STATE OF CALIFORNIA

THE RESOURCES AGENCY

STATE WATER RESOURCES CONTROL BOARD

INTERIM
WATER QUALITY CONTROL PLAN
for the
EAST COLORADO RIVER BASIN

JUNE 1971

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

COLORADO RIVER BASIN REGION

FOREWORD

This report contains the Interim Water Quality Control Plan for the East Colorado River Basin to satisfy federal and state requirements for construction grant programs. The plan also complies with the Porter-Cologne Water Quality Control Act requirements for water quality control plans.

The Interim Plan will serve as a guide for water quality management and for waste treatment plant construction in the next two years, until completion of comprehensive basin and regional plans which are now under preparation. This plan has been adopted by the Regional Water Quality Control Board, Colorado River Basin Region, and approved by the State Water Resources Control Board. It supersedes all previous water quality control plans adopted by this Regional Board.

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CHAPTER I

INTRODUCTION

Until recently it was assumed that wastes could be discharged to the environment in great quantities without adversely affecting aquatic resources. Waste discharges were evaluated in the traditional sense; that is, with major consideration given to oxygen depletion, gross toxicity, and bacteriological quality measured against a presumed assimilative capacity of receiving waters and a tolerable degree of water quality degradation. Requirements for waste discharges were based almost exclusively upon protection of the benefits that man could derive from the direct and consumptive uses of the waters.

Recent advances in technology and science show that certain constituents of wastes can result in far reaching adverse effects upon aquatic environments and man's beneficial uses of his environment. Certain substances in concentrations previously considered inconsequential to man do, in fact, greatly reduce his ability to realize benefits from aquatic resources. This is notably true for persistent toxicants that concentrate in food webs and eventually enter man's diet with potentially debilitating results. Already many species of aquatic animals and plants have been harmed, some of them seriously, by the discharge of certain known and, presumably, many other unidentified toxic substances into aquatic environments. Many factions are indifferent to these losses and believe them to be inconsequential unless man is directly affected. Others want only the level of control that will assure sustained commercial exploitation of water resources. Still others, in daily increasing numbers, are demanding total protection of aquatic environments regardless of man's uses of these resources.

While California is endowed with more water of good quality than many areas of the nation, the compounded effects of increased use of water and increasing volume and strength of municipal and industrial wastes have degraded and threatened water quality in many areas of the State. Inadequately treated municipal wastes are discharged to fresh water streams above domestic water intakes; residential and recreational developments have degraded mountain lakes and streams by siltation and inadequate sewage disposal systems; industrial wastes have toxified certain estuaries to levels that are harmful to aquatic organisms; and beaches have been closed to recreation due to bacteriological contamination from domestic waste discharges. Many past efforts to protect and manage California's waters have averted catastrophes and abuses. Frequently, however, they have lacked general applicability and force. These circumstances, coupled with the conflicting social attitudes previously cited, virtually demand a water quality control and water resource management policy that equates to water conservation; wise use, reasoned management, and adequate protection of water and water resources to ensure their preservation for the beneficial uses and enjoyment of present and future generations of the people.

As technology advances and societal needs increase, new benefits of aquatic resources will materialize. Aquatic resources must be managed to provide sustained yields while recognizing the dependence of man on the environment in which he must continue to live. State policy must be sufficiently restrictive to assure protection while being sufficiently flexible to adjust to new knowledge, capabilities and needs. State policy further must recognize the costs of wastewater management and the reciprocal compensations of water reclamation.

Simultaneously, there is growing public awareness of the precarious state of man's global environment. The once predominant indifference to environmental deterioration is yielding to an appreciation of the environment as an indispensable, but threatened and destructible, life requirement that needs conservation. Water quality control and management policy must acknowledge this developing environmental ethic. Accordingly, the policy set forth herein incorporates sound principles of water conservation.

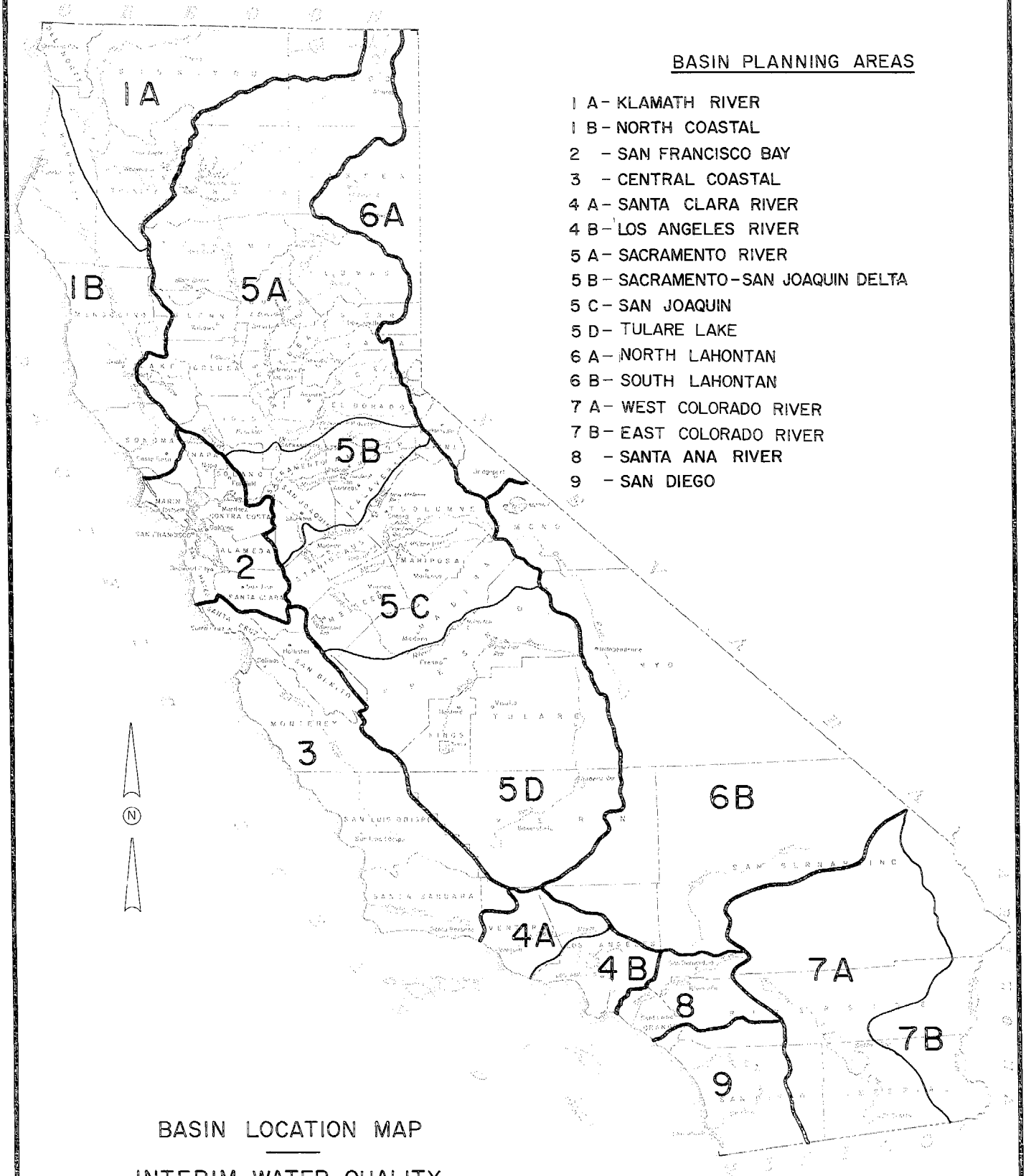
The creation of the State Water Resources Control Board in 1967, and the adoption of the Porter-Cologne Water Quality Control Act in 1970, recognized the need for a long-range, balanced plan for water quality management that will anticipate man's potential needs and technological abilities. This plan is a major step toward fulfilling this responsibility.

This Interim Water Quality Control Plan has been prepared to satisfy federal and state requirements for construction grant programs and the Porter-Cologne Act requirements for water quality control plans. Under present federal-state construction grant programs a community may receive up to 55 percent of the capital cost of a wastewater treatment project from the Federal Environmental Protection Agency (E.P.A.) and an additional 25 percent from the State Water Resources Control Board, leaving as little as 20 percent of the cost to be met by local funding. Under such a program, federal and state officials must be assured that the investment will purchase the greatest protection of our waters from the effects of wastes and make maximum use of the wastewater as a resource.

The E.P.A. has required each state to prepare and approve water quality control plans for drainage basins as a condition for future receipt of construction grants by communities. It has required a fully developed plan for each basin by July 1, 1973 but has permitted adoption of interim basin plans by July 1, 1971 to provide for construction during the time needed to adequately prepare the plans. This report is the interim plan for the East Colorado River Basin as shown in Figure 1.

As the term "interim" implies, this document and its supporting information are the initial step toward a more comprehensive "Fully Developed Basin Plan". It will guide our water quality management activities by establishing priorities and time schedules for actions required to meet water quality and environmental objectives during the next several years.

FIGURE 1. BASIN LOCATION MAP



BASIN LOCATION MAP

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CHAPTER II

SCOPE

This report was developed through the coordinated efforts of the State Water Resources Control Board, and the Regional Water Quality Control Board, Colorado River Basin Region. Technical assistance from the State Departments of Water Resources, Public Health, and Fish and Game is gratefully acknowledged. Input from the three State Departments was oriented towards each department's expertise, statutory duties and responsibilities.

Limitations of time did not allow special detailed planning studies to be performed for this report, but fortunately considerable technical data was available as a result of past and ongoing State and local planning efforts. Using this data, provisional plans have been derived for the interim period until completion of comprehensive basin plans in July 1973.

The report was developed in stages, beginning with a conceptual plan for areawide sewerage. The conceptual plan, as developed by the regional staff, was reviewed by the State Board and its appointed Board of Consultants in March 1971. The conceptual plan reviews formed the basis for preparation of this Interim Water Quality Control Plan.

The East Colorado River Basin is divided into several separate hydrologic units and subunits in this Plan. Physical and hydrologic descriptions, water quality conditions and problems and waste disposal facilities are described for each hydrologic unit and subunit in Chapter III. In addition to the hydrologic division of the Basin as provided by the Department of Water Resources, the Colorado River itself is also treated as a hydrologic entity, since it is an interstate body of water, and thus the Colorado River is given status, in this report equivalent to that of the Basin's hydrologic units.

The beneficial uses to be protected for the various streams and water bodies of the basin are listed in Chapter IV. The overall policy used as a guide in preparing water quality objectives and sewerage plans is the subject of Chapter V.

Water quality objectives to protect the beneficial uses of the streams and water bodies of this basin are contained in Chapter VI along with waste discharge prohibitions. These prohibitions provide the legal basis for enforcement actions which may be necessary to meet water quality objectives and protect the beneficial uses.

The actual sewerage plans formulated to meet both local and regional needs for water quality improvement are presented in Chapter VII. These plans are not intended to serve as the final word on future sewerage planning but will serve to allow planning and construction to continue under the guidance of an interim basin-wide plan until final water quality management plans are adopted in June 1973. Thus, a continuing flow of federal and state assistance to local agencies is assured. This Chapter also contains a surveillance program to monitor water quality conditions and to enforce waste discharge prohibitions.

An important portion of the basin plan will be the yearly project list of needed sewerage projects for each of the succeeding five fiscal years. In the future, prior to January 31 of each year, the State Water Resources Control Board, in conjunction with the Regional Boards, will update the yearly list and extend it for the succeeding five-year period.

Project lists showing those projects which will be considered for certification by the State Water Resources Control Board to the Environmental Protection Agency as eligible for federal grants are attached as Appendix A.

Appendix B is a summary of comments received during hearings held on this report.

CHAPTER III

BASIN DESCRIPTION

Description of Area

The East Colorado River Basin is located in the extreme southeasterly portion of California, encompassing portions of San Bernardino, Riverside, and Imperial Counties. As shown in Figure 1, the Basin is bounded on the north and east by the California-Nevada and the California-Arizona state lines, respectively, and on the south by the International Border between the United States and Mexico. The Basin's westerly boundary is formed by the drainage divide for streams in California that are directly tributary to the Colorado River. The Basin is approximately 200 miles long with a maximum east-west dimension of about 70 miles. The gross area of the Basin is about 3600 square miles and the surface area of its water-bearing sediments is approximately 2000 square miles.

Precipitation, although extremely light and irregular, is the major source of replenishment of the inland groundwater reservoirs, except in the southeastern portion of the basin where groundwaters are replenished by deep percolation of applied Colorado River water. Typical mean seasonal precipitation is 4.0 inches at Blythe and 4.8 inches at Needles. In view of the extremely limited precipitation, and since Colorado River Water is released by the United States Government in strict accordance with contractual commitments for delivery of water to areas most of which are located outside of the East Colorado River Basin, the Basin is extremely deficient in water resources.

All of the Basin's natural streams are ephemeral, flowing only after heavy rain storms, and are of minor significance from the standpoint of being directly utilizable by man. The Colorado River is the most important source of water in this Basin. Those areas of the Basin which have established rights to the use of Colorado River water are highly developed, primarily in agriculture.

The major irrigated agricultural developments in this Basin are located in Palo Verde Valley, and in that portion of the United States Bureau of Reclamation's Yuma Project located in Bard Valley in the extreme southeasterly corner of California.

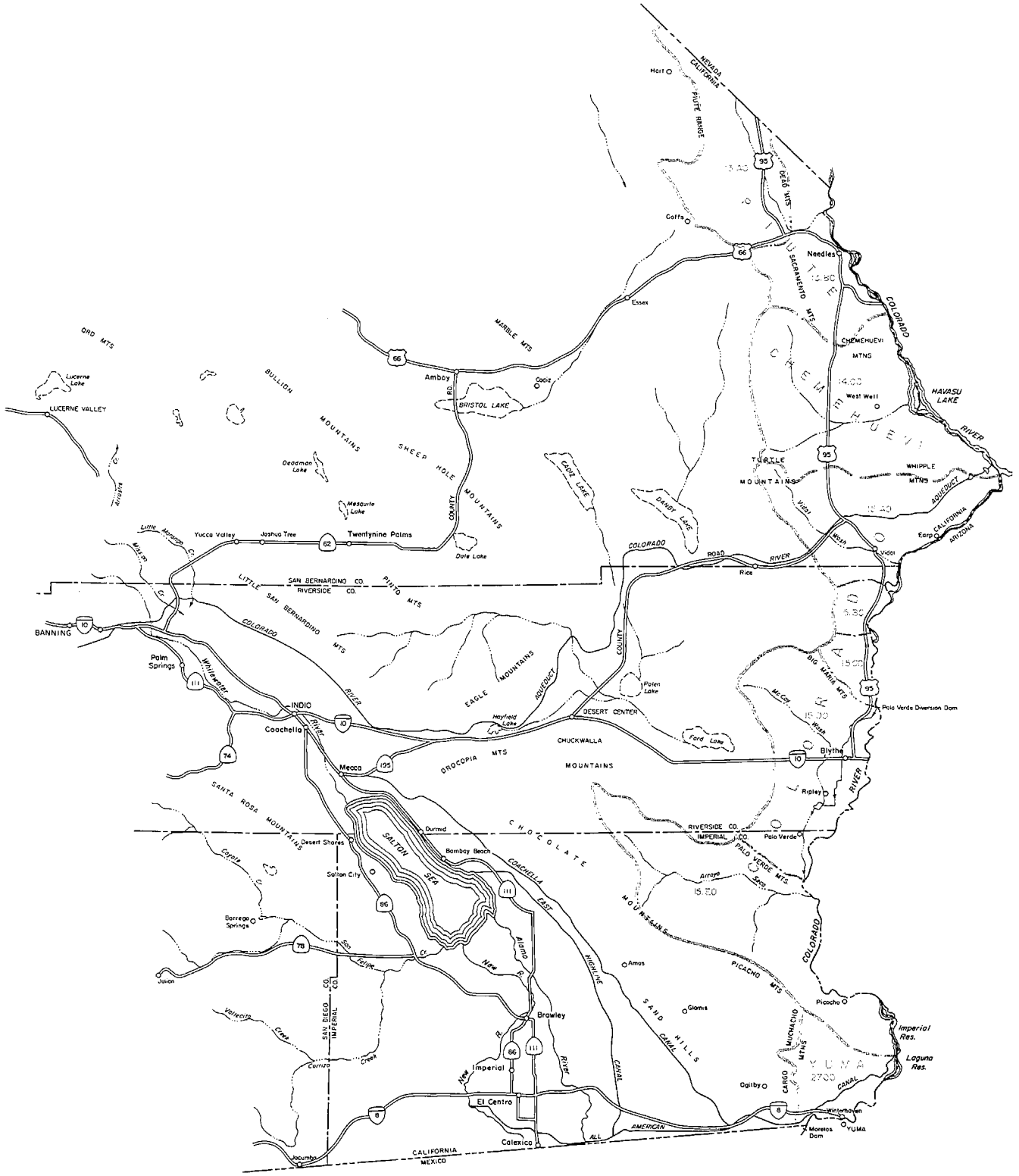
There is only limited industrial development in the East Colorado River Basin, but considerable recreational use is made of Colorado River. Short, mild winters with sunny days, and excellent boating and fishing are drawing increasingly large numbers of recreationists and there are recreational resorts along many reaches of the river.

The East Colorado River Basin contains several hydrologic units. The Colorado River is operated by the United States as a controlled stream, and is therefore described below as a hydrologic entity, in addition to the Basin's hydrologic units which are also described.

The following is a listing of hydrologic units and subunits of the East Colorado River Basin. These units and subunits are keyed to the numbering system contained in Figure 2.

Unit and Subunit Name	Key No. on Figure 2
Colorado River	–
Piute Hydro Unit	13
Piute Subunit	13.AO
Needles Subunit	13.BO
Chemehuevi Hydro Unit	14.00
Colorado Hydro Unit	15
Vidal Subunit	15.AO
Big Wash Subunit	15.BO
Quien Sabe Subunit	15.CO
Palo Verde Subunit	15.DO
Arroyo Seco Subunit	15.EO
Yuma Hydro Unit	27.00

Figure 2



HYDROLOGIC SUBUNITS
EAST COLORADO RIVER BASIN

SCALE OF MILES

8 0 8 16 24

COLORADO RIVER REGIONAL WATER QUALITY CONTROL BOARD

The physical and hydrologic characteristics, and the water quality conditions in each hydrologic unit and subunit are described in Parts 1 through 5 below, along with an explanation of existing waste discharges.

PART 1 – COLORADO RIVER

Description of Area

The Colorado River drains portions of seven states, having a total drainage area in the United States of about 258,000 square miles. The natural, unimpaired average annual runoff of the Colorado River above Gila River is about 16,000,000 acre-feet. However, since 1935 when Hoover Dam was placed into operation, the river flow has been regulated by the United States Government to provide for contractual and other water rights. Davis and Parker Dams are also operated as major regulating dams for river flow in California. Mohave Lake is impounded behind Davis Dam, and Havasu Lake is impounded behind Parker Dam.

The following are average annual gaged flows of the Colorado River:

Gage Location	Period of Gaging	Average Annual Flow During Gaging Period (Acre-feet/year)
Below Davis Dam	1949–1968	9,462,000
Near Topock	1917–1934	14,670,000
	1934–1968	9,665,000
Below Parker Dam	1934–1968	9,187,000
Below Palo Verde Dam	1956–1968	6,229,000
At Imperial Dam	1934–1968	8,550,000
Below Yuma Main Canal Wasteway	1963–1968	684,000

Water Quality Conditions

The quality of Colorado River water in the area of Topock, Arizona, is essentially identical to that which enters California at its Nevada boundary. The quality of water at Imperial Dam represents the final downstream quality of Colorado River water diverted for use in California. The following Table 1 indicates the quality of Colorado River water in the reach between Topock and Imperial Dam.

Colorado River water in the California reach from the Nevada boundary southward to Imperial Dam is sodium-calcium sulfate in character, Class 2 for irrigation, and very hard. The mineral content meets the California State Department of Public Health's "Interim Policy on Mineral Quality of Drinking Water," which is established for areas where no other more suitable waters are available in sufficient quantities. But the total filtrable residue content and the sulfate content of Colorado River water exceeds the numerical values listed in paragraph 5.21 of the PHS Drinking Water Standards.

The total filtrable residue (TFR) content of Colorado River water delivered to California has gradually increased during the years subsequent to river regulation, and this TFR content continues to increase, due to water-related activities of the other six states in the Colorado River's total drainage basin. These states contemplate still further development and utilization of the waters of the Colorado River system for expansion of irrigated agriculture and industry and to accomodate population growth. Accordingly, it is anticipated that under present practices and facilities, and with expected growth in the upper basin states, the TFR content of Colorado River water delivered to California will deteriorate further, depending upon points of diversion, by at least an additional 300 to 500 mg/l.

INTERSTATE GUIDELINES

"Guidelines for Formulating Water Quality Standards for the Interstate Waters of the Colorado River System," were developed by the State Conferees in the Matter of Pollution of the Interstate Waters of the Colorado River and its Tributaries at a series of meetings during 1966 and 1967, in the interest of compatible state water quality standards. Several water resource interests of each state were involved in most

meetings, particularly the last two, held in Scottsdale, Arizona, on December 7, 1966 and January 13, 1967. The 'Guidelines' are as follows:

General Considerations

Past and future economic growth of the States served by the Colorado River System* has been and will continue to be dependent upon the development and utilization of its water resources. Appropriate water quality standards will enhance this development by protecting the quality and productivity of the System's waters. Such standards will not be used to restrict reasonable use and development of each State's apportionment of water in the Colorado River System**. Nothing herein is intended to construe the Colorado River Compacts**.

The System's interstate waters are used for municipal and industrial supplies, irrigation, fish and wildlife, and recreation. Maximum effort must be directed toward maintaining the highest possible water quality for these uses consistent with reasonable beneficial future development and utilization of all resources within States served by the System.

In order to develop practicable and reasonable quality standards for interstate waters of the Colorado River System, full consideration must be given to the numerous factors and variables connected with the control, development, utilization, conservation, and protection of the System's water resources. It is evident that future development and utilization of the System's water resources for expansion of irrigated agriculture, increases in population, and industrial growth will be accompanied by progressive increases in consumptive losses of water and attendant increases in concentrations of dissolved solids.

In view of the anticipated increase in consumptive use of water, augmentation of the Colorado River is essential just to maintain the existing water quality. Enhancement, as contemplated by the Guidelines of the Federal Water Pollution Control Administration, of the present water quality of the Lower Colorado River is most practicable by a major water augmentation program. One objective of a major water augmentation program would be to approach the limits for total dissolved solids, chlorides, and sulfates recommended by the U.S. Public Health Service Drinking Water Standards of 1962.

Basic Principles

1. The States served by the Colorado River System recognize that answers to important questions regarding total dissolved solids, chlorides, sulfates and sodium are lacking or are based on factors that are not yet well-defined. In respect of this recognition, the States agree that pending the development of acceptable answers to enable the setting of criteria for total dissolved solids, chlorides, sulfates and sodium for the interstate waters of the Colorado River System, such criteria should be stated in qualitative terms. At the same time, it is agreed that all identifiable sources of water pollution will be managed and controlled to the maximum degree practicable with available technology in order to provide water quality suitable for present and potential future uses of the System's interstate waters.

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*The Colorado River and all those streams contributing water thereto.

**California and Nevada do not agree with these two sentences, but propose that there be further negotiations and discussions to resolve this issue.

TABLE 1

COLORADO RIVER WATER QUALITY (Average Values)

Constituent or Characteristic	Units	Stations, and Years of Record: Near Topock 1951–1969		Below Parker Dam 1951–1969		Near Blythe 1953–1969		Imperial Dam 1969	
		Max.	Ave.	Max.	Ave.	Max.	Ave.	Max.	Ave.
Temperature	°F	82	66	81	71	88	76	82	75
pH	Scale	8.3	7.9	8.3	8.0	8.5	8.0	8.2	8.1
Conductivity	Micromhos	1295	1031	1288	1029	1340	1157	1322	1286
Calcium (Ca)	mg/1	116	88	110	87	104	90	95	92
Magnesium (Mg)	mg/1	36	30	36	30	36	32	34	33
Sodium (Na)	mg/1	120	100	122	101	140	113	152	141
Potassium (K)	mg/1	6	–	6	5	6	5	5	5
Carbonate (CO_3)	mg/1	10.0	0.6	10.0	0.6	14.0	0.6	0	0
Bicarbonate (HCO_3)	mg/1	181	162	183	160	379	165	171	170
Sulphate (SO_4)	mg/1	356	289	360	295	364	317	353	344
Chloride (C1)	mg/1	246	89	114	86	133	101	136	125
Nitrate (NO_3)	mg/1	4.5	2.3	5.0	1.9	4.5	1.9	2.5	2.1
Fluoride (F)	mg/1	0.7	0.5	0.7	0.5	0.8	0.5	0.7	0.6
Boron (B)	mg/1	0.26	0.14	0.3	–	0.22	0.14	0.19	0.18
Total Dissolved Solids (TDS)	mg/1	858	728	881	728	928	781	880	862
Dissolved Oxygen (DO)	mg/1	10.6	8.4	9.8	8.0	9.2	8.1	9.4	8.3

2. Reviews of all available technical knowledge* pertaining to the water quality problem and evaluation of new pollution potentials will be made at intervals of not greater than three years by representatives of the seven System States with the view and intent of improving, strengthening, or otherwise modifying the quality standards.

3. Monitoring of the quality of interstate waters will be carried out at designated points near State lines and other key locations for all constituents covered by the standards. In addition, measurements will be made at these locations for total dissolved solids, sulfates, chlorides, and sodium.

4. Any State may convene a meeting of all seven States to discuss remedies in those instances where the quality of water available to that State has been adversely affected or threatened by pollutants discharged into the Colorado River system.

Minimum Quality Criteria Applicable to Interstate Waters at Agreed State Line Sampling Points

1. Free from substances attributable to domestic or industrial waste or other controllable sources that will settle to form sludge or bottom deposits in amounts sufficient to be unsightly, putrescent or odorous, or in amounts sufficient to interfere with any beneficial use of the water.

2. Free from floating debris, oil, grease, scum, and other floating materials attributable to domestic or industrial waste or other controllable sources in amounts sufficient to be unsightly or in amounts sufficient to interfere with any beneficial use of the water.

3. Free from materials attributable to domestic or industrial or other controllable sources in amounts sufficient to produce taste or odor in the water or detectable off-flavor in the flesh of fish, or in amounts sufficient to change the existing color, turbidity or other conditions in the receiving stream to such degree as to create a public nuisance, or in amounts sufficient to interfere with any beneficial use of the river.

4. Free from high temperature, biocides, organisms pathogenic to human beings, toxic, corrosive, or other deleterious substances attributable to domestic or industrial waste or other controllable sources at levels or combinations sufficient to be toxic to human, animal, plant or aquatic life or in amounts sufficient to interfere with any beneficial use of the water.

5. Radioactive materials attributable to municipal, industrial or other controllable sources shall be minimum concentrations which are physically and economically feasible to achieve. In no case shall such materials exceed the limits established in the 1962 Public Health Service Drinking Water Standards or 1/10 of the 168-hr. values for other radioactive substances specified in National Bureau of Standards Handbook 69.

6. No wastes from municipal or industrial or other controllable sources containing arsenic, barium, boron, cadmium, chromium, cyanide, fluoride, lead, selenium, silver, copper, and zinc that are reasonably amenable to treatment or control will be discharged untreated or uncontrolled into

*During the periodic reviews of technical knowledge full consideration will be given to all new technological or other developments and research which may be utilized to upgrade the standards to provide for the protection and enhancement of water quality. This will include possibilities such as: (1) importation of water of better quality from outside the System: (2) control or management of natural sources of salinity; (3) reduction of total dissolved solids in irrigation return flows through reasonable and practicable means; and (4) other suitable measures.

the Colorado River System. At agreed points of sampling above Imperial Dam in the Colorado River System the limits for concentrations of these chemical constituents will be set at values that recognize their cumulative effects and which will provide River Water quality consistent with the mandatory requirements of the 1962 Public Health Service Drinking Water Standards.

7. The dissolved oxygen content and pH value of the waters of the Colorado River System shall be maintained at levels necessary to support the natural and developed fisheries.

Existing Waste Discharges

The following is a summary of water and wastewater discharges to Colorado River from California.

The City of Needles discharges treated sewage effluent from a permanent population of approximately 4080.

The United States Bureau of Reclamation discharges a maximum of 10,000 gpd of backwash wastewater from its water filtration plant which serves Parker Dam and its facilities.

Agriculture control water, in the amount of approximately 490,000 acre-feet per year, is discharged from Palo Verde Valley via a drainage system which is maintained by Palo Verde Irrigation District.

Sewage from the Indian Hill area of Fort Yuma Indian Reservation is discharged without treatment.

PART 2 – PIUTE HYDRO UNIT

Description of Area

The Piute Hydro Unit is bounded on the northeast by the California-Nevada boundary, and by the northernmost reach of Colorado River in California. The western and southwestern boundaries are formed by ridge lines of the Piute Mountains and Sacramento Mountains; and the southern boundary is along the ridge line of Chemehuevi Mountains. Piute Hydro Unit is subdivided hydrologically into Piute Subunit to the north, and Needles Subunit to the south. The ridge line of Dead Mountains forms the principal boundary between these subunits. Appreciable development is not expected in the Piute Subunit by the year 2000.

Needles Subunit consists of precipitous mountains in the western and southern areas, grading into an approximately five-mile wide alluvial fan which slopes eastward to Colorado River. The only communities existing and anticipated in the Subunit by the year 2000 are the City of Needles and Park Moabi.

City of Needles

Needles is a railroad community with a 1970 permanent population of 4080, that has hardly varied since 1950. Colorado River in the Needles area is being used increasingly for water-contact sports, which causes periodic large increases of population in the area.

Park Moabi

Park Moabi is a trailer park and marina development of the County of San Bernardino, with a permanent population of under 100 persons, but with facilities (including sewerage facilities) adequate to accommodate a much greater population. It is located along Colorado River approximately opposite Topock, Arizona.

Water Quality Conditions

Piute Hydro Subunit

There are no perennial streams in Piute Subunit. Its long, narrow valley is drained by Piute Wash, which runs southward and eastward to Colorado River. The Subunit contains few wells. Although water of relatively good quality is present, the quantities are limited. An analysis of water collected

in 1964 from a converted oil well (depth 3,400 feet) northwest of Arrowhead Junction, showed a TDS content of 336 mg/l; but the fluoride content of this water was 3.4 mg/l. Water from two springs near Klinefelter, in 1954, showed slightly higher concentrations of TDS, but the fluoride content was only 0.4 to 0.6 mg/l.

Needles Hydro Subunit

Analyses, principally in 1961, of water from 11 wells indicate that the groundwater is highly mineralized (TDS of 2600 mg/l) and is generally not suitable for domestic use. Also, some groundwaters in the Subunit contain high manganese. The City of Needles, and individual recreational establishments, obtain water from wells which are located very close to the Colorado River, where the quality of groundwater is influenced by the quality of the river water. Even so, this latter groundwater has much higher TDS and sulfate contents than does the river water, due principally to the type of soil structure.

Existing Waste Discharges

City of Needles

Most of the City's sewage is collected into the Bazoobuth Pump Station, and is then pumped southward two miles to the treatment plant site. Sewered areas south of the treatment plant are brought in by a separate line, connecting to the pressure line at the State Highway.

Needles sewage treatment facilities consist of primary clarification, biofiltration, separate sludge digestion, and chlorination prior to discharge to Colorado River. The City also has a 10-acre ponding area for emergency sewerage use.

Park Moabi

The park has three infiltration and evaporation sewage lagoons for a design capacity of 7500 persons. Only a portion of one lagoon is presently being used.

Transcontinental Gas Compressor Stations

1. **Pacific Lighting Service and Supply Co.,** four miles north of Needles.

   Wastewaters from air conditioning and from zeolite-brine softener regenerative cycles are discharged by evaporation and infiltration. Flow quantities are 22,000 gpd during summer, and 1000 gpd during winter.

2. **Pacific Lighting Service Company,** ten miles south of Needles.

   Over 50,000 gpd of cooling tower blowdown and zeolite-brine softener regenerative waters are discharged by evaporation and infiltration.

3. **Pacific Gas and Electric Company,** located across from Topock.

   Chromic sludge is buried at the San Bernardino County Dumpsite about five miles south of Needles. Treated cooling tower waters are discharged by injection; but the company is preparing to construct lined evaporation ponds.

PART 3 – CHEMEHUEVI HYDRO UNIT

Description of Area

Chemehuevi Hydro Unit consists of the broad valley and associated mountain ranges which are drained by Chemehuevi Wash. The bordering mountains are the Chemehuevi, Turtle, and Whipple Ranges.

The Unit is bounded on the east by Lake Havasu. There is a residential-resort development at Havasu Landing, and a resort at Black Meadow. Also, the Chemehuevi Indian Tribe has lands of resort potential adjacent to Havasu Landing.

Water Quality Conditions

Water quality data are available for three wells in the alluvial-fill valley, and one in Turtle Mountain. Indicated water quality is as follows:

Constituents	Units	Three Wells on Valley Floor 1952–1958	Well at Turtle Mtn. 1952	4 Wells of Havasu Water Co. 8–26–64
TDS	mg/l	351–649	1094	1293
Sulfate	mg/l	33–155	—	507
Chloride	mg/l	59–161	256	188
Nitrate	mg/l	1–32	—	—
Fluoride	mg/l	1.8–3.5	13.5	1.1

In view of the resort potential in the Havasu Landing area, it should be noted that the groundwater in this area is high in total dissolved solids and sulfate, and in some locations high in fluoride. New development in this area has been restricted because the groundwater mineral quality does not meet domestic water standards of the State Department of Public Health. Concurrently, it should be noted that adjacent Colorado River water is of a much higher quality. Presuming that groundwater in this area results from infiltration of Colorado River water, the water quality deterioration most likely occurs during movement through the soil profile.

Waste Disposal Facilities

Havasu Landing, Inc. discharges sewage via subsurface disposal facilities. These facilities are not able to handle peak loads, and the resort is also using a sewage lagoon for discharge of septic tank effluent.

PART 4 – COLORADO HYDRO UNIT

Description of Area

The Colorado Hydro Unit includes all lands draining to the Colorado River along the reach from Parker Dam southward to Imperial Dam. The Unit contains five subunits: Vidal, Big Wash, Quien Sabe, Palo Verde and Arroyo Seco. Following is a brief description of these subunits.

Vidal Subunit

This Subunit extends from Parker Dam southward to about three miles south of the Riverside-San Bernardino County boundary. The inland limits of the subunit are determined by the ridge lines of Whipple, Turtle, and Riverside Mountain Ranges. The large valley floor consists of sediments which have moderate to high permeability. The communities in this area are Earp, Vidal, and Vidal Junction. These are very small communities with slow growth rate.

Big Wash Subunit

This Subunit extends from the Vidal Subunit southward to Quien Sabe Point. The Subunit does not contain any communities, but a few resorts are located along the river frontage. These utilize private sewage disposal facilities.

There is no data available on groundwater quality.

Quien Sabe Subunit

This Subunit extends from Quien Sabe Point southward to where the ridge of Big Maria Mountains meets the Colorado River. The Subunit does not contain communities, but there are several resorts, located along the river frontage, which use private sewage disposal facilities.

There is no data available on groundwater quality.

Palo Verde Subunit

This Subunit is formed by the ridgelines of Big Maria Mountains on the north, McCoy and Mule Mountains on the west, Palo Verde Mountains on the south, and Colorado River on the east. It contains the broad agricultural Palo Verde Valley. The Subunit contains the following communities:

Community	Population
City of Blythe	7087
East Blythe (unincorporated)	2500
Ripley (unincorporated)	600
Palo Verde (unincorporated)	500

The predominant economy of the Subunit is agriculture. Approximately 90,000 acres are farmed on the floor of Palo Verde Valley. About 5000 acres of an allowable 16,000 acres are farmed on the mesa. Approximately seven acre-feet of water is applied each year (AF/Yr) on each acre of land being farmed; and the net water usage is 4 1/2 AF/Yr per acre of farmed land.

Recent records indicate that about 880,000 AF/Yr of Colorado River water is diverted at Palo Verde Diversion Dam; and this water is conveyed to farmlands via a system of open, unlined canals. Only a few farmlands have tiling. The surface return to Colorado River, which contains canal spills and drain waters, is approximately 490,000 AF/Yr; and most of this return is via the Palo Verde Outfall Lagoon, which is located near the southern tip of the Subunit.

Principal crops are alfalfa, barley, cotton, lettuce, dehydrator onions, bulk processing tomatoes, melons, and citrus. Livestock operations include cattle feedlots and winter sheep pasturing on alfalfa fields. The annual crop value is $23 million, and livestock operations amount to $12 million annually.

Arroyo Seco Subunit

This Subunit extends from the Palo Verde Mountains southward along Colorado River to Imperial Dam. The Subunit contains PicachoState Recreation Area and Imperial Reservoir, but no communities.

Water Quality Conditions

No water quality data are available for groundwater in the Big Wash and Quien Sabe Subunits, and recent groundwater quality data in the other Subunits are meager. Following is a tabulation of water quality data available in Colorado Hydro Unit, Table 2.

TABLE 2

Water Quality Data – Colorado Hydrologic Unit

(Ranges in Concentration of Mineral Constituents)

		Hydrologic Subunits		
		Vidal	Palo Verde	Arroyo Seco
Number of Wells		6	4	3
Period of Analyses		1961–67	1963–69	1961–64
Constituents	Units			
Mg	mg/l	62–1	28–7	21–11
SO_4	mg/l	248–53	437–262	447–13
Cl	mg/l	472–81	420–138	679–14
NO_3	mg/l	23.2–1.5	6.8–0	15–8.6
F	mg/l	9.2–0.5	3.0–0.2	1.8–0.1
B	mg/l	1.06–0.24	1.25–0.22	5–0.12
EC x 106	(Micromhos)	1915–740	2300–1350	3480–500
TDS	mg/l	1321–446	1418–934	2267–322
T.H.	mg/l	695–39	450–111	366–185
Principal Ions	––	Na, Cl, SO_4	Na, Cl, SO_4	Na, Ca, Cl, HCO_3

The following paragraphs include interpretations of the above data.

Six wells in the Vidal Subunit sampled between 1961 and 1967 yielded water which ranged widely in character and mineral content, as indicated in the above table. Of the six wells sampled, three were good and three were unsatisfactory for irrigation. All samples were marginal or unsatisfactory for domestic use, due primarily to excessive concentrations of TDS and fluoride.

The TDS content of waters from four wells in Palo Verde Subunit, as determined from the most recent analyses of samples taken between 1963 and 1969, ranges from 934 to 1418 mg/l, which for the most part is unsuitable for domestic and certain agricultural uses. Well No. 6S/22E35R1 indicated a TDS content of 723 mg/l in 1957, at which time it was owned by Southern Counties Gas Co. Two analyses of water from Well No. 7S/22E34H2 (1951 and 1957) showed TDS content of 856 and 1010 mg/l.

The quality of irrigation water diverted at Palo Verde Diversion Dam for irrigation use in the Palo Verde Valley may be approximated from the data in Table 1.

Groundwater in the Arroyo Seco valley ranges widely in composition and mineral concentration.

Samples from two wells in the northwestern part of the valley show high mineralization. One well had 868 mg/l TDS, while another more shallow well (23 feet deep) had 2267 mg/l TDS. A well in the central part of the Subunit had only 322 mg/l; and the concentrations of individual constituents were well within recommended limits for domestic and irrigation use.

Existing Waste Discharges

Sewage

Sewage from Parker Dam and Parker Dam Camp is treated in an extended aerobic treatment plant and is discharged in infiltration basins. Present sewage volume is approximately 22,000 gpd maximum.

There are numerous resorts along Colorado River in the reach from Parker Dam southward to Earp. Sewage from these resorts is discharged by leaching and infiltration via private facilities. It is possible that continuing development along this strip could warrant the need for community sewerage by 1980. Also, the Big River Subdivision south of Earp has a potential of several thousand lots. If the anticipated development occurs, this area may need community sewerage by 1990.

Sewage from the City of Blythe is conveyed to the SE¼ of SE¼ of Section 5, T7S, R23E, SBB&M, and is there treated and discharged by infiltration and evaporation. The land area at this location is presumed sufficient for lagoons to serve a population of 15,000.

Sewage from the community of East Blythe is infiltrated and evaporated in lagoons located near Goodman Slough south of the community. Also, a force main conveys sewage to the lagoons from Blythe Marina along Colorado River.

Blythe airport discharges sewage into a 'burned-out wooden Imhoff tank' which operates as a sewage lagoon.

Other sewage disposal in the Hydro Unit is accomplished via private facilities, which discharge to the subsurface or via surface infiltration and evaporation.

Sewage from Gene Camp, which houses personnel of the Metropolitan Water District's Gene Pumping Plant, is discharged to septic tanks and leach fields adjacent to Desilt Wash. The population served is 200 persons and the sewage load is 17,000 gpd.

Other Wastes

The City of Blythe discharges cooling waters from air-conditioners in the commercial area, and storm waters from said area, by pumping into D–14 Canal at the intersection of 14th Avenue and the Sante Fe Railroad tracks.

Southern Counties Gas Company discharges approximately 0.13 mgd of cooling tower blowdown water and backwash water by evaporation and percolation.

There are a few minor discharges of other wastes, such as from cattle truck washing, none of which are discharged to surface streams.

PART 5 – YUMA HYDRO UNIT

Description of Area

Yuma Hydro Unit is an approximately 40-square mile watershed located in the most southwesterly corner of California. It is bounded on the south and southeast by portions of the present and former Colorado River channels, on the northeast by the ridge of Picacho Mountains, and on the west by the Cargo Muchacho Mountains and alluvial summits. The lands which are located south of All-American Canal are developed farmlands, and this area is called Bard Valley. Agricultural water to Bard Valley is supplied from the All-American Canal. A system of drainage ditches in Bard Valley conveys drainage and seepage waters to Colorado River at a few locations below Laguna Dam.

The two communities in the Unit are Winterhaven (unincorporated), and the Indian Hill and adjacent development of the Quechan Indian Tribe. Both of these California communities are located opposite the City of Yuma, Arizona. There is also a housing unit of Imperial Irrigation District for personnel of Imperial Dam.

Agriculture is the only industry in the Unit. During the 1950's there was a manganese ore-processing operation near Winterhaven.

Bard Lake and Haughtelin Lake, which are contained within the old channel of Colorado River, are freshwater recreational lakes with considerable potential for future recreational development.

Water Quality Conditions

The Yuma Hydro Unit's groundwater basin benefits greatly from seepage of water in the unlined portions of All-American Canal, which supplies large amounts of water to the underlying aquifers. Groundwater ranges widely in character and mineral concentrations. TDS in nine samples collected between 1950 and 1954 ranged from 616 to 1,677 mg/l. Samples collected prior to this period showed TDS ranging up to 14,000 mg/l.

Existing Waste Discharges

The only sewered community in the Unit is Indian Hill, from which approximately 15,000 gpd of raw sewage is discharged directly to Colorado River.

Sewage from the Imperial Dam housing unit is infiltrated and evaporated in a lagoon.

All other sewage disposals, including that from homes and businesses in Winterhaven, are accomplished via private subsurface facilities.

The private facilities in Winterhaven are very inadequate for discharging the sewage loads. This is due mostly to a combination of congested development, high water table, and tight soil conditions. However, the Bureau of Reclamation plans to rechannel Colorado River in the area of Winterhaven. The River bed will be lowered; and it is anticipated that this project will lower the water table in the Winterhaven area.

Table 3 is an index to the waste dischargers shown on Figure 3 which shows all of the municipal and industrial waste discharger locations in the East Colorado River Basin.

TABLE 3

INDEX TO EXISTING WASTE DISCHARGES

(Keyed to Code Numbers on Figure 3)

MUNICIPAL WASTEWATER TREATMENT PLANTS

Code Number	Agency or Organization	Service In or Near
7B–36–13CO–001	City of Needles	Needles
7B–36–13CO–002	San Bernardino County Department of Regional Parks	Park Moabi Marina
7B–36–1400–001	Metropolitan Water District	Gene Pumping Station
7B–33–15DO–001	East Blythe County Water District	East Blythe
7B–33–15DO–002	City of Blythe	Blythe – Sanitary Wastewaters
7B–33–15DO–003	City of Blythe	Blythe – Stormwater
7B–33–15DO–004	Riverside County Department of Airports	Blythe
7B–13–15EO–001	Imperial Irrigation District	Imperial Dam
7B–13–2700–001	Quechan Indian Tribal Council	Fort Yuma Indian Reservation

DISCRETE INDUSTRIAL

7B–36–13CO–001	Southern California Gas Co.	Needles
7B–36–13CO–002	Pacific Lighting Service & Supply Co.	Needles
7B–36–13CO–003	Pacific Gas & Electric Co.	Topock
7B–36–13CO–004	Pacific Gas & Electric Co.	Topock
7B–33–15DO–001	Southern Counties Gas Co.	Blythe

DISCRETE INDUSTRIAL
FEDERAL INSTALLATIONS

7B–36–15AO–003	Bureau of Reclamation	Parker Dam
7B–36–15AO–004	Bureau of Reclamation	Parker Dam

DISCRETE INDUSTRIAL
OTHERS

7B–36–1400–001	Havasu Landing Inc.	West Lake Havasu
7B–36–1400–002	Black Meadow Landing	West Lake Havasu
7B–36–15AO–001	Bermuda Palms Park	Parker Strip
7B–36–15AO–002	Big Bend Resort	Parker Strip
7B–33–15CO–001	River Bend Lodge	North of Blythe
7B–13–15DO–002	Mitchell Camp Development Corporation	Palo Verde Valley
7B–33–15DO–003	Anaya Labor Camp	Palo Verde Valley

UNSEWERED AREAS

7B–33–15DO–001	Riverside County Services Area No. 62	Ripley
7B–13–2700–001	Winterhaven Sanitary District	Winterhaven

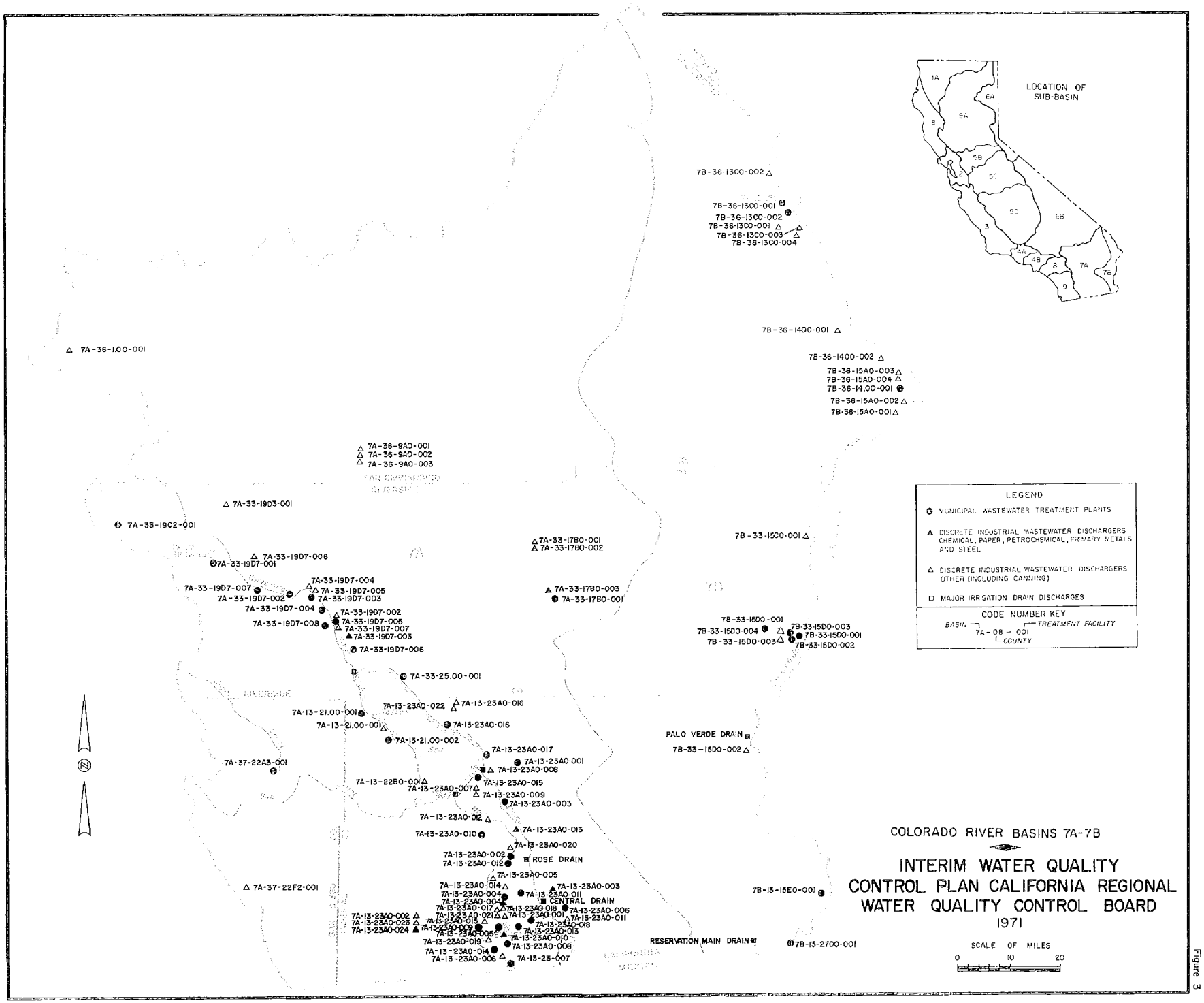
LOCATION OF SUB-BASIN
1A
6A
5A
1B
5B
5C
5D
6B
3
4A
4B
6
7A
7B
9
7B-36-1300-002
7B-36-1300-001
7B-36-1300-002
7B-36-1300-001
7B-36-1300-003
7B-36-1300-004
7B-36-1400-001
7B-36-1400-002
7B-36-15A0-003
7B-36-15A0-004
7B-36-14.00-001
7B-36-15A0-002
7B-36-15A0-001
7A-36-1.00-001
7A-36-9A0-001
7A-36-9A0-002
7A-36-9A0-003
7A-33-19D3-001
7A-33-19C2-001
7A-33-19D7-008
7A-33-19D7-001
7A-33-19D7-004
7A-33-19D7-005
7A-33-19D7-007
7A-33-19D7-002
7A-33-19D7-003
7A-33-19D7-004
7A-33-19D7-002
7A-33-19D7-005
7A-33-19D7-008
7A-33-19D7-007
7A-33-19D7-003
7A-33-19D7-006
7A-33-1780-001
7A-33-1780-002
7A-33-1780-003
7A-33-1780-001
7B-33-1500-001
7B-33-1500-001
7B-33-1500-004
7B-33-1500-003
7B-33-1500-003
7B-33-1500-001
7B-33-1500-002
7A-33-25.00-001
7A-13-21.00-001
7A-13-23A0-022
7A-13-23A0-016
7A-13-21.00-001
7A-13-23A0-016
7A-13-21.00-002
7A-13-23A0-017
7A-13-23A0-001
7A-13-23A0-008
7A-37-22A3-001
7A-13-22B0-001
7A-13-23A0-007
7A-13-23A0-015
7A-13-23A0-009
7A-13-23A0-003
7A-13-23A0-02
7A-13-23A0-013
7A-13-23A0-010
7A-13-23A0-020
7A-13-23A0-002
7A-13-23A0-012
ROSE DRAIN
7A-13-23A0-005
7A-37-22F2-001
7A-13-23A0-014
7A-13-23A0-003
7A-13-23A0-004
7A-13-23A0-011
CENTRAL DRAIN
7A-13-23A0-004
7A-13-23A0-017
7A-13-23A0-018
7A-13-23A0-006
7A-13-23A0-021
7A-13-23A0-001
7A-13-23A0-011
7A-13-23A0-002
7A-13-23A0-015
7A-13-23A0-008
7A-13-23A0-023
7A-13-23A0-024
7A-13-23A0-009
7A-13-23A0-005
7A-13-23A0-015
7A-13-23A0-010
7A-13-23A0-019
7A-13-23A0-008
7A-13-23A0-014
7A-13-23A0-006
7A-13-23-007
PALO VERDE DRAIN
7B-33-15D0-002
7B-13-15E0-001
RESERVATION MAIN DRAIN
7B-13-2700-001
LEGEND
MUNICIPAL WASTEWATER TREATMENT PLANTS
DISCRETE INDUSTRIAL WASTEWATER DISCHARGERS CHEMICAL, PAPER, PETROCHEMICAL, PRIMARY METALS AND STEEL
DISCRETE INDUSTRIAL WASTEWATER DISCHARGERS OTHER (INCLUDING CANNING)
MAJOR IRRIGATION DRAIN DISCHARGES
CODE NUMBER KEY
BASIN
TREATMENT FACILITY
7A - 08 - 001
COUNTY
COLORADO RIVER BASINS 7A-7B
INTERIM WATER QUALITY CONTROL PLAN CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
1971
SCALE OF MILES
0
10
20

Figure 3

CHAPTER IV

BENEFICIAL USES OF WATER

The beneficial uses of water bodies in the East Colorado River Basin are defined for each hydrologic unit and subunit within the basin, and are presented in Table 4. Additional uses may be identified during the interim period July 1, 1971 to June 30, 1973. Water quality objectives presented in Chapter IV will be achieved by implementation of the Plan, wherein the disposal of wastes shall be so regulated as to achieve the highest water quality consistent with maximum benefit to the people.

Beneficial uses of the waters of the Basin that may be protected against damage resulting from water quality degradation include, but are not necessarily limited to: municipal and domestic supply, agricultural supply, industrial supply (including power generation), wildlife resources, recreation and esthetic enjoyment.

The following is a listing of brief definitions of specific beneficial uses of waters of the Basin, including an abbreviation for each use as it appears in Table 2.

Definitions and Abbreviations

Municipal Supply (MUN) – includes usual community use.

Agricultural Supply (AGR) – includes crop, orchard and pasture irrigation, stockwatering, and all uses in support of farming and ranching operations.

Industrial Supply (IND) – includes those uses related to the manufacturing of products and includes cooling waters related to processes.

Domestic Use (DOM) – individual use for the various household purposes.

Water Contact Recreation (REC 1) – all recreational uses involving actual body contact with water, such as swimming, wading, water sports – water skiing, skin diving, sport fishing, and uses in therapeutic spas.

Non-water Contact Recreation (REC 2) – recreational uses which involve the presence of water, but do not require contact with water, such as picnicking, sunbathing, hiking, camping, aesthetic enjoyment, pleasure boating, and waterfowl hunting.

Freshwater Habitat (FRSH) – provides freshwater habitat for fish, wildlife and waterfowl.

Replenishment of Fresh Surface Waters (RFSW) – self-explanatory.

Hydroelectric Power Generation (POW) – self-explanatory.

Wildlife Habitat (WILD) – provides a water supply and habitat for wildlife.

Groundwater Recharge (GRW) – natural or manmade recharge of groundwaters.

TABLE 4

LISTING OF BENEFICIAL WATER USES

Hydrologic Unit & Water Source	MUN	AGR	IND	DOM	REC 1	REC 2	FRSH	RFSW	POW	WILD	GRW
Colorado River	X	X	X	X	X	X	X	X	X	X	X
Piute Unit											
Groundwater	X	X	X	X						X	
Washes								X			X
Chemehuevi Unit											
Groundwater	X	X	X	X						X	
Washes								X			X
Colorado Unit											
Groundwater	X	X	X	X						X	
Washes								X			X
Canals		X	X				X			X	X
Drains		X			X	X	X	X		X	X
Yuma Unit											
Groundwater	X	X		X						X	
Washes								X			
Canals		X		X			X		X	X	X
Drains							X	X		X	X
Lakes					X	X	X			X	X

CHAPTER V

POLICY GUIDELINES

GOALS

In view of the limited water resources in the East Colorado River Basin, and the increasing intensity of use of the waters, the policy of the California Regional Water Quality Control Board, Colorado River Basin Region, is to direct its actions toward achieving the following goals.

1. Preserve and enhance the quality of State waters, both surface and underground, fresh and saline, for present and anticipated beneficial uses.

2. Control the quality of wastewater discharges, to optimize the reuse of this water resource.

3. Encourage reclamation and reuse of wastewaters, where feasible, in order to preserve fresh water supplies to the maximum extent possible.

4. Preserve the integrity of groundwater basins, so that the basins remain capable of storing water for beneficial use.

5. Seek improvement in the quality of interstate waters entering the Basin.

MANAGEMENT PRINCIPLES

The above goals will be implemented by using the following management principles.

1. Waste treatment and discharge systems are subservient to their main purpose for existence, which is to optimize the quality of State waters, and to optimize reclamation of wastewaters for beneficial use.

2. The optimization of water quality shall be considered in relation to environmental goals.

3. Wastewater treatment and discharge systems shall be directed towards regionalization as far as is feasible.

4. Land use practices shall be controlled to assure preservation of the integrity of usable groundwater basins.

5. Source control and pretreatment of wastes shall be optimized to minimize degradation of water quality by toxicants, biostimulants, and filtrable substances.

6. The transport of hazardous materials shall be controlled to prevent spillage and leakage.

7. Wastes which have long-term capability of polluting waters shall be discharged in such manner and locations as to be protected against erosion or inundation from a maximum storm which could be expected to occur on a frequency of at least once in a 100-year period.

8. A major water augmentation program is needed for Colorado River.

9. The administration of grants and loans to sewerage entities shall include determination of implementation of adequate source control, industrial waste ordinances, and reclamation.

10. Groundwater recharge with water of adequate quality is encouraged.

11. Evaporative loss of reclaimable wastewater is to be minimized.

12. Pesticidal materials and other toxicants must not be allowed to enter State waters.

CHAPTER VI

WATER QUALITY OBJECTIVES AND DISCHARGE PROHIBITIONS

Many water quality terms and expressions are generally understandable. However, there are several terms which ought to be specifically defined. The definitions of these latter terms are as follows:

Water Quality is the set of chemical, physical and biological properties which affect the use of water.

Water Quality Indicators are constituents or characteristics which serve to measure water quality. Examples of indicators are: Temperature, dissolved oxygen (DO), biochemical oxygen demand (BOD), pH, Chloride, bacteria, and appearance.

Certain water quality indicator terms are not sufficiently self-explanatory and are therefore further defined below, as follows:

Pesticide is any substance or mixture of substances used to control objectionable insects, weeds, rodents, fungi, or other forms of plant or animal life.

Biostimulant is any substance which stimulates or increases the growth of aquatic organisms: examples are nitrogen and phosphorus.

Toxicity is the poisonous effect of organic or inorganic substances or combination of these substances upon animal or plant life.

Total filtrable residue (TFR) is substantially identical to the commonly used term "total dissolved solids (TDS)". The trend is to discontinue using the term TDS, in favor of the term TFR. However, at present, considerable data exists in the form of TDS, so that it cannot be completely eliminated from the text.

Filtrable materials are those substances which exist in water solution as dissolved or finely suspended material, and which are included in the determination for total filtrable residue. The term is closely analogous to the commonly used term "dissolved solids".

Water Quality Objectives are limits or levels prescribed for water quality indicators for protection of indicated uses.

The following list of general water quality objectives is applicable to all ground and surface waters in East Colorado River Basin.

1. **COLOR** – No significant increase beyond background* levels.
2. **TURBIDITY** – No significant increase beyond background levels.
3. **BOTTOM DEPOSITS** – None other than from background origin.
4. **FLOATABLES, OIL AND GREASE** – No visible effect other than of background origin.
5. **ODORS** – None other than of background origin.

*Background is that status of a particular body of water which is incident to the established natural, agricultural, or river control conditions or to established combination of conditions.

6. **PESTICIDES** – The total summation of concentrations of individual pesticides in surface waters shall not be greater than 0.1 micrograms per liter. Nor shall concentrations of pesticides be allowed that are detrimental to fish and wildlife. Exception is allowed in those irrigation canals which do not have appreciable aquatic resources, and where short-term herbicide operations are conducted under irrigation district supervision in coordination with the State Department of Fish and Game.
7. **pH** – No significant change in normal ambient value; nor shall the pH be depressed below 6.5 units, or raised above 8.5 units as a result of waste discharges.
8. **BIOSTIMULANTS** – No substance shall be added which produces aquatic growths in the receiving waters to the extent that such growths cause nuisance or damage to any of the beneficial water uses.
9. **COLIFORM BACTERIA** – As recommended by the California State Department of Public Health for these waters.
10. **TOXICITY** – No toxic substance which will produce deleterious effects upon aquatic biota, humans, or wildlife, shall be discharged to the receiving waters.
11. **RADIOACTIVITY** – Radionuclides shall not be present in concentrations that exceed the maximum permissible concentrations for radionuclides in water as set forth in Chapter 5, Title 17, of the California Administrative Code. The objective shall be to minimize radioactivity to the extent physically and economically feasible.
12. **TEMPERATURE** – The temperature objectives of Interstate Waters shall be as set forth in the policy regarding the "Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California," adopted by the State Water Resources Control Board January 7, 1971. Irrigation return water is not considered an elevated temperature waste discharge for the purpose of this policy.

    Waste discharges shall not cause the temperature of the receiving water to increase by more than 5^{o} F in streams or lakes having a range of temperatures generally suitable for warm water fishes such as bass or catfish. Irrigation return water is not considered an elevated temperature waste discharge for the purpose of this policy.

13. Waste discharges into surface or groundwaters shall not endanger the public health or fish and wildlife resources.
14. Waste discharges shall not adversely affect the esthetic condition of waters, including their clarity, and freedom from unsightliness, odors and adverse taste.
15. Wastes discharged from municipal, industrial, and other controllable sources which are reasonably amenable to treatment shall be controlled with the objective of not increasing the mineralization or adversely affecting the existing chemical, physical, and biological characteristics of the waters for agricultural, raw domestic, recreational, and industrial purposes, and its suitability as a habitat for aquatic life, plant life, and wildlife.
16. **DISSOLVED OXYGEN** – Median dissolved oxygen concentrations in the main water mass of streams and above the thermocline in lakes shall not fall below 85 percent of saturation concentration, and the 95 percentile concentration shall not fall below 75 percent of saturation concentration as a result of waste discharge.

    Additionally, dissolved oxygen at any location shall not fall below 6 mg/l at any time as the result of waste discharges. Nor shall waste discharges cause the dissolved oxygen content in waters designated as spawning and nursery areas, and cold-water biota and trout habitat to fall below 7 mg/l at any time. When background factors cause lesser concentrations, then controllable water quality factors shall not cause further reduction.
17. **FILTRABLE MATERIALS** – No filtrable materials shall be added in quantities found to be deleterious to the beneficial uses.

18. **HEAVY METALS AND ASSOCIATED CHEMICALS** – Wastes from municipal, industrial, or other controllable sources, containing heavy metals or associated chemicals shall not be discharged into any waters in amounts such that their cumulative effects may interfere with any beneficial use. In no event shall wastes be discharged in quantities that will, at any time, cause the concentrations of these constituents to exceed the following limits in any usable surface or groundwater.

Constituent	Limiting Concentration (mg/l)
Arsenic (As)	0.05
Barium (Ba)	0.5
Cadmium (Cd)	0.01
Chromium (Hexavalent) (Cr^{6})	0.05
Copper (Cu)	0.05
Cyanide (CN)	0.10
Lead (Pb)	0.05
Selenium (Se)	0.01
Silver (Ag)	0.05
Zinc (Zn)	0.5
Mercury (Hg)	0.005

19. Concentrations of the below-listed chemical constituents in surface waters shall not exceed the following limits, as determined by the annual average of analyses under the surveillance schedule. Also, single sample maximum concentrations shall not exceed the listed average values by more than 10 percent.

Constituent	Maximum allowable average value (mg/l)
Methylene blue anionic surfactant (MBAS)	0.1
Boron	0.4
Nitrate	5
Iron	0.2
Manganese	0.05
Ammonia (NH_3)	1

20. Wastes that impair taste of fish flesh shall not enter irrigation drains at levels that could produce tainting.

21. Discharge of sewage and other wastes to surface waters, or to areas proximate to surface waters shall not render any portion of the surface waters unfit for water-contact recreation.

The criteria for defining levels of specific water quality indicators used in prescribing waste discharge requirements to achieve water quality objectives is based upon the following:

UNITED STATES PUBLIC HEALTH SERVICE
DRINKING WATER STANDARDS, 1962

In milligrams per liter

Substance	Recommended limits of concentrations	Mandatory limits of concentrations
Alkyl benzene sulfonate (ABS)	0.5	—
Arsenic (As)	0.01	0.05
Barium (Ba)	—	1.0
Cadmium (Cd)	—	0.01
Carbon chloroform extract (CCE)	0.2	—
Chloride (Cl)	250	—
Chromium (hexavalent) (Cr^{6})	—	0.05
Copper (Cu)	1.0	—
Cyanide (CN)	0.01	0.02
Iron (Fe)	0.3	—
Lead (Pb)	—	0.05
Manganese (Mn)	0.05	—
Nitrate (NO_3)	45	—
Phenols	0.001	—
Selenium (Se)	—	0.01
Silver (Ag)	—	0.05
Sulfate (SO_4)	250	—
Total dissolved solids (TDS)	500	—
Zinc (Zn)	5	—

UNIVERSITY OF CALIFORNIA CRITERIA
FOR IRRIGATION WATERS

Factor	Class 1 Excellent to Good	Class 2 Good to Injurious	Class 3 Injurious to Unsatisfactory
Electrical conductance, EC x 10^6 at 25° C	Less than 1000	1000 to 3000	More than 3000
Boron, ppm	Less than 0.5	0.5 to 2.0	More than 2.0
Chloride, ppm	Less than 175	175 to 350	More than 75

NORMAL RANGE OF MINERAL PICKUP IN DOMESTIC SEWAGE *

Mineral Constituent	Normal range, in parts per million (except as noted)
Total dissolved solids (TDS)	100–300
Boron (B)	0.1–0.1
Percent Sodium (%Na)	5–15 **
Sodium (Na)	40–70
Potassium (K)	7–15
Magnesium ($CaCO_3$)	15–40
Calcium ($CaCO_3$)	15–40
Total nitrogen (N)	20–40
Phosphate (PO_4)	20–40
Sulfate (SO_4)	15–30
Chloride (Cl)	20–50
Total alkalinity ($CaCO_3$)	100–150

* Adopted from State Water Pollution Control Board Publication No. 9, Chart 1–8, page 25

**In percent

The following water quality objective applies specifically to Colorado River:

As recommended by the State Department of Public Health, the following values will be used to to determine if any significant degradation of bacteriological quality has occurred along various reaches of Colorado River.

Monitoring Station	MPN/100 ML Geometric Mean Total	Fecal	90% Total	Fecal
Four miles south of Nevada line	120	10	1,200	30
Topock Bridge	200	15	2,000	60
MWD Intake in Lake Havasu	30	5	150	15
Palo Verde Weir	540	60	7,000	220
Cibola Bridge	1,300	120	7,000	400
All-American Canal at Imperial Dam	700	150	2,000	400

WATER QUALITY OBJECTIVES FOR SOLID WASTE AND SLUDGE WASTE DISPOSAL

The following objectives are established for the control of water pollution with respect to land disposal of solid or sludge-type wastes.

1. Classification of Solid Waste Disposal Sites

Class 1 Sites

Sites located on nonwater-bearing rocks or underlain by isolated bodies of unusable groundwater, which are protected from surface runoff so that they will not be eroded or inundated by a maximum

storm which would be expected to occur on a frequency of at least once in a 100-year period, and where safe limitations exist with respect to the potential radius of infiltration.

Class 2 Sites

Sites underlain by usable, confined, or free groundwater, where the discharge surface can be maintained at least six (6) feet above anticipated high groundwater elevation, and which will not be eroded or inundated by a maximum storm that would be expected to occur on a frequency of at least once in a 100-year period.

Class 2 (special) Sites

Sites which meet all of the objectives for Class 2 sites, as described above; and in addition are geologically, hydrologically, topographically, and otherwise satisfactory for discharge of specified quantity of a specific waste.

Class 3 Sites

Sites so located as to afford little or no protection to usable waters of the State.

2. **Nature of Wastes Acceptable for Discharge at Each Class of Disposal Site**

The below listing is not intended to be comprehensive, but rather is provided to indicate the nature of wastes acceptable at each class of disposal site. Where there is question concerning the nature of a particular waste, the determination will be made by the Regional Board's Executive Officer.

Wastes Acceptable at Class 1 Sites

No limitation as to solid or sludge wastes.

Wastes Acceptable at Class 2 Sites

All wastes excepting:

(a) Liquid and/or soluble industrial wastes
(b) Toxic ash
(c) Chemical and pesticide containers

The usual materials acceptable at these sites are household and commercial refuse and rubbish, garbage including tin cans, and other decomposable organic refuse.

Wastes Acceptable at Class 2 (special) Sites

Selected wastes of the above-listed prohibition for Class 2 sites. Each waste material will be considered separately as to type and quantity for discharge.

Wastes Acceptable at Class 3 Sites

Limited to nonwater soluble, nondecomposable, inert solids.

PROHIBITIONS

1. Elevated temperature waste discharges into Colorado River from the California-Nevada stateline to the Needles-Topock Highway Bridge is prohibited.

2. Use of surface waters to dilute and/or treat wastewater discharges is prohibited.

3. Discharge of wastes, whose suspended matter and 5-day, 20°C biochemical oxygen demand (20°C BOD_5) as determined on unfiltered samples exceeds the following limits, to any surface water, is prohibited.

Constituent	Limiting Values (mg/l)		
	Median	80 Percentile	Maximum
Suspended Matter	20	30	40
20°C BOD_5	20	30	40

Where necessary in specific cases, more strict limitations will be placed upon the suspended solids and/or 20° BOD_5 of specific discharges.

4. In order that subsurface sewage disposal facilities shall be located a sufficient distance laterally from the regulated high water line of surface waters used for water-contact sports, to assure complete filtration of pathogenic organisms, the discharge from said facilities closer than 200 feet laterally from the regulated high-water line of Colorado River, Haughtelin Lake, Bard Lake, and any other surface water used for water-contact sports is prohibited.

5. Discharge of untreated sewage or inadequately treated sewage or other waste to surface waters is prohibited.

CHAPTER VII

PROGRAM OF IMPLEMENTATION

The program of implementation is designed particularly to achieve the goals and control criteria contained in Chapter III, and the water quality objectives and discharge prohibitions contained in Chapter VI. The program is interim, pending adoption of a fully integrated program of implementation by June 30, 1973. The fully integrated program will be formulated in coordination with the water-oriented efforts of local agencies, areawide planning organizations, and other interested federal, state, and local agencies, and persons. Several agencies are presently in the process of drafting areawide sewerage and other water-oriented plans. This implementation plan does not conflict with any areawide sewerage plans presently adopted by areawide planning agencies.

General Implementation Plan

1. Dry lakes in the several hydrologic units and subunits should be reserved for receipt of drainage and seepage waters.

2. The discharge of mining wastes and industrial wastes to the ground shall be controlled to insure that:

   a. Mining wastes do not intercept either surface or groundwater flow.
   b. Highly mineralized industrial wastewaters are permanently excluded from entrance into groundwater basins.

3. Groundwater basins will be protected against land operations, particularly as regards discharges of soluble minerals, toxicants, and taste producing materials discharged on permeable alluvium, so that these basins will remain acceptable as water storage reservoirs.

4. Eventual discharge of highly salinized waters should be to dry lake areas or by reinjection in those instances where there will not be percolation back into usable waters.

Implementation Plans Applicable to Specific Hydrologic Units

Colorado River

1. The California Regional Water Quality Control Board, Colorado River Basin Region will assist the State Water Resources Control Board and the Resources Agency in any plans or programs towards improving the quality of Colorado River water entering California.

2. In acting upon requests to discharge wastewater to Colorado River, the California Regional Water Quality Control Board, Colorado River Basin Region will take into consideration the capability of the proposed discharger to comply with prescribed waste discharge requirements, and the policy of regionalization of sewerage facilities; and will disallow the proposed discharge when the determination appears to warrant same.

3. The California Regional Water Quality Control Board, Colorado River Basin Region will continue to enforce elimination of the discharge of untreated sewage to Colorado River from the Indian Hill community at Fort Yuma Indian Reservation.

Piute Hydro Unit

The proposal of Pacific Gas and Electric Company to construct lined impervious basins as standby facilities in the event of failure of their reinjection well is considered necessary and adequate.

Colorado Hydro Unit

1. **City of Blythe and East Blythe Area to Colorado River**

   These urbanized areas should be served by a combined sewage treatment and discharge system. However, the present separate systems should continue to function until expansions or upgrading become necessary.

2. **Blythe Airport**

   No appreciable flow increase is expected into the airport's sewerage system, unless the airport actually obtains industry.

3. **Ripley (unincorporated)**

   It is expected that Ripley will install community sewerage during 1973-74 fiscal year. The treatment and discharge facilities should be designed as service to Ripley only, because the community is too far distant from other communities.

4. **Palo Verde (unincorporated)**

   The community will probably need a sewerage system by the year 2000.

No other communities in Colorado Hydro Unit are expected to need community sewerage by the year 2000.

Yuma Hydro Unit

Transport of community wastewaters from the Quechan Tribal Community (including Indian Hill and the community of Winterhaven into the City of Yuma, Arizona, sewerage system is considered as adequate towards fulfilling the concept of regionalization of sewerage facilities. However, in pursuing this course, the following items should be given consideration.

1. Receipt of credit to California for return of water to Colorado River.

2. The Quechan Indian Tribe must agree, in writing, to accept and comply with administrative enforcement by the State of California as provided in Division 7 of the California Water Code, as a condition to receiving California Clean Water Bond Law funds.

SURVEILLANCE

Effective water quality management requires three categories of water quality monitoring. First, individual treatment plant monitoring is necessary to maintain optimum treatment efficiencies and compliance with waste discharge requirements. Plant effluent monitoring is also essential to assess the individual effects of each waste source on the waters into which it discharges. Second, the rivers, lakes, ground and coastal waters receiving wastes must be examined to assure attainment and maintenance of water quality levels consistent with state water quality criteria. Third, the effects on water quality of manipulating the state's waters through water resource development projects must be determined and evaluated. These three categories of monitoring will provide information necessary for efficient management of pollution control facilities and water resource development projects, and the effective administration of water quality criteria.

The objectives of a comprehensive surveillance or monitoring program for water quality management are to identify:

Compliance and noncompliance with water quality criteria.

Water quality baselines and trends.

Improvements in water quality produced by abatement measures undertaken.

Emerging water quality problems, in sufficient time to effect adequate preventive measures.

The State Water Resources Control Board and California Regional Water Quality Control Boards have an established program of surveillance based on discharger self-monitoring, regional board routine sampling and data acquisition from other state agencies.

Significant waste discharges and, in many cases, the attendant receiving waters are monitored by the discharger in compliance with waste discharge requirements adopted by the regional board. These data are supplemented by sampling conducted by the regional board staff and by special surveys conducted by other agencies at the Board's request.

The Department of Fish and Game conducts many special surveys of water quality and aquatic biota at specific locations for limited time periods.

The Department of Public Health requires public water suppliers to periodically report certain water quality parameters of importance to public health and supplements this information with sampling and analyses by departmental staff. Special surveys of new water supply sources also yield considerable data.

The Department of Water Resources operates an extensive water quality monitoring program. The program includes, in general, monthly sampling of both surface and groundwaters. In addition, short-term studies yielding water quality data are made of specific areas. Additional data are acquired from local agencies and are available through Department of Water Resources.

In addition to the various state and local agencies, several federal agencies routinely collect water quality information within their respective areas of interest and conduct studies and investigations which yield water quality data. Particularly significant among these are the U.S. Geological Survey; Environmental Protection Agency, Water Quality Office; U.S. Bureau of Reclamation and the U.S. Corps of Engineers.

The need for a comprehensive surveillance program encompassing the requirements of all state agencies has already been recognized by the State Board. A preliminary evaluation was presented in the February 1971 report, "Evaluation of Water Quality Monitoring Programs in California." The steps leading to a comprehensive program were described as:

a. Define objectives and scope
b. Develop a data management system capable of handling the data and providing for evaluation of the program.
c. Evaluate existing monitoring against the program objectives.
d. Identify methods of sampling and analysis to include in the program.
e. Prepare and implement the detailed program.

The objectives of a comprehensive surveillance program for water quality management have been previously presented. The State Water Resources Control Board is currently preparing and implementing a data management system capable of satisfying the needs of the total statewide surveillance program. Detailed evaluations of water quality monitoring needs have been made for the Bay-Delta area ("An Environmental Monitoring Program for the Sacramento-San Joaquin Delta and Suisun Bay," State Water Resources Control Board Publication No. 40), and for pesticides monitoring throughout the state

("A Review of Pesticide Monitoring Programs in California," State Water Resources Control Board, February 1971). The utility of remote sensing has been studied ("Study to Evaluate the Utility of Aerial Surveillance Methods," State Water Resources Control Board Publication No. 41), and monitoring by satellite is being investigated through the Earth Resources Technology Satellite program.

As techniques appear practical, they are being tested in pilot programs. Two pilot programs will be in operation shortly after July 1, 1971. A low altitude aerial surveillance program will be conducted by board staff as a routine surveillance component. An intensive monitoring of hazardous materials will be conducted in the Monterey Bay drainage area to determine the most effective approach to a full state-wide operation.

These surveillance planning and development activities are proceeding on a schedule which will complement and support the fully developed water quality management plans.

The California Regional Water Quality Control Board, Colorado River Basin Region's surveillance program in the East Colorado River Basin is as follows:

Waste Discharges

1. Self-monitoring by dischargers, in accordance with prescribed monitoring.

2. Staff review of self-monitoring data, and report of irregularities to discharger, including followup.

3. Staff's annual field check on the waste discharges. Includes sampling and analyses essentially similar to those submitted by discharger.

4. Physical inspection of waste treatment facilities under the following schedule:

   Bimonthly inspections and investigations

   a. All sewage discharges
   b. Solid wastes disposal sites
   c. Discrete industrial waste discharges
   d. Major livestock operations
   e. Institutions and miscellaneous discharges

5. **Special investigations**

   a. Preceding administrative enforcement

   These investigations are intensive, and include examination of every pertinent aspect of the waste discharge and the environment, including the receiving waters.

   b. In concert with other agencies

   These investigations are varied in scope and purpose. The investigations are usually intensive, but for a limited period only; and are generally performed under direction of the State Water Resources Control Board.

Receiving Waters

a. Semi-annual investigations of land use along the entire West Bank of the Colorado River in California.
b. Semi-annual physical inspections of major irrigation drainage systems discharging to the Colorado River.
c. Review of chemical analyses as submitted by dischargers.

Field test data conducted by Board staff

These include conductivity, dissolved oxygen, temperature, pH, chloride, sulfate, phosphate, turbidity, settleable matter, and qualitative testing for heavy metals. The field testing is conducted on field samples and receiving waters.

Data obtained by staff sampling with analyses conducted by other agencies

a. Routine and special deliveries to DPH laboratory

$20^{o}C$ BOD_5, bacteriological, total filtrable residue, quantitative tests on heavy metals, MBAS, fluoride, and complete chemical.

b. Special deliveries to local agency laboratories, on cooperative bases

$20^{o}C$ BOD_5, total filtrable residue, MBAS, and fluoride.

Surveillance of water quality indicators in Colorado River

Federal agencies are conducting sampling and analyses at various stations along Colorado River. The program is presently in a position of flux as to permanent surveillance stations and the particular unit of federal government that will conduct the sampling and analyses at a particular station. However, the State Department of Water Resources is establishing procedures to obtain the surveillance data from each participating agency; and the Regional Board is establishing procedures to obtain the surveillance data from the State Department of Water Resources on a regular basis. As of the date of adopting this report the surveillance program along Colorado River is reported to be as follows:

Station Along Colorado River	Participating Agencies	Data Being Obtained
Near Topock	USGS [1]	Complete Chemical
Colorado River Intake	MWD [2]	Complete Chemical
Below Parker Dam	USGS	Complete Chemical
	EPA[3]	Fecal Coliform
Ehrenberg Bridge	USBR[4] & USGS	Complete Chemical
Taylor Ferry	USBR	Complete Chemical
Below Cibola	USBR	Complete Chemical
Imperial Dam	USGS	Complete Chemical
North International Boundary Near Andrede	IB&WC[5] & USGS & EPA	(Not Stated)
South International Boundary	USGS & EPA	(Not Stated)

1. U.S. Geological Survey
2. Metroplitan Water District of Southern California
3. Water Quality Office of Environmental Protection Agency
4. U.S. Bureau of Reclamation
5. International Boundary and Water Commission

APPENDIX A

PROJECT LISTS

Basic to the implementation of this interim plan will be lists of municipal and industrial projects proposed for construction. These are presented on the following pages.

On April 1, 1971, the California State Water Resources Control Board adopted regulations for administering the joint federal-state grant program for construction of wastewater treatment projects. These regulations (Subchapter 7, commencing with Section 2100 of Chapter 3, Title 23, California Administrative Code) were adopted to implement the Clean Water Bond Law of 1970 (Water Code Division 7, Chapter 13) and Section 8 of the Federal Water Pollution Control Act. Federal regulations (18 CFR 601.32) state that no federal grant shall be made unless a project is included in "an effective current basinwide plan for pollution abatement consistent with applicable water quality standards." Sections 2120 and 2121 of the aforementioned State regulations cover establishment and scheduling of municipal projects.

The Municipal Project List is a list of municipal wastewater treatment projects by fiscal year that contains the name of the project, a brief description, estimate of project cost, and project group. A project must be on the list to be considered for certification by the State Water Resources Control Board to the Environmental Protection Agency as eligible for a federal grant. In addition, each construction grant application will undergo a thorough evaluation by the Regional and State Board staffs as required by Section 2140 through 2149 of the State regulations. **Therefore, it should be absolutely clear that inclusion of a project on the project list does not mean that it is approved for grant participation but merely that it will be considered for grant participation.** The following Municipal Project List is recommended for adoption by the State Board.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, COLORADO RIVER BASIN REGION

BASIN 7B – EAST COLORADO RIVER BASIN

MUNICIPAL PROJECT LIST

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
		1971–72	
City of Needles	I	Interceptor & pump station	$24,000
Riverside County Service Area #62	I	Raw sewage lagoons & evaporation-infiltration ponds	20,000

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, COLORADO RIVER BASIN REGION

BASIN 7B -- EAST COLORADO RIVER BASIN

MUNICIPAL PROJECT LIST

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
		1973–74	
East East Blythe County Water District	III	Lift Station, 2000' Force Main to Treatment Plant	$ 30,000
East Blythe County Water District	III	Lift Station, 8700' Force Main to Treatment Plant	130,000
Community of Ripley Riverside County Services Area No. 62	III	Construction of two Lift Stations and 2830 Lineal Feet of 8'' Interceptor Sewer	61,500

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, COLORADO RIVER BASIN REGION

BASIN 7B – EAST COLORADO RIVER BASIN

MUNICIPAL PROJECT LIST

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
		1974–75	
City of Needles	I	Construction of Tertiary Treatment Units, and miscellaneous plant modifications	$400,000

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, COLORADO RIVER BASIN REGION

BASIN 7B – EAST COLORADO RIVER BASIN

MUNICIPAL PROJECT LIST

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
		1975–76	
City of Needles	I	Construct clarifier, add headworks capacity	$157,000

APPENDIX B

SUMMARY OF PUBLIC HEARING

EAST COLORADO RIVER BASIN

Hearing Schedule and Attendance

A public hearing was held May 13, 1971 in Palm Springs, to take testimony on the Interim Water Quality Control Plan for the East Colorado River Basin.

The registered attendance was 59 persons, which included three unidentified guests.

There were 11 oral statements. Written statements were submitted at the hearing, and during ten days following the hearing.

The hearing was conducted before the California Regional Water Quality Control Board, Colorado River Basin Region. Chairman Keith Ainsworth chaired the hearing. In addition, the following Board members were present: Vice-Chairman E. F. Bevens, Lee J. Escher, Harry H. Schmitz, George Werden, Jack Fleming, Gerald Perske, and Bernard Galleano. Board member Robert Chesney was absent.

Conduct of Hearing

Following introductory remarks by the Chairman, the Executive Officer summarized the Plan and its recommendations.

The Chairman invited guests to testify orally, or to read prepared statements. To clarify comments made, questions were asked of several of the speakers by members of the Board and the Executive Officer. Occasionally, members of the Board or the Executive Officer made comments or explanations, or called upon guests to comment on specific points. The purpose of such comments or questions was for clarification, rather than debate or refutation. The hearing testimony was recorded on a tape by the staff of the Regional Board.

Summary of Comments

The following is a summary of the major comments presented at the hearing, or received in the Board Office no later than ten days after the hearing.

1. Robert Y. D. Chun, Supervising Civil Engineer, State Department of Water Resources

Concurs with general concepts of the Interim Plan.

2. John Day, State Department of Fish and Game

Concurs with the general plan. Recommends revisions as follows:

Page 13. B.1. – Add "...and fish and wildlife resources."

B.3. – Delete last words of the sentence "...plant and animal life (including waterfowl)," and insert "..., plant and wildlife."

Page 14. Chemical Characteristics 2. under Constituent – Add "Mercury (Hg)" with limiting concentration of ".005 mg/l".

Page 15, 3. Revise paragraph to read: "The total concentration of the total summation of individual biocides shall not be greater than 0.1 micrograms per liter nor shall concentrations of biocides be allowed that are detrimental to fish and wildlife."

5. – Revise paragraph to read: "Dissolved oxygen concentrations shall be maintained at or above 6.0 mg/l except for areas designated as spawning and nursery areas, and cold water biota and trout habitat, where the minimum dissolved oxygen shall be 7.0 mg/l."

Page 19. – Enunciate wildlife as a beneficial use to be protected in the Hydro Unit and its subunits.

Formulate water quality objectives to protect wildlife.

Recommends the following:

"There shall be no perceptible change in the water quality of the Piute Hydro Unit surface waters (excepting Colorado River) as a result of waste discharge."

Page 21. – Beneficial Uses – Revise last sentence to read: "These groundwaters also support limited vegetation in open desert which provides scenery, forage and drinking water for livestock and wildlife."

Page 25. – Beneficial Water Uses – Revise first sentence to read: "Despite the poor quality of groundwaters and springs in many areas of Colorado Hydro Unit, the water is used for domestic purposes and wildlife as it is the only water available in those areas."

Page 28. – Beneficial Water Uses – Revise first part of last sentence to read: "Haughtelin Lake, Bard Lake, the canals and drains of Bard Valley support aquatic and wildlife resources,..."

(A confirming letter was submitted, dated May 12, 1971.)

3. **Vernon E. Valantine, Assistant Chief Engineer, Colorado River Board of California**

Opposes requirement on:

Page 16. 1. – The report states "There shall be no discharge of sewage to Colorado River, from the California side, regardless of degree of treatment." If the proposed policy is adopted, California would be the only state that will not allow the return of waste waters to the Colorado River. Thus there would be further reduction in the net effective use.

Urges that California's waste discharge policy encourage the return of adequately treated sewage effluent to the river.

The adoption of this policy change would also require a change in the statements on pages 14 and 20 of the report that would prohibit the City of Needles from discharging treated effluent to the Colorado River commencing on January 1, 1977.

Without the right to return adequately treated sewage effluent to the River, the major California users may be affected and may also have to take a further cutback in the amount of water they can divert from the River. All other states on the Colorado River return their sewage effluent to the River and it is part of the water that we have to use ourselves. It doesn't make much sense for California to be the only state on the River not to take advantage of the same rights that are granted other states.

In addition to this major policy issue, we suggest the following revisions:

Page 7, The maximum TDS concentration of Colorado River water at Imperial Dam, during 1969, was 1070 mg/l; not 880 mg/l as shown.

Page 8, A.2. This refers to farmlands in Bard Valley, and should be corrected to refer to "Yuma Valley."

B.4. Recommends deletion of phrase "non-allocated".

Page 22, Wastewater Management – The plan on this page should be revised to permit properly treated effluent to be discharged to Colorado River.

Page 29, Wastewater Management – The plan should not require discharge of sewage effluent into the City of Yuma's sewerage system but should indicate that alternative only as an acceptable alternative. We thoroughly agree with your Condition No. 1.

(The above is included in a prepared text which was submitted)

4. **Wayne H. Hoereth, City Manager, City of Needles**

Agrees with Colorado River Board's statement for allowing return of treated sewage effluent to Colorado River.

Page 10, General Considerations, First Paragraph, 3rd Sentence – The report states "Such standards will not be used to restrict reasonable use and development of each State's apportionment of water in the Colorado River System."

If City of Needles is prevented from discharging effluent, no matter how well treated, the Board cannot meet this General Consideration in the study.

Page 19, Beneficial Water Uses – Needles Subunit – The report states "Community diversion of Colorado River water is forbidden." This is inaccurate. The city does have a protected water right to divert Colorado River water. We have no objection to not putting back into the Colorado River any sewage effluent that is not charged against that Colorado River allotment. If we must be charged for the allotment, then it is absolutely essential we be permitted to receive credit for return waters. Otherwise, you would be in effect cutting to one-quarter or one-fifth the amount of Colorado River water we will be able to use.

Recommends that the report contain more positive steps to be taken to insure that the quality of water as it reaches the California boundary be better protected, and that there be more protection from across the river in Arizona.

Does not object to increasing the level of treatment, if in fact it is required to retain the quality of the Colorado River. Does not object to diverting it and not putting it back into the River provided we do not lose water rights as a consequence thereof.

5. **William Longenecker, Deputy Chief Engineer, Coachella Valley County Water District**

Concerned that discharges cannot go back into the Colorado River. The District would be the first to feel a shortage of water.

Page 16, Wastewater Management Plan 1. – Recommends word "untreated" be inserted between the words **of** and **sewage** and strike out rest of sentence after the comma. The sentence to read: "There shall be no discharge of untreated sewage to Colorado River, from the California side."

Recommends Board adopt this philosophy.

6. **Maurice Hawkins, Assistant Sanitary Engineer, Riverside County Department of Public Health.**

Thinks that in general the sub-basin management plan is excellent because it takes the concept of basin management and sub-basin management rather than a whole hydrologic area as a management program. Feels Board's plan of including replenishment of basins is definitely necessary. Recommends as follows:

Page 25, Top of Page – Questions statement "The TDS content of waters from four wells...is unsuitable for domestic and certain agricultural uses." Thinks that in general there is much better quality of water in that area than the report notes.

Beneficial Water Uses, Second sentence – Thinks the water may be influenced by the River, but has found that in many establishments the general water quality is much lower; in some instances running well over 1000 mg/l TDS.

Page 26, 5. – Feels clarification is needed as to the phrase "natural background levels".

Existing Waste Discharges – Thinks sewage treatment facility at U.S. Gypsum Co. Plant at Midland should be included on list. Although it is closed now it may open again.

Page 27, Wastewater Management, 1. – Believes that in principle, degree of treatment should be referred to, rather than spell out one definite type of treatment that would be accepted. Higher than secondary may be required in some instances.

(The above oral testimony was confirmed in a Departmental letter dated May 21, 1971.)

7. **Virgil Jones, President of Board of Directors, Palo Verde Irrigation District**

Concurs with the Interim Plan.

8. **Arthur Reinhardt, Supervising Sanitary Engineer, State Department of Public Health**

Concurs in general with the Interim Management Plan. Recommends as follows:

Page 7, Bottom of Page – Two constituents, Total Dissolved Solids and Sulfates should be named as exceeding Public Health Service Drinking Water Standards.

Calls attention to statement that is printed in the Public Health Service Drinking Water Standards that precedes the listing of recommended chemical substances, which is substantially the same as the State Board of Health policy:

"No. 5.2(1) The following chemical substances should not be present in a water supply in excess of the listed concentrations where in the judgment of the reporting agency and the certifying authority, other more suitable supplies are or can be made available."

Page 18, B. – Mention should be made of high Manganese in some of the groundwater in this subunit. Regarding City of Needles: while the mineral quality of the City's water is marginal it generally meets the State Health Department's interim policy on mineral quality.

Page 20. – Wastewater Management Plan, 1. Statement requiring City of Needles wastewaters be used exclusively for green belt irrigation is quite restrictive. City should have option concerning reclamation of its wastewater.

Page 21 – It should be noted that groundwater in the Havasu Landing Area is high in TDS and Sulfates, and in some locations high in Fluoride. New development in this area has been restricted because of groundwater mineral quality not meeting the Department's standards.

Page 22, – Wastewater Management – Statement requiring green belt irrigation is restrictive. The The Havasu Landing and Chemehuevi Tribal communities should have option concerning reclamation of wastewater.

Pages 23 to 27 – Recommends the Regional Board recommend a community sewer system for the Colorado Hydro Unit. In report there is no mention of numerous resorts in Parker Dam Area and south to Earp. Because of water quality problems, this area may need a community sewer system by 1980. Big Bend Subdivision south of Earp has potential of 10,000 commercial and residential lots. Developers estimate permanent residential population is 2000 to 4000 persons in next ten years. Sewage problems are to be expected in this area near the river.

Page 26, 8., and Page 27.– Wastewater Management, 1. – Concurs with Mr. Valantine's statement regarding allowance of properly treated sewage discharges to Colorado River. Recommends consistency, since the report allows discharge of treated sewage to the irrigation drains in Palo Verde Valley. These irrigation drains all discharge ultimately to the Colorado River. On page 16, Item 1, it is stated "There shall be no discharge of sewage to Colorado River ... regardless of degree of treatment," and Item 2 states "The City of Needles' sewage discharge to Colorado River is prohibited commencing January 1, 1977."

In answer to question from Executive Officer, "If City of Needles and other dischargers discharging into irrigation drains in Palo Verde Valley treated their discharges adequately, would the State Department of Health object to allowing their discharges to go into the irrigation drains and/or River?" Mr. Reinhardt answered:

"The State Health Department would have no objections."

(The Department submitted a confirming letter, dated May 10, 1971.

9. David G. Stump, Secretary, Imperial County Planning Commission

Recommends the Board direct the staff to work with Mr. David Pierson who is preparing a county-wide study in cooperation with Koebig & Koebig engineers. The study will involve all Imperial County communities of less than 5500 persons. Recommends Regional Board keep "open end" on the Interim Management Plans so that if the county's findings do not coincide with findings of the Board, the Board will be open to suggestions, particularly in the Yuma-Winterhaven area. The Interim Plan recommends that Winterhaven and the Fort Yuma Indian Reservation convey their sewage to Yuma where it would be dumped back into the River. If the Interim Plan were changed, the Quechan Tribe and Winterhaven community could discharge their treated effluent into the Colorado River from this side which would be far cheaper than hauling it to Arizona.

(Executive Officer explained that raw sewage is being discharged from Indian Hill to Colorado River in violation of the Board's requirements, and this must be corrected as quickly as possible. On behalf of the Quechan Indian Tribe and the community of Winterhaven, Koebig and Koebig have submitted a proposal to collect the sewage from the two communities and convey it across the river to be discharged to the City of Yuma's new sewage treatment plant. Board staff has recommended this project. The State Board and Federal Government want regionalization of sewerage facilities in order to avoid a proliferation of sewage treatment plants in one area.)

10. Georgia Laird Culp, Secretary-Treasurer, Chemehuevi Tribal Council

Requests that the final "s" be deleted in spelling of "Chemehuevi".

Opposes sewage lagoon constructed at Havasu Landing. Expects a large population eventually, and prefers to have other type of treatment plant, such as reclamation system or modular system as at Santee. No further pollution of the Colorado River should be allowed. Pollution level has now reached 750 ppm whereas maximum allowable is supposed to be 500 ppm.

Page 22, Wastewater Management Plans, Second sentence in first paragraph – Havasu Landing-Chemehuevi Tribal area is expected to be the Tribe's largest resort area. Because of terrain, it will not be possible to have only one community sewerage system covering the entire area. Opposes the Board's plan that only one community sewerage system be allowed for this area. Opposes discharges to to the River if discharge is more 'impure' than river water. Recommends California be the first state to be conscious of possibility of pollution of river water and prevent all sewage discharges. More concerned about bacteria count, than TDS.

11. Tito Smith, Chemehuevi Indian Tribe

Page 22, – Wastewater Management Plans, second sentence in first paragraph – Recommends words "Chemehuevis Tribal" be deleted and sentence read: "There shall be only one community sewerage system for the Havasu Landing area." The reservation is in two parts and more than one sewerage system is needed for the community.

12. Tuttle & Taylor, Attorneys at Law, representing Chemehuevi Indian Tribe

(Submitted two letters dated May 21, 1971, stating as follows:)

Concurs generally with recommendations made by the Board as to steps which are to be taken to control and eventually eliminate pollution of the Colorado River.

Strongly opposes any efforts that may be made to weaken control on discharge of pollutants into the river such as the attempt at the May 13 hearing by City of Needles to persuade the Board to abandon its proposed prohibition of sewage discharge commencing January 1, 1977.

Opposes discharge of undissolved solids into the Colorado River.

Page 22, The Tribe has, subsequent to May 13 hearing, adopted testimony given by Mrs. Georgia Laird Culp at the hearing, as its own, that:

The Tribe requests the Board make provision for the possibility of separate sewer systems to service separate cohesive areas.

Pages 21, 22, 22A – Recommends addition to the report of a statement pertaining to the Tribe's legal right to divert 11,340 acre feet annually from the Colorado River.

Requests the Regional Board to reconsider its original approval of the location of the sewage oxidation pond at Havasu Landing, and just next to the Reservation. Urges the Board not to permit creation of a nuisance adjacent to the Reservation which would have effect of impairing the beauty and desirability of prime recreational land.

13. Bob Shubeck, Southern California Edison Co.

Page 12, 5. – Recommends this paragraph be revised to read as follows: "Radioactive materials attributable to municipal, industrial or other controllable sources shall be minimum concentrations which are physically and economically feasible to achieve. In no case shall materials exceed the limits established in the California Administrative Code, Title 17 or Title 10, Code of Federal Regulations Part 20."

Page 15, 4. – Radioactivity – Strongly recommends that the numerical limitations be revised to read as follows:

Radium – 226	– 30 uuc/liter
Strontium – 90	– 330 uuc/liter
Alpha Emitters	– 30 uuc/liter
Gross Beta	– 30 uuc/liter

to conform with standards shown in California Department of Public Health in Title 17 of the Administrative Code, which are taken from Title 10 of the Code of Federal Regulations, Part 20.

(A confirming letter was submitted, dated May 21, 1971.)