, and prevent nuisance.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The resources which will be irretrievably committed to construction include a few acres of land and relatively small amounts of steel, cement, aggregates, and pipe. Operation of treatment facilities will consume a moderate amount of electrical energy.

MITIGATION MEASURES TO MINIMIZE ADVERSE IMPACTS

Standard procedures will be used in the project design and specifications to minimize the impacts associated with construction operations. Design and siting decisions will be made to minimize land requirements and potential odor problems insofar as is practical.

GROWTH-INDUCING ASPECTS

Preliminary studies have indicated that the proposed facilities should be sized to accommodate only a modest amount of growth, in accordance with forecasts. The overall effect of the project on growth is highly speculative. On the one hand, the relatively high monthly costs would tend to discourage growth, at least within the service area. On the other hand, the freedom from worry and savings in initial construction cost would tend to encourage building within the service area.

TABLE 12 (Continued)

RECOMMENDED MEASURES

Construct improved wastewater treatment and disposal facilities for the community of Newell and the City of Montague. (Details of the required facilities have not yet been determined.) In the interim, the Regional Board and the county health departments will take steps to mitigate the adverse impacts associated with present treatment and disposal operations.

ENVIRONMENTAL IMPACT

The recommended measures will eliminate health hazards, nuisances, and violations of water quality objectives, and waste discharge prohibitions caused by inadequacies of existing treatment and disposal facilities at Montague and deterioration of treatment facilities at Newell. Upgrading of the Montague facilities is included in the interim water quality control plan, but no definite steps have been taken toward construction. Improvements of the facilities at Newell have not been included in previous plans.

UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

Although definite plans have not been formulated for the facilities to be constructed, no major adverse environmental effects are foreseen. The projects may require use of a small amount of land presently devoted to other uses. The usual short-term impacts during construction such as noise, dust, unsightliness, and traffic disruption will be insignificant because of the remoteness of the treatment plant sites.

ALTERNATIVES

The "no-action" alternative has been found unacceptable because of the existence of problems with existing facilities. The other alternatives available are matters of design variations which have not yet been resolved.

RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

The money, land, and other resources devoted to upgrading these wastewater treatment and disposal facilities will result in long-term improvements in the quality of surface and groundwaters and contribute to protection of the public health and prevention of nuisance. Reclamation of the Montague effluent for irrigation use is being considered; this would enhance agricultural production by adding to the water supply.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The land and building materials devoted to facility construction will be of minor significance. The completed facilities will probably consume some electrical energy for operation.

MITIGATION MEASURES TO MINIMIZE ADVERSE IMPACTS

No significant adverse environmental impacts are foreseen, provided that ordinary care is used in design and construction procedures.

GROWTH-INDUCING ASPECTS

The recommended facilities would be sized to accommodate only the modest growth projected for these communities. The improvements to existing wastewater treatment and disposal facilities would not exert any significant influence on growth.

TABLE 12 (Continued)

RECOMMENDED MEASURES

Extend sewerage service from the cities of Yreka and Crescent City to specified adjacent unincorporated areas. Meanwhile, discharges from new septic tank-leaching systems will be banned in areas designated by the county health departments, and steps will be taken to mitigate the adverse effects of presently malfunctioning septic tank-leaching systems.

ENVIRONMENTAL IMPACT

The recommended projects will eliminate present health hazards associated with direct contact with surfacing effluent and potential pollution of groundwater which is currently pumped from domestic wells in these areas. Both of the recommended projects are currently on the municipal project list and their inclusion in this plan represents no change from the "no-action" condition.

UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

The short-term adverse impacts of project construction will include noise, dust, unsightliness, and interference with community services and traffic flow. The interim ban on new septic tank-leaching systems will cause inconvenience and possibly financial hardships on an indeterminate number of property owners.

ALTERNATIVES

Alternatives to the recommended measures include construction of independent wastewater collection, treatment, and disposal systems, or repair of offending septic tank-leaching systems on an individual basis. Installation of community water systems would alleviate part of the problems presently being experienced. The "no-action" alternative is not acceptable in view of the serious present problems.

RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

The money and other resources devoted to construction of the recommended facilities and the temporary disruptions caused by the ban on new septic tank-leaching systems will yield long-term benefits in the protection of public health, prevention of nuisance, and formation of a sound base for orderly growth in the future.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Aside from the materials used in construction, the only resources consumed will be a moderate amount of electrical energy for pumping and treatment.

MITIGATION MEASURES TO MINIMIZE ADVERSE IMPACTS

Standard procedures will be employed to minimize the adverse environmental impacts during construction.

GROWTH-INDUCING ASPECTS

The recommended systems will be sized to accommodate a moderate amount of growth. Although they would not directly affect the total growth of the area, they should have a substantial influence on growth patterns. There would be a strong tendency for new development to concentrate within the system service areas, particularly if stringent controls are maintained on septic tank-leaching systems in the adjoining areas.

TABLE 12 (Continued)

RECOMMENDED MEASURE

Continue with present plans for development of regional solid waste disposal sites in each county and abandonment of local disposal sites.

ENVIRONMENTAL IMPACT

This measure supports present county plans for consolidation of solid waste disposal operations. Consolidation of operations limits the potential for water quality impairment due to solid waste disposal by substituting a few closely regulated and monitored larger sites for numerous smaller operations which cannot be economically controlled to the same degree. This measure lends support of the Regional Board to county programs which are currently under way and thus represents no change from the "no-action" condition.

UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

The primary adverse effects of consolidation of waste disposal operations are: (1) increased use of petroleum resources for hauling, (2) greater theoretical potential for pollution due to the concentration of wastes in a single area, and (3) a possible tendency to increase unauthorized dumping because of the greater costs and longer hauls involved.

ALTERNATIVES

Alternatives to the recommended action range from return to the former pattern of many small local dumps, often with open burning, to consolidation of operations on a regional basis rather than a county basis.

RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

The recommended measure involves immediate increases in costs of solid waste disposal to achieve the long-term goal of protecting the environment from pollution by employing good solid waste disposal practices at a few well-supervised and monitored disposal sites. The ultimate effect will be devotion of less land area to such uses than would be required with numerous smaller disposal operations.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The principal commitment of resources to operation of consolidated solid waste disposal operations will be the additional fuel used to transport wastes longer distances. No estimate of the actual quantities involved is available.

MITIGATION MEASURES TO MINIMIZE ADVERSE IMPACTS

Increased fuel use for transportation can be minimized by efficient scheduling and planning. The potential pollution hazard due to concentration of wastes can be minimized by proper site selection, operation, and monitoring both during and after the period of active operation. The possible attendant increase in unauthorized dumping must be met by stringent enforcement of existing laws which prohibit such activities.

GROWTH-INDUCING ASPECTS

This recommended measure has no foreseeable significant impacts on growth or growth patterns.

TABLE 12 (Continued)

RECOMMENDED MEASURES

The Board will adopt waste discharge requirements for mining activities. In addition, it will issue cleanup and abatement orders to mining operations which are potentially or actually adversely affecting water quality.

ENVIRONMENTAL IMPACT

The goal of this recommended measure is the protection of basin waters from excessive chemical, sediment, and organic wastes from the mining operations. No quantitative assessment is possible at this time as to its ability to meet water quality objectives. The waste discharge requirements will result in no substantial change in the quality of the basin's water.

UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

The waste discharge requirements are a part of the system of control measures to protect the basin's water resources. The principal adverse effects are possible increases in the cost of mining operations, which will increase the cost of the products.

ALTERNATIVES

Alternatives include continuation of present practices and many alternative administrative approaches to the problem. These could vary from doing nothing to implementing very stringent waste discharge prohibitions.

RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

Overall, the waste discharge requirements and issuance of cleanup and abatement orders may reduce some mining production. Reduction of stream degradation will improve fishery habitat and will create conditions favorable to long-term increases in productivity.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Waste discharge requirements and cleanup and abatement orders may increase the cost of operations, which could lead to increased use of other resources to accomplish the objective. At this time, such an impact is highly speculative and not subject to quantification.

MITIGATION MEASURES TO MINIMIZE ADVERSE IMPACTS

The principal defense against potential adverse impacts is judicious and considered compliance with the waste discharge requirements and the cleanup and abatement orders.

GROWTH-INDUCING ASPECTS

No overall effects are expected from the regulation of mining operations.

TABLE 12 (Continued)

RECOMMENDED MEASURES

By Regional Board resolution 74-38, all entities which discharge, store, or manage wastes are required to formulate an emergency contingency plan to deal with accidental spills or discharges. Any such spill or discharge is to be reported to the Board, and immediate cleanup and abatement actions taken to rectify the incident.

ENVIRONMENTAL IMPACT

The goal of this recommended measure is the protection of public health, fish and wildlife, and the basin's waters from accidental spill or discharge of wastes. No quantitative assessment is possible. However, the need for such recommended measures is obvious, since the accidental spill or discharge of highly toxic material, for example, could be disastrous. The implementation of a well planned emergency spill program is essential by all concerned.

UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

The emergency spill plan is a part of the overall control measures to protect the basin's water resources. The principal adverse effects are possible increases in the cost of operations by entities which handle wastes and by the responsible governmental authorities.

ALTERNATIVES

Alternatives include continuation of past practices for which no organized and planned program to cope with emergencies was available and many possible alternative administrative approaches to such problems. These could vary from leaving things as they are to going all out and developing a highly sophisticated system of communication and controls.

RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

The recommended emergency spill measures would reduce the chances for disaster, resulting from accidental spill of toxic materials into the basin's streams. The long-term benefit of the measure will be the development of corrective measures to deal with such accidents.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Regulations of this control measure will increase cost of operation to the responsible agencies. No quantitative assessment is possible at this time.

MITIGATION MEASURES TO MINIMIZE ADVERSE IMPACTS

Not applicable.

GROWTH-INDUCING ASPECTS

Not applicable.

TABLE 12 (Continued)

RECOMMENDED MEASURES

The Regional Board, alone or in cooperation with others, will conduct further studies of the following:

1. Septic tank system failure in Hornbrook, Grenada, Trinity Center, Weaverville South, and Hayfork. The goal will be delineation of specific areas where septic tank discharges should be banned.
2. Discharges and health hazards associated with a community septic tank system in Grenada.
3. Adequacy of planned capacity of Crescent City wastewater treatment facilities to serve outlying areas which may be connected to the system.
4. Adequacy of wastewater treatment and disposal facilities serving the City of Etna.
5. Effects of agricultural drainage discharges from the Lost River and Butte Valley areas.
6. Increased mineralization of groundwater and potential contamination by pesticides.
7. Decline of fisheries in the Trinity River and in Butte Valley, Scott Valley, and Hayfork Creek Subunits.
8. Nuisance algal blooms in lakes and rivers.
9. Increased mineral concentrations in the Lower Lost River, Upper Klamath River, and Shasta River.

ENVIRONMENTAL IMPACT

There will be no direct environmental impact of the recommended studies themselves, but they are directed at determining future courses of action which will protect the environment, solve existing water quality problems, or eliminate health hazards or nuisances.

UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

The recommended studies will cause no adverse environmental effects.

ALTERNATIVES

Alternatives include no action or taking specific remedial actions. Taking no action is not desirable because of the known or indicated existence of current problems, and more specific actions cannot be justified at this time because of the need for greater information.

RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY*

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES*

MITIGATION MEASURES TO MINIMIZE ADVERSE IMPACTS*

GROWTH-INDUCING ASPECTS*

*These items are not applicable to the recommendation for further studies. Assessments will be made of the action plans which will result from the studies.

