STATE OF CALIFORNIA

THE RESOURCES AGENCY

STATE WATER RESOURCES CONTROL BOARD

INTERIM
WATER QUALITY CONTROL PLAN
for the
WEST COLORADO RIVER BASIN

JUNE 1971

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

COLORADO RIVER BASIN REGION

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COLORADO RIVER BASIN REGION

FOREWORD

This report contains the Interim Water Quality Control Plan for the West 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.

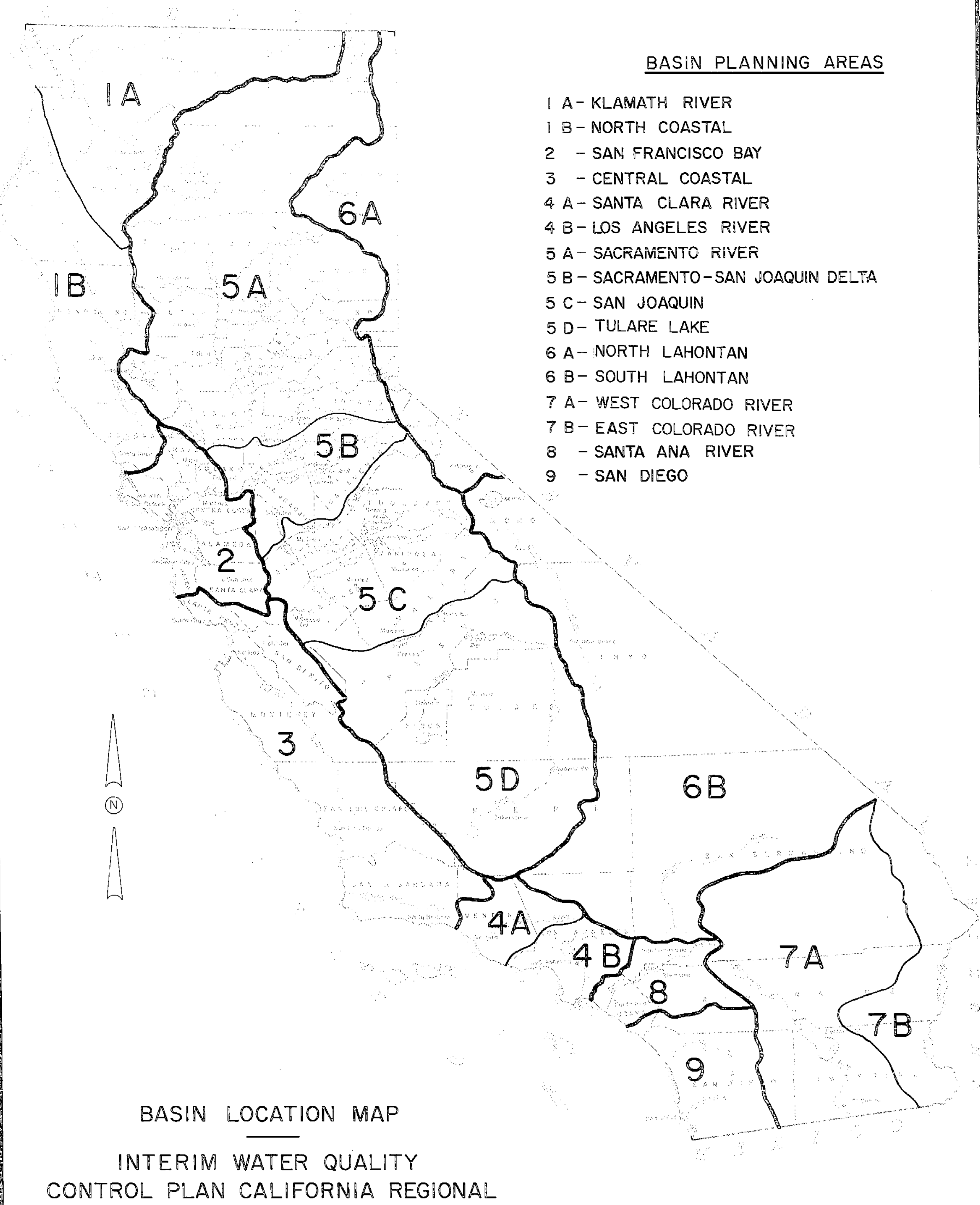
The creation of the State Water Resources Control Board in 1967, and the adoption of the Porter-Cologne Water Quality Control Act in 1970, recognized the need for a long-range, balanced plan for water quality management that will anticipate man's potential needs and technological abilities. This plan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

INTERIM WATER QUALITY CONTROL PLAN CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

1971

CHAPTER II

SCOPE

This report was developed through the coordinated efforts of the State Water Resources Control Board and the California 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 fully developed 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 West 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 Salton Sea itself is also treated as a hydrologic entity, since it is a very large body of water, and thus Salton Sea is given a report status 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 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

The West Colorado River Basin is located in the southeasterly desert area of California. The Basin is bounded on the north by the Ord, Bristol, Granite, Providence and New York Mountains, and a portion of the Nevada State boundary. The easterly boundary is along a watershed divide which is roughly parallel to, and from 10 to 70 miles westerly of Colorado River. The southerly boundary is along the International Border with Mexico, and the westerly boundary is generally along the Granite, San Bernardino, San Jacinto and Peninsular Mountain Ranges. The Basin's main geographic feature is the Salton trough containing the Salton Sea and Imperial and Coachella Valleys.

The Basin includes those portions of San Bernardino, Riverside, San Diego and Imperial Counties that drain internally to the Salton Sea and dry lakes. The Basin area is approximately 15,800 square miles; and the surface area of water-bearing sediments is about 11,500 square miles.

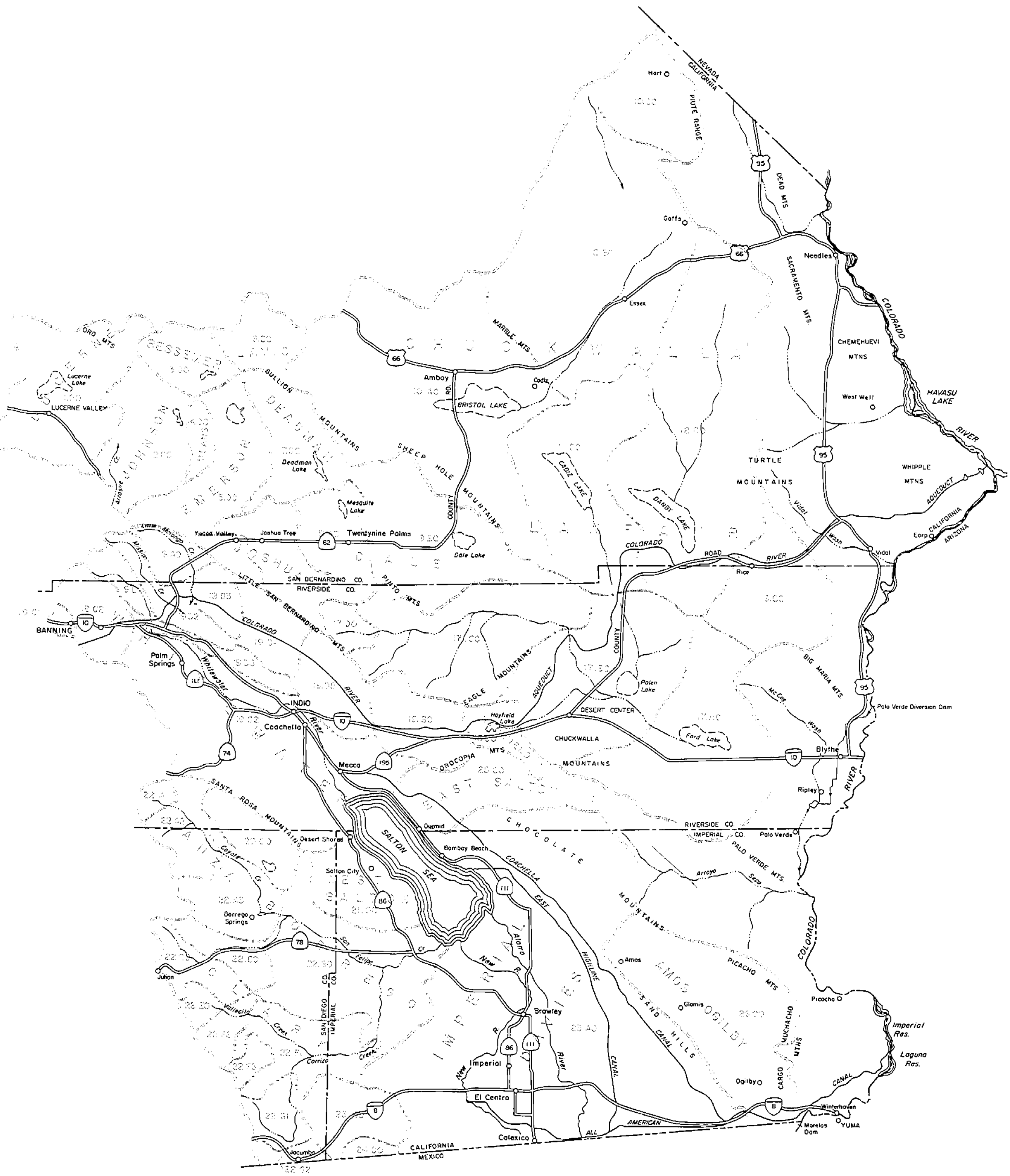
The Basin is characterized by the driest climate in California, along with generally mild winters and very hot summers. Much of the area in the Salton trough is below sea level and virtually frostfree, which permits the growing of agricultural crops throughout the year.

, Snowfall is common in the mountains during the winters. Mean seasonal precipitation on the upper slopes of the San Jacinto and San Bernardino Mountains ranges from 30 to 40 inches. However, the lower areas of the Basin receive scant rainfall, with typical mean seasonal precipitation of 3.5 inches. At several desert stations, only trace precipitation has been recorded for entire seasons.

The West Colorado River Basin contains 23 hydrologic units. These units are described below, along with the Salton Sea, which is also treated as a hydrologic entity. Some of the hydro units are grouped together because of hydrologic similarities and proximity. These groupings are also listed below, along with the Chapter III part-numbers and a key-number tie to Figure 2.

HYDROLOGIC UNITS OF WEST COLORADO RIVER BASIN

Group	Units	Part Number In Chapter III	Key Number On Figure 2
	Lucerne	1	1
	Johnson	2	2
	Bessemer	3	3
	Means	3	4
Bessemer	Emerson	3	5
	Lavic	3	6
	Deadman	3	7
	Joshua Tree	4	8
	Dale	5	9
	Bristol	6	10
	Cadiz	6	11
Chuckwalla	Ward	6	12
Lanfair	Rice	6	16
	Chuckwalla	6	17
	Whitewater	7	19
	Hayfield	8	18
	East Salton Sea	9	25
	Anza-Borrego	10	22
	West Salton Sea	11	21
	Imperial	12	23
	Davies	13	24
	Amos-Ogilby	14	26
	Salton Sea	15	—
	Clark	16	20



HYDROLOGIC SUBUNITS
WEST COLORADO RIVER BASIN

SCALE OF MILES

8 0 8 16 24

COLORADO RIVER REGIONAL WATER QUALITY CONTROL BOARD

PART 1 – LUCERNE HYDRO UNIT

Description of Area

The Lucerne Hydro Unit occupies an area of 280 square miles in the northwest corner of West Colorado River Basin. The major structural feature of the Unit affecting groundwater movement and levels is the Helendale fault. Groundwater movement is impeded in the vicinity of the Helendale fault. Differences of 48 feet in water levels have been measured in wells 250 feet apart on either side of the fault. Highest water levels are on the western side. The fault vicinity contains some flowing wells, such as Rabbit Springs which is located approximately two miles south of Lucerne Dry Lake. Although the mountain streams are ephemeral, they continue through periods of snowmelt. Generally, streams infiltrate before reaching the valley floor. The Unit drains internally to Lucerne Dry Lake. Except for the small community of Lucerne Valley, the Unit is sparsely populated.

Water Quality Conditions

Groundwater in the Lucerne Hydrologic Unit exhibits a wide areal and vertical range in type and concentration of its mineral constituents. The shallower waters tend to be more highly mineralized than those of the deeper aquifers. In the area south and southeast of Lucerne Lake, the quality of the groundwater is generally suitable for most purposes, with TDS content less than 700 mg/l. However, in the areas near the dry lake, the dissolved solids content of groundwater ranges from 2000 to 5000 mg/l and is particularly high in Boron and Fluoride.

There is considerable gypsum mining and attendant manufacturing in the southern foothills. The two largest such installations are Kaiser Cement and Gypsum Corporation, and Pfizer, Inc.

Existing Waste Discharges

Sewage from dwellings and businesses in the community of Lucerne Valley, which contains about 2260 persons, is discharged via private subsurface facilities.

Kaiser Cement and Gypsum Corporation discharges both industrial and domestic wastewaters. Sanitary wastewaters are discharged by means of septic tanks and leach fields. Average sewage flow is 4500 gallons per day. Industrial wastewaters, consisting mainly of washdown and pump leakage, are routed to a pond for final disposal by infiltration and evaporation.

Pfizer, Inc., discharges sanitary wastewaters via septic tanks and leach fields, with an average flow of 10,000 gallons per day. No liquid industrial wastes are generated.

PART 2 – JOHNSON HYDRO UNIT

Description of Area

Johnson Hydro Unit contains the precipitous northerly slope of the San Bernardino Mountains northeasterly of Baldwin Lake. The mountainous slope and its immediate alluvium terminate in the broad Johnson Valley, and the narrower Fry Valley to the northwest. The Unit drains locally into Soggy Lake and Melville Lake, both of which are dry. Except for periods of torrential rainfall, stream flow is ephemeral.

There are no communities in the Unit, and the quantity of ground water available is limited.

Analyses of water from eight sources in the Unit indicate that water quality is generally Class 1 and 2 for irrigation, and suitable to marginal for domestic use. The basic water quality indicators range as follows:

Water Quality Indicator	Range	Unit
TDS	550–700	mg/l
Sulfate	252–587	mg/l
Hardness	200	mg/l
Fluoride	0.6–1.2	mg/l
Boron	0.11–.38	mg/l
Chloride	33–520	mg/l
Percent Sodium	27–46	%

Existing Waste Discharges

There are no community sewerage facilities within the Unit, and none are expected prior to the year 2000. Sewage is presently being discharged via individual subsurface facilities. The Big Bear City Community Services District and the Big Bear Lake Sanitation District are planning to jointly discharge up to 5 MGD of treated sewage effluent to Arrastre Creek which drains into the floor of Johnson Valley.

PART 3 – BESSEMER, MEANS, EMERSON, LAVIC AND DEADMAN HYDRO UNITS

Description of Area

Although the Bessemer, Means, Emerson, Lavic and Deadman Hydro Units are separate hydrologic entities, they are treated as a group because of compactness and similarities in geography and in lack of development.

The entire group is located northeast, east, and southeast of Johnson Hydro Unit. The group's easterly boundary is along the ridge of Bullion Mountains and the southern extremities of Cadiz Mountains. The group's southerly boundary consists mostly of an alluvium valley floor divide from Dale and Joshua Hydro Units, but the southern boundary continues westward along the ridge of Bighorn Mountains.

Bessemer Hydro Unit

Drainage is internal to Galway Lake (dry). Ninety-five percent of the Unit is alluviated, and capable of recharge. However, average rainfall is less than five inches annually, and there is little if any infiltration. There is a paucity of information concerning depth to groundwater. Minimum depth is reported to be 20 feet. No water quality data is available.

Means Hydro Unit

Drainage is internal to Means Dry Lake. Recharge is possible over 95 percent of the valley floor, but due to meager rainfall, infiltration is minimal. Water was reportedly found at a depth of 15 feet. There is no water quality data available.

Emerson and Deadman Hydro Units

Drainage of Emerson Unit is internal to Emerson and Ames Dry Lakes and the Unit contains the the community of Landers (pop. 1800). Drainage of Deadman Unit is internal to Deadman Dry Lake. A substantial portion of Deadman Unit is restricted for use by the United States Marine Corps, and community development is unlikely.

Groundwaters in both Units are typically sodium bicarbonate in character, with TDS content generally less than 300 mg/l. Three wells were sampled in Emerson Unit and two wells were sampled in Deadman Unit during 1964. These indicate the following range of concentrations of specific constituents:

Constituent	Range of Concentration	Unit
Chloride	18–39	mg/l
Sulfate	27–43	mg/l
Fluoride	0.2–1.0	mg/l
Percent Sodium	43–75	%

Groundwaters from the Deadman Hydro Unit are conveyed to the Twentynine Palms Marine Corps Base in the Dale Hydro Unit for municipal use.

Lavic Hydro Unit

Drainage is internal to Lavic Dry Lake. There is no water quality data available.

Existing Wastewater Discharges

Sewage from individual dwellings in the community of Landers, and elsewhere within these Hydro Units, is discharged via individual subsurface facilities. There are no industrial discharges.

PART 4 – JOSHUA TREE HYDRO UNIT

Description of Area

The southwesterly boundary of this Hydro Unit is formed by the ridge of Little San Bernardino Mountains. The Unit is divided into two Subunits by a minor fault. Average annual precipitation on the Hydro Unit is five inches which, except for periods of flash flood, infiltrates into the stream bed alluvium before reaching the valley floor; stream flow, therefore, is ephemeral. Drainage is internal to a low area located in portions of Sections 10, 11, 14, 15, and 23, T1N, R7E, SBB&M.

Warren Subunit

This is the most westerly Subunit. It consists of a Valley floor drained by adjacent mountains, and it contains the unincorporated community of Yucca Valley (pop. 5800). Drainage is integrated and movement of underflow is eastward towards the Copper Mountain Subunit. The total alluviated area is subject to recharge, and the depth of valley fill is approximately 300 feet. Measured maximum and minimum depth to groundwater is 290 and 110 feet respectively.

Copper Mountain Subunit

This Subunit contains two separate valleys. The northerly valley is practically an eastward extension of the Warren Subunit; and it contains the unincorporated community of Joshua Tree (pop. 2640). The southerly valley is contained within Joshua Tree National Monument. The direction of groundwater movement is easterly. Ninety-five percent of the alluviated area is subject to recharge. Maximum depth of the valley fill is 630 feet. Maximum depth to groundwater is 175 feet.

Analyses of groundwater from four sources in the Warren Subunit and five sources in the Copper Mountain Subunit indicate that the water is generally of excellent mineral quality. The basic water quality indicators range as follows:

Water Quality Indicators	Range	Unit
TDS	124–129	mg/l
Sulfate	8–13	mg/l
Hardness	27–71	mg/l
Fluoride	0.2–1.0	mg/l
Boron	.04–.21	mg/l
Chloride	9–13	mg/l
Percent Sodium	49–79	%

Existing Wastewater Discharges

There are no community sewerage facilities in Joshua Tree Hydro Unit. Sewage is discharged via private subsurface systems.

PART 5 – DALE HYDRO UNIT

Description of Area

Dale Hydro Unit is contained between the ridgelines of Bullion and Pinto Mountains, except for a valley boundary along the northwest. The Hydro Unit contains two Subunits which are separated by a high alluvium divide. Precipitation is approximately five inches annually, and stream flow is ephemeral.

Twentynine Palms Subunit

This Subunit is located astride the San Bernardino Base Line. Most of the valley floor consists of sediments of moderate to high permeability. The Subunit drains to Mesquite Lake (dry). The community of Twentynine Palms (unincorporated, and with a population of 8000) is located in the Subunit, along with a nearby United States Marine Corps Base of 6000 population.

The quality of groundwater is acceptable for domestic use with the exception of the fluoride concentration, which ranges from 1.2 to 11 mg/l generally in the east and north portions of the subunit. Concentrations of other specific constituents are well within the recommended limits set in USPHS Drinking Water Standards. TDS ranges from 300 mg/l in the community of Twentynine Palms to 500–600 mg/l in the northwestern part of the Subunit.

Dale Subunit

This Subunit is also located astride the San Bernardino Base Line west of the Twentynine Palms Subunit. The area drains to Dale Lake (dry). Dale Subunit does not contain any communities.

Groundwater quality does not meet recommended limits for domestic use because of excessive concentrations of TDS, sulfate and fluoride. TDS ranges from 1400 to 332,000 mg/l, with the poorer quality water occurring beneath Dale Lake and the better quality waters some distance away from the Lake.

Existing Wastewater Discharges

Twentynine Palms Subunit

Community of Twentynine Palms
The community is presently unsewered. The Twentynine Palms County Water District is planning a community sewerage system which is presently scheduled for construction to commence during the first half of 1972, with completion during the first half of 1973. The site for the sewage treatment plant under consideration is located in the NE¼ of Section 21, T1N, R9E, SBB&M. A large commercial laundry located southeast of the community ponds its wastewaters in impervious basins, with no discharge.

U.S. Marine Corps Base
Sewage load is contributed from two separate systems, and is treated as follows:

Marine Corps Area and Marine Palms Housing Unit – Treatment facilities consist of two primary sedimentation tanks and one sludge digester. Effluent from the primary sedimentation tanks is oxidized in two stabilization lagoons, is chlorinated, and is then discharged into an oxidation lagoon which also receives primary lagoon effluent from the Ocotillo Heights Housing Area.

Ocotillo Heights Housing Area – Sewage is discharged into a primary lagoon, from which the effluent is discharged into an oxidation lagoon which also receives the chlorinated effluent from the above-mentioned Marine Corps Area and Marine Palms Housing Unit.

The combined effluent in the oxidation ponds is used for golf course irrigation without further chlorination.

PART 6 – CHUCKWALLA–LANFAIR GROUP

Description of Area

The Chuckwalla-Lanfair Group consists of the following hydrologic units in the northeast portion of the West Colorado River Basin. The Group and its Units may be located by reference to Figure 2:

Bristol Hydro Unit
Cadiz Hydro Unit
Ward Hydro Unit
Rice Hydro Unit
Chuckwalla Hydro Unit

The Group area is bounded on the east by the westerly boundary of the East Colorado River Basin from approximately the Nevada State line southward to the ridge of Little Chuckwalla Mountains. The southwesterly boundary is formed by ridgelines of Chuckwalla, Hexie and Little San Bernardino Mountains to joinder with the Pinto Range. The boundary then continues easterly along the Pinto Range and northwesterly along Bullion Mountains to the north boundary of the Basin. All drainage in the Group is internal to several sinks, which are dry lakes. Rainfall in the Group averages less than five inches annually, and there are no perennial streams.

The only population centers within the Group are the communities of Desert Center, Lake Tamarisk, and Kaiser Mine Village, all of which are located within the Palen Subunit of the Chuckwalla Unit. The very small roadside communities of Bagdad, Amboy, Cadiz, Essex, Fenner, and Goffs are all located in the Bristol Unit.

Water Quality Conditions

Bristol Hydro Unit

This Unit contains three Subunits: namely, Bristol, Fenner, and Lanfair, all of which drain to Bristol Dry Lake. Data concerning depths to groundwater and recharge capability of the Valley fills are as follows:

Subunit	Depths to Groundwaters (feet)	Percent of Valley Floors Subject to Recharge
Bristol	8–565	90
Fenner	268–565	100
Lanfair	4–500	100

Analyses of water from six sources in the **Bristol Subunit** indicate that water quality ranges widely from good and generally suitable for domestic and agricultural purposes in the area northeast of Bristol Dry Lake, to brackish and not suitable for any purpose in the area northwest of the Dry Lake. Analyses of groundwater from nine sources in the **Fenner Subunit** indicate quality generally suitable for domestic use and Class 1 for irrigation. The basic water quality indicators range as follows:

Water Quality Indicators	Range	Unit
TDS	289–11,894	mg/l
Sulfate	34–1,846	mg/l
Hardness	79–3,324	mg/l
Fluoride	0.6–3.9	mg/l
Boron	0.2–10.3	mg/l
Chloride	35–5,532	mg/l
Percent Sodium	33–93	%

Groundwater analyses from 13 sources in the **Lanfair Subunit** indicate a wide range in water quality. The water sources located near the eastern foothills of the New York Mountains (on the northwest flank of the Subunit) produce water of a quality unsuitable for domestic or irrigation use. In the central portion of the Subunit water quality was found to be suitable for all beneficial uses. The basic quality indicators range as follows:

Water Quality Indicators	Range	Unit
TDS	188–2,120	mg/l
Sulfate	17–1,110	mg/l
Hardness	66–1,030	mg/l
Fluoride	0.3–0.9	mg/l
Boron	.08–.57	mg/l
Chloride	11–168	mg/l
Percent Sodium	19–77	%

Cadiz Hydro Unit

Drainage and groundwater movement are towards Cadiz Dry Lake. Eighty-five percent of the alluviated area is subject to recharge. Depth to groundwater ranges from 10 to 280 feet.

No recent water quality data are available for this Unit. Analysis of a source located two miles north of Cadiz Lake showed moderate mineral content, and suitability for domestic use. Basic quality indicators are listed below:

Water Quality Indicators	Range	Unit
TDS	615	mg/l
Sulfate	159	mg/l
Total Hardness	189	mg/l
Chloride	166	mg/l
Magnesium	7	mg/l
Percent Sodium	63	%

Ward Hydro Unit

Drainage and groundwater movement are towards Danby Dry Lake. Some 85 percent of the alluviated valley floor is subject to recharge; and depth to groundwater ranges from 18 to 315 feet.

Analyses of water from four sources in the unit indicate a moderately mineralized water from the sources located in the northern portion of the Unit. However, the quality is unsuitable for domestic use because of high fluoride content. Two wells in the southern part of the Unit near Danby Dry Lake indicate a wide range in dissolved solids content. The basic water quality indicators are as follows:

Water Quality Indicator	Range	Unit
TDS	194–1,103	mg/l
Sulfate	294	mg/l
Hardness	47	mg/l
Fluoride	10	mg/l
Boron	14	mg/l
Chloride	291	mg/l
Percent Sodium	91	%

Rice Hydro Unit

Drainage is internal and direction of groundwater movement is northeasterly toward Vidal Valley, but there is no defined dry lake. The total area of valley fill is subject to recharge. Depth to groundwater even in the lowest part of the valley is so great that it would be uneconomical to pump water for irrigation; in addition, the water quality is poor.

The most recent sample of groundwater was obtained in 1956 from a well near the center of the valley. Besides being too highly mineralized for domestic use, the water is Class 3 for irrigation, due to high boron content. Analyses of water from two sources indicate the following range of water quality:

Water Quality Indicator	Range	Unit
TDS	1,087–1,890	mg/l
Sulfate	147–1,018	mg/l
Hardness	522–605	mg/l
Fluoride	0.7–1.8	mg/l
Boron	0.2–2.8	mg/l
Chloride	194–312	mg/l
Percent Sodium	24–62	%

Chuckwalla Hydro Unit

The Chuckwalla Unit contains the following Subunits, reading from west to east:

Pleasant Subunit
Pinto Subunit
Palen Subunit
Ford Subunit

The Pleasant, Pinto and Palen Subunits drain eastward to Palen Dry Lake, which is located in the Palen Subunit. Ford Subunit drains internally to Ford Dry Lake. Groundwater mineral content ranges from 314 to 8,126 mg/l TDS. Water quality deteriorates as the groundwaters move downstream; and highest mineralization is reached in the vicinity of the dry lakes. Most of the groundwater in Ford Subunit is not suitable for use. Groundwaters of the Palen Subunit are less mineralized, but have fluoride content greatly exceeding the USPHS Drinking Water Standards. Groundwaters of the Pinto Subunit would be suitable for domestic use, again except for fluoride content; and this water is Class 3 for irrigation, due to high sodium percentage. Water quality data are not available for the Pleasant Subunit.

Ranges of Subunit water quality is as follows:

Water Quality Indicators	Unit	Range of Indicator Concentrations Subunits Ford	Palen	Pinto	Pleasant
TDS	mg/l	762–8126	315–805	314–585	
Sulfate	mg/l	1–1734	108–295	23–261	No
Hardness	mg/l	28–1205	9–76	28–123	Available
Fluoride	mg/l	0.7–5.7	8–15	1.1–2.7	Data
Boron	mg/l	.63–3.6	.50–.90	.20–.38	
Chloride	mg/l	206–3248	74–223	44–104	
Percent Sodium	%	33–95	84–96	42–93	

Existing Wastewater Discharges

Bristol, Cadiz, Ward and Rice Hydro Units

No communities are located in these Subunits. Sewage from individual residences is discharged via individual subsurface disposal facilities.

Palen Subunit of Chuckwalla Unit

Lake Tamarisk – This community is sewered. Treatment facilities consist of mechanically aerated sewage lagoons. Discharge is by infiltration via ponds. The sewage treatment and discharge facilities are sized for an ultimate population of 2050 persons.

The community also has a mechanical defluoridation facility to defluoridate the supply water. Defluoridation wastes are routed to impervious evaporation basins.

Kaiser Mine Village (Privately owned) – The village is sewered. Sewage is treated in lagoons, with final disposal by evaporation and infiltration.

Kaiser Mine (Industrial Waste) – Tailings water from ore classifiers is pumped to impervious basins and wastewater is recycled into the plant process.

PART 7 – WHITEWATER HYDRO UNIT

Description of Area

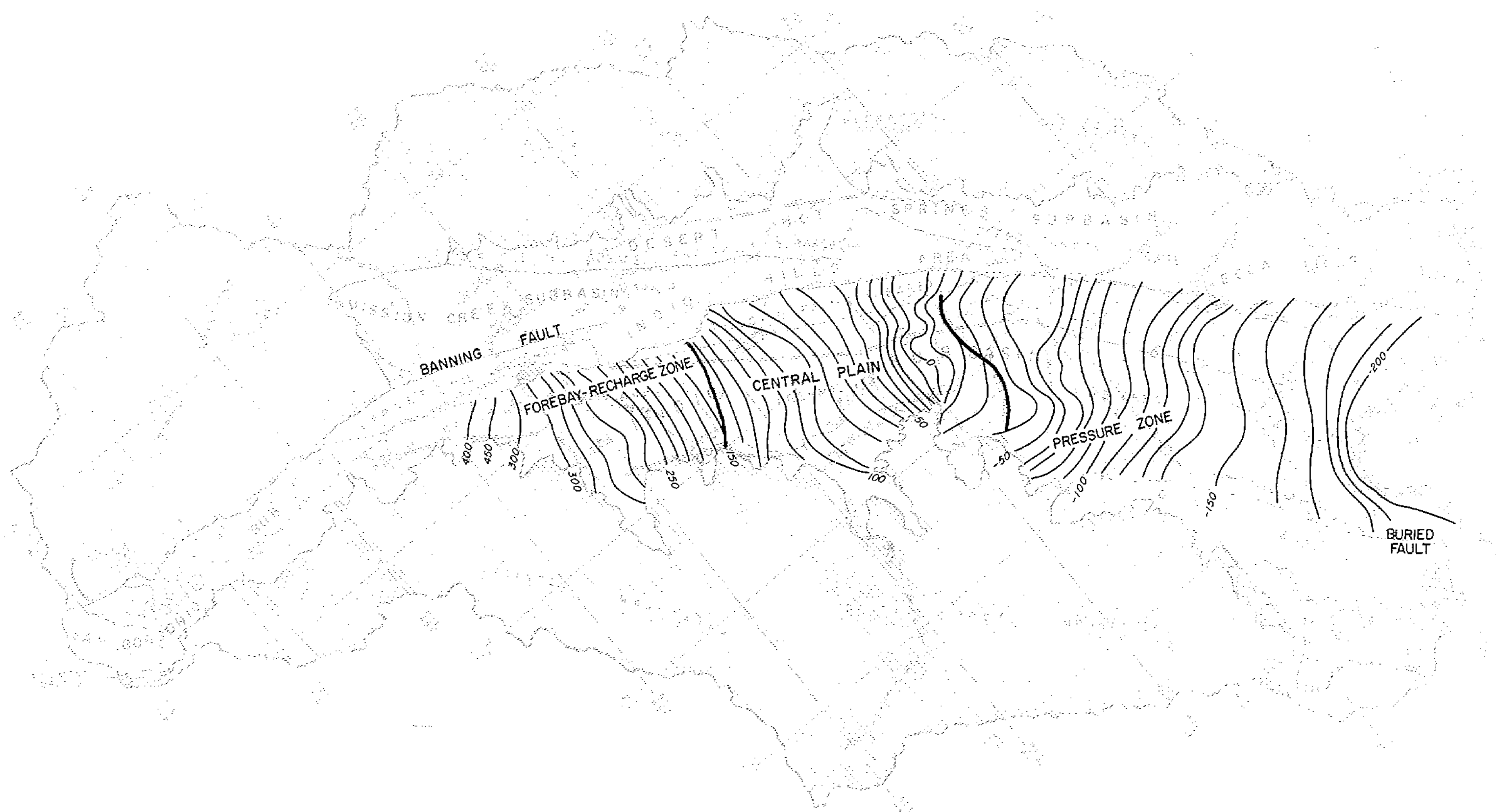
The Whitewater Hydro Unit extends from the Banning-Beaumont summit southeasterly to the Salton Sea, and from the ridge of the San Jacinto-Santa Rosa Mountains northeasterly to the ridge of the Little San Bernardino Mountains. The predominant portion of the Hydro Unit is located in Riverside County; small portions are located in San Bernardino, San Diego and Imperial Counties.

Hydrologic Subunits and Subareas

Figure 2 shows the hydrologic divisions of the Whitewater Hydro Unit which are as follows:

Numerical Designation	Description
19.AO	Morongo Hydro Subunit
19.BO	Shavers Hydro Subunit
19.CO	San Gorgonio Hydro Subunit
19.C1	Beaumont Hydro Subarea
19.C2	San Gorgonio Hydro Subarea
19.DO	Coachella Hydro Subunit
19.D1	Garnet Hill Hydro Subarea
19.D2	Mission Creek Hydro Subarea
19.D3	Miracle Hill Hydro Subarea
19.D4	Sky Valley Hydro Subarea
19.D5	Fargo Canyon Hydro Subarea
19.D6	Thousand Palms Hydro Subarea
19.D7	Indio Hydro Subarea

Figure 3



NOTE: CONTOUR DATA FROM YEAR 1957. UPDATED WITH AVAILABLE INFORMATION TO 1969. CONTOURS BELOW MEAN SEA LEVEL (U.S.G.S.) INDICATED AS MINUS.

Basic Data from D.W.R. Bull. 108

COACHELLA SUBUNIT OF
WHITEWATER HYDROLOGIC UNIT
and
GROUND WATER CONTOUR LEVELS

COLORADO RIVER REGIONAL WATER QUALITY CONTROL BOARD

Figure 3 indicates the major topographic features of the Whitewater Hydro Unit which are summarized as follows:

Northeasterly and southwesterly areas – Rugged mountainous terrain composed of nonwater-bearing materials including crystalline, volcanic, and consolidated sedimentary rocks. These materials are of low permeability, or are impermeable.

Central longitudinal area – Essential Valley Floor – Recent and upper Pleistocene sediments, whose permeability is generally moderate to high. The soil structure varies from coarse sand in the San Gorgonio Pass Area, to fine sand in the upper Coachella Valley, to loam in the lower Coachella Valley.

Uplifts from Valley Floor – Hilly areas – Lower Pleistocene and older sediments, which are water-bearing. These include moraines, and uplifted and dissected upper pleistocene areas. These materials have generally moderate permeability.

Geography

Whitewater Hydro Unit is located in an essentially desert area in Southeastern California. The precipitous San Jacinto and Santa Rosa Mountains, which form the southwesterly portion of the Hydro Unit are separated from the San Bernardino Mountains on the north by a narrow plateau known as San Gorgonio Pass, and are separated from the Little San Bernardino Mountains on the northeast by Coachella Valley and Sky Valley. The extreme easterly portion of the Hydro Unit is topographically (though not hydrologically) isolated from Coachella Valley by the Mecca Hills. This easterly portion contains a high plateau (referred to as Shavers Pass) between the Cottonwood Mountains to the north and the Orocopia Mountains to the south.

Salton Sea, which is an inland body of water located in a geologic sink, and whose surface elevation is approximately 232 feet below mean sea level, borders the Hydro Unit on the southeast. This Sea serves as a final repository for drainage and seepage waters from Whitewater Hydro Unit, as well as from a few other hydro units.

Description of Subunits

Morongo Subunit

Final drainage of groundwaters and storm runoff is through Morongo Valley Canyon, at the southernmost tip, into Mission Creek Subarea of Coachella Subunit.

Shavers Subunit

This subunit is very sparsely populated. Final drainage is into the Indio Subarea of Coachella Subunit, via Box Canyon which cuts through the Mecca Hills.

San Gorgonio Subunit

This Subunit consists essentially of a narrow pass area, surrounded on the north and south by the formidable San Bernardino and San Jacinto Mountains, respectively. The pass is about 14 miles long, varies from two to four miles in width, and is located as an upper and westerly extension of Coachella Valley. The subunit is separated hydrologically from Coachella Valley by a predominant bedrock ridge which is a northward projection of Mount San Jacinto. This ridge creates a further construction of the narrow pass, reducing the cross-sectional area of alluvial fill. Although water level data in the pass area is sparse, it does indicate a groundwater cascade over this bedrock constriction such that a drop in water level of over 500 feet in a distance of 8000 was measured in April 1961.

Drillers' logs indicate very coarse and poorly sorted materials, over 1000 feet thick, with little or no fines present throughout the pass area. However, there are reddish-brown clayey sands and gravels present in an area west and south of Banning.

Coachella Subunit

This subunit covers the largest area within the Whitewater Hydro Unit; and it is the most important subunit from the standpoint of available water and of development. The subunit contains seven subareas, of which again the Indio subarea is the most important.

The gross subunit consists of a long, narrow valley floor bounded by formidable mountains, except for San Gorgonio Pass on the Northwest and Salton Sea on the southeast.

The Indio Hills which rise from the valley floor divide the valley into two distinct valleys, which are called Sky Valley and Coachella Valley.

Garnet Hill Subarea – This area encompasses the Whitewater River watershed in the San Bernardino Mountains, and it includes the alluvial fan from Whitewater Canyon onto the valley floor. From this point, however, the subarea trends north of the Whitewater flood plain. The subarea's southerly boundary on the valley floor is along Garnet Hill fault, which serves as an effective barrier to groundwater movement into the Indio Subarea, as is illustrated by a difference of 170 feet in water level elevation in a horizontal distance of 3200 feet. This fault does not reach ground surface, and is an effective barrier probably only below a depth of 100 feet.

On the valley floor, depth to groundwater generally exceeds 170 feet. The chemical character of the groundwater plus its direction of movement, indicates that the main source of recharge is from Whitewater River through the permeable deposits which underlie Whitewater Hill.

Mission Creek Subarea – The northwesterly portion of this subarea encompasses the watershed of Mission Creek, which is located in the rocky San Bernardino Mountains. A smaller northerly portion encompasses the watershed of Big and Little Morongo Canyons, and Morongo Valley Canyon, which drains Morongo Valley. The southeasterly limits extend about three miles into the Indio Hills. The remainder of the subarea is located on the valley floor (or alluvium), and reflects the estimated limit of effective storage within the subarea.

The southerly boundary of the subarea is formed by Banning fault, which is a very effective barrier to groundwater movement towards Garnet Hill subarea. This barrier is evidenced by an indicated vertical difference of 250 feet in water elevation in a horizontal difference of 4900 feet straddling the fault line; and is further evidenced by fault springs and abrupt changes in vegetation.

Similarly on the northeast, the subarea is divided from the Miracle Hill Subarea by Mission Creek fault, whose effectiveness as a barrier to groundwater movement is indicated by a vertical difference in groundwater elevation of approximately 255 feet in a horizontal distance of 1600 feet straddling the fault.

All known wells drilled in the subarea were begun in Recent sands and gravels. At depths ranging from 20 to 170 feet, the wells pass through unconsolidated Recent material and encounter semi-consolidated and interbedded sands, gravels, and silts.

Miracle Hill Hydro Subarea – This subarea extends from the aforementioned Mission Creek fault northward to the ridge of the Little San Bernardino Mountains, and includes a valley floor of about 12 square miles area. The easterly and westerly boundaries are formed by surface drainage divides, bounding Morongo Subunit on the west and Sky Valley Subarea on the east. Groundwater levels indicate that underflow across this boundary moves from Miracle Hill Subarea southeastward into Sky Valley Subarea.

In addition to domestic water wells, the valley floor contains an extensive development of hot, mineralized water wells, the waters thereof being used at several spas. Depth to water ranges from 12 feet below ground surface near the Mission Creek fault to over 300 feet in the southeast portion of the valley floor.

The subarea appears to contain several barriers to groundwater movement. These barriers generally trend parallel to Mission Creek fault. Structural conditions within the subarea are complex, and the barrier effects are not well understood.

Sky Valley Hydro Subarea

Most of the mountainous runoff from this subarea enters the valley floor via three major canyons, the largest of which is Fan Canyon. The valley floor, including the alluvium portions of the canyons, covers approximately 35 square miles.

Groundwater and other hydrologic data in this subarea are sparse. Recent investigations indicate only eight active water wells, which pump only small quantities of groundwater for domestic use. Movement of water is southeasterly from the Miracle Hill Subarea and southwesterly from the vicinity of Fan Canyon, converging on Thousand Palms Canyon, where rising water is present throughout the year. Final drainage of this subarea is into Thousand Palms Hydro Subarea via Thousand Palms and Pushwalla Canyons.

Fargo Canyon Subarea

This subarea is located between Indio Hills on the west and Mecca Hills on the southeast. It extends from the ridge of the Little San Bernardino Mountains southwesterly 11 miles to San Andreas fault. The northwesterly half of the valley floor is underlain by coarse alluvial fans of Recent age. To the southeast, Recent deposits are confined to stream channels cut into the Mecca Hills.

Information on groundwater occurrence in this subarea is very sparse. Recent investigations indicate only two active wells, pumping water for domestic and irrigation use. Indicated groundwater movement from the northwesterly portion of the valley floor is southwesterly, and the groundwater is probably unconfined.

Thousand Palms Subarea

This subarea extends from the watershed ridge of Indio Hills–Edom Hill, southwesterly for a distance of about three miles, to a southwest boundary in the valley floor which is determined by tracing the limit of destructive groundwater chemical characteristics. Water in the Thousand Palms Subarea is sulfate-bicarbonate in character whereas water in the Indio Subarea is bicarbonate in character.

The water quality differences suggest that recharge to the Thousand Palms Subarea comes primarily from the Indio Hills and is limited in supply. The relatively sharp boundary between chemical characteristics of the groundwaters on either side of the boundary suggest that there is little intermixing of groundwater between these areas.

Indio Subarea

This subarea comprises the major portion of the floor of Coachella Valley, and has the greatest quantity of available water in the entire unit. The subarea extends from the east boundary of San Gorgonio Pass southeasterly to Salton Sea. Approximately half of the subarea is contained within the non-water-bearing San Jacinto and Santa Rosa Mountains. The most easterly portion of the subarea contains the Mecca Hills, and a southerly portion contains the Oasis Piedmont Slope. Both of these latter hills are composed of conglomerate water-bearing materials of generally moderate permeability. The remainder of the subarea is essentially valley floor, and constitutes the groundwater storage basin.

The Indio Subarea's valley floor may be divided into three zones, viz: forebay-recharge area, Central Plain, and Pressure area.

The **forebay-recharge zone** is the northernmost of these divisions, and extends southerly to just south of Cathedral City. The major sources of recharge include infiltration of stream runoff from San Jacinto Mountains and Whitewater River, and surface inflow from San Gorgonio Pass. The Valley fill materials within this area are essentially heterogeneous alluvial fan deposits exhibiting little sorting, and with little content of fine-grained material. The thickness of these water-bearing materials appears to to exceed 1000 feet. Depth to water ranges from 100 feet near Cathedral City to over 500 feet at the northwesterly boundary.

The **Central Plain** extends from the southerly limits of Cathedral City southeastward to approximately the Coachella Canal's crossing of the valley floor. The broad alluvial fans of Palm Desert and La Quinta penetrate far northeasterly and easterly into this plain. These fans contain unconfined, or free water conditions. Valley materials range from wind-blown coarse sands at the northwesterly boundary to fine sand in the vicinity of Coachella Canal crossing. Groundwater of the forebay-recharge area moves southeastward into the interbedded sands where the predominant permeabilities are parallel to the bedding of the deposits. Depths to groundwater generally range less than 100 feet, and are about 50 feet in the vicinity of the Coachella Canal crossing.

The **Pressure zone** extends from the Coachella Canal's valley crossing southeastward to Salton Sea. Valley materials vary from fine sands at Coachella Canal to silts and clays near Salton Sea. A predominant feature of this zone is the presence of two aquifers separated by a depth of finer-grained aquatard materials. Waters in the lower aquifer are under pressure, such that a few artesian wells are flowing in the southeast portion.

The lower aquifer is the most important source of groundwater in Coachella Subunit. Depth to the top of this aquifer ranges from 300 to 600 feet. The thickness of the zone ranges from at least 500 feet to over 1000 feet.

The aquatard overlying the lower aquifer is generally 100 to 200 feet thick, although in some areas on the periphery of Salton Sea it is in excess of 500 feet in thickness. In the area of Coachella Canal crossing the aquatard is apparently lacking, and no distinction is made between upper and lower aquifers.

The upper aquifer is about 100 to 300 feet thick, and since it is relatively impermeable, subsurface inflow into it is less than that into the lower aquifer. As water levels in the forebay-recharge area continue to drop, the cross-sectional area available for recharge from this source is reduced.

Capping the upper aquifer is a shallow fine-grained layer in which semiperched groundwater is present. This surficial layer consists of Recent silts, clays, and fine sands and is relatively persistent southeast of Indio. It ranges from zero to 100 feet thick, and is generally an effective barrier to deep infiltration. However, north and west of Indio, the layer is composed mainly of clayey sands and silts, and its effect in retarding deep percolation is limited. Water in this layer is maintained essentially by imported irrigation water, some of which is applied to control salt balance in the soil. Drainage of at least the top six-foot portion of this zone is encouraged via a comprehensive drainage system which discharges to the Salton Sea.

The Oasis Piedmont slope straddling the Riverside-San Diego County boundary along the east slope of the Santa Rosa Mountains contains water-bearing materials underlying highly permeable fan deposits. Groundwater data suggests that the boundary between this slope and the aforementioned pressure zone is formed by a buried fault extending from Travertine Rock to the community of Oasis. The remainder of the boundary is a lithologic change from the coarse sand deposits of the Slope to the interbedded sands, gravels, and silts. The water-bearing materials are estimated to be in excess of 1000 feet thick.

Very few wells exist on this slope. The limited hydrologic data indicates that a source of recharge is from the aquifers of said pressure zone. Surface runoff from Santa Rosa Mountains also contributes to recharge. Movement of groundwater in the slope is considered small. Depth to water ranges from near ground surface along the pressure zone boundary to over 160 feet at water well No. 8S–8E–31R1.

Existing Waste Discharges

Sewage

Table 1 summarizes the existing community sewerage facilities in the Whitewater Hydro Unit as of April 1, 1971; and the table is followed by a more detailed explanation of these facilities.

TABLE 1

Existing Community Sewerage Facilities

Whitewater Hydro Unit (as of April 1, 1971)

City or District	Population Served	Type or Degree of Treatment	Discharge To
City of Banning	11,819	Secondary	1. Smith Creek 2. Infiltration
City of Palm Springs	21,672	Secondary, Chlorination	1. Green Belt Irrigation 2. Infiltration
*CVCWD Palm Desert Country Club	2,125	Secondary, Chlorination	1. Green Belt Irrigation
Valley Sanitary District	19,000	Secondary	1. Coachella Valley Stormwater Channel
City of Coachella	8,500	Primary & Secondary	1. Farm Irrigation
Thermal Sanitary District	510	Secondary	1. Coachella Valley Stormwater Channel
Mecca Sanitary District	600	Secondary, Chlorination	1. Lincoln Street Drain

* Coachella Valley County Water District

City of Banning

The City's sewage treatment facilities consist of a primary sedimentation tank, sludge digester, and oxidation ponds.

City of Palm Springs

The City's sewage treatment facilities consist of a bar screen, primary sedimentation tank, sludge digesters, trickling filters, secondary sedimentation, infiltration ponds, and chlorinator. In addition to infiltration, effluent is used for irrigation of the municipal golf course and other green areas.

Coachella Valley County Water District's Palm Desert Country Club Estates Sewerage System

The District utilizes multiple activated sludge units, a lined pond, and chlorination. Effluent is used to irrigate the local golf course.

Valley Sanitary District

The District provides sewerage service to the Indio extended area. Treatment units consist of bar screen, two primary sedimentation tanks, a sludge holding tank, a sludge wet-oxidizer, a trickling filter, and three oxidation ponds. Effluent discharge is to Coachella Valley Stormwater Channel, with some effluent used for irrigation.

City of Coachella

The City's existing sewage treatment facilities consist of a primary sedimentation tank, sludge digester, and ponds; and the effluent therefrom is used entirely for farm irrigation. The City is presently constructing an activated sludge type sewage treatment plant at a location approximately one mile downstream from the existing plant, in order to serve an expanded area of the City. Initial effluent discharge will be to Coachella Valley Stormwater Channel, and plans are being considered for some wastewater reclamation.

Thermal Sanitary District

The District utilizes a "Clarigester" and chlorination. Effluent is discharged to Coachella Valley Stormwater Channel.

Mecca Sanitary District

The District utilizes a package-type activated sludge plant, and chlorination. Effluent is discharged to Lincoln Street Drain.

In addition to the above-listed community sewerage facilities, the Hydro Unit also contains several communities and institutions which utilize privately owned and operated sewerage systems. A complete compilation of these is not included herein. However, typical larger installations are Tri-Palms Mobil Estates in Thousand Palms, Desert Crest, Inc. near Desert Hot Springs, and College of the Desert. These private sewerage systems include both surface and subsurface facilities, and there is also wastewater reclamation for golf course irrigation.

The following communities are expected to install community sewerage prior to the year 2000.

Morongo Subunit
- **Morongo***

San Gorgonio Subunit
- **City of Cabazon***

Coachella Subunit
- **Desert Hot Springs County Water District**
- **Cathedral City**
- **Palm Desert – Rancho Mirage**
- **Indian Wells**
- **La Quinta***
- **North Shore**

Industrial

The following three industries discharge fruit and vegetable wash waters to the Coachella Valley Stormwater Channel. The wastes are settled in sedimentation tanks, with discharge of clarified effluent.

(a) **Richard A. Glass, Co., Inc. – Indio**
(b) **Safeway Pre-Pak Co. – Indio**
(c) **Heggblade & Marguleas Co. – Thermal**

***Community sewerage not expected prior to 1976**

PART 8 – HAYFIELD HYDRO UNIT

Description of Area

The Hayfield Hydro Unit is bounded on the north and west by the Eagle Mountains, on the south by the Orocopia Mountains and on the east by the drainage divide with Shavers Subunit. The Unit drains internally to Hayfield Dry Lake. The only existing community is the small residential area of the Metropolitan Water District's Hayfield Pumping Plant.

Water Quality Conditions

No recent water quality data are available for this Unit. An analysis of water collected in 1952 from a well in Section 19, T6S, R14E, SBB&M showed nonsuitability for domestic use and Class 3 for irrigation. The water quality indicators analyzed are as follows:

Water Quality Indicator	Concentrations	Units
TDS	1,498	mg/l
Sulfate	181	mg/l
Hardness	642	mg/l
Fluoride	11.5	mg/l
Boron	0.4	mg/l
Chloride	408	mg/l
Percent Sodium	36	%

Existing Waste Discharges

Sewage from the community of Metropolitan Water District's Hayfield Pumping Plant is discharged via private subsurface facilities.

PART 9 – EAST SALTON SEA HYDRO UNIT

Description of Area

This Unit is contiguous to and northeast of Salton Sea. The Unit is bounded on the north and northeast by the Orocopia and Chuckwalla Mountains respectively. Some two-thirds of the southerly boundary is defined by the Chocolate Mountains. The southwesterly unit boundary is the shoreline of Salton Sea. Alluvial fill in the basin consists of Lake Cahuilla deposits and quaternary alluvium reaching a maximum thickness of 645 feet.

Water Quality Conditions

Brackish water is found in most parts of the Unit and very concentrated brackish water is found near the Salton Sea. Analyses of water from seven sources in the Unit indicate that water quality is generally unsuitable for domestic use due to high fluoride, and is Class 3 for irrigation. The basic water quality indicators range as follows:

Water Quality Indicators	Range	Units
TDS	503–12,582	mg/l
Sulfate	81–1,605	mg/l
Hardness	49–1,254	mg/l
Fluoride	2.0–5.5	mg/l
Boron	.77–15.8	mg/l
Chloride	86–5,920	mg/l
Percent Sodium	55–95	%

Existing Waste Discharges

Salton Sea State Recreation Area

Duplicate sewage treatment facilities, one serving the Headquarters Unit at North Shore, and the other providing sewerage for Mecca Beach, consist of septic tanks, pump stations, and force mains discharging to raw sewage lagoons and evaporation-infiltration basins.

Community of North Shore

Presently the community is unsewered. The Coachella Valley County Water District has formed an improvement district and is planning a community sewerage system to be constructed during fiscal year 1971–1972.

PART 10 – ANZA–BORREGO HYDRO UNIT

Description of Area

The Anza-Borrego Hydro Unit comprises the eastern slopes of the several mountain ranges whose ridge lines define the westerly boundary of the West Colorado River Basin from Lookout Mountain near Anza southward to the International Boundary with the Republic of Mexico. The Unit contains seven separate Subunits. However, all of the Subunits are sparsely populated.

Water Quality Conditions

The following Table 2 summarizes available water quality data in the various hydrologic subunits, followed by detailed descriptions of conditions in each subunit.

TABLE 2
WATER QUALITY DATA – ANZA–BORREGO HYDRO UNIT

	Range in Mineral Constituents									
	mg/l									
Subunit	Mg	SO_4	Cl	NO_3	F	B	EC x 10^6	TDS	T.H.	% NA
Borrego– 14 wells 1962–69	3 46	53 479	33 247	0 348	0.2 0.9	.0 .32	478 2165	320 1822	141 464	27 64
San Felipe 4 wells 1960–64	1 36	117 565	145 667	.1 3.1	.9 5.3	0 1.15	890 2597	498 1771	49 508	65 88
Mescal–Bajada 3 wells 1957–63	76 86	1019 1115	249 374	0 1	0.2 0.6	.10 .17	2850 2898	2185 2500	1022 1071	34 43
Banner 2 wells 1957	14 31	29 212	63 29	1.7 .7	.2 .7	0 0	470 919	299 609	155 327	29 33
Vallecito–Carrizo 7 wells 1953–59	1 48	34 285	22 170	0 25	0 1.0	0 .35	377 1920	249 760	37 660	9 59
Jacumba 9 wells 1961–68	0 89	31 724	60 510	1.6 29	.4 2.4	.05 1.14	499 3010	316 2230	5 986	4 97

Borrego Subunit

This Subunit is divided hydrologically into three Subareas which are sparsely populated except for the Borrego Valley portion of Borrego Subarea. The Subunit drains internally into Borrego sink. Stream flow is ephemeral, and infiltration occurs before reaching the valley floor, except during periods of heavy rainfall.

There is considerable agriculture in Borrego Valley; and the community of Borrego Springs has a population of approximately 900.

There exists in this subunit a wide variation in groundwater quality. High quality water suitable for both domestic and agricultural use is found adjacent to the northwestern boundary of the subunit, where TDS content is generally less than 500 mg/l. The quality deteriorates southeastward toward Borrego sink, which is the low point for internal drainage. At Borrego sink, TDS content ranges up to 1800 mg/l; and at this location the most undesirable constituents are TDS, sulfate and nitrate. The long-term average annual inflow to lower Borrego Valley is 22,000 acre-feet.

Ocotillo–Los Felipe Subunit

This Subunit contains the broad, sloping desert floor alluvium along which San Felipe Creek drains the adjoining ranges and discharges northeastward to Salton Sea. Most of the southerly boundary is formed by Vallecito, Fish Crater, and Superstition Mountains. The north boundary is formed by the southern tip of Santa Rosa Mountains. There are no communities in the Subunit but the United States Navy Salton Sea Test Base is located along Salton Sea and northwest of the San Felipe Creek outlet to the Salton Sea.

Mescal-Bajada, San Felipe, Mason, Vallecito-Carrizo and Jacumba Subunits

These Subunits are located along the mountain ridge boundary of the Basin. Most of these subunits are only sparsely populated; but there is a small community named Jacumba in the Jacumba Subunit. Julian High School is located on the east slope, just east of the community of Julian, which is in the San Diego Basin. In the San Felipe Subunit are the small communities of Kentwood and Whispering Pines.

Existing Waste Discharges

Borrego Subunit

The Borrego Springs County Water District provides sewerage services to a residential development of about 115 persons. Sewage is treated in a package activated sludge plant with design capacity for approximately 500 persons. Effluent is discharged by infiltration and evaporation via a pond.

Sewage from the community of Borrego Springs, which contains about 900 persons, is discharged via private subsurface systems.

San Felipe Subunit

The Julian Union High School District discharges sewage effluent via septic tank, leaching lines, ponding, and irrigation of pasture land. The present population served is 470 persons; the treatment and discharge facilities are designed to serve 1000 persons.

Sewage from the U.S. Navy's Salton Sea Test Base is discharged via subsurface facilities; the facilities are adequate unless the Base obtains a sizeable manpower increase, of which there is no present indication.

Vallecito–Carrizo Subunit

Sewage from the U.S. Air Force Station at Mt. Laguna is routed through a septic tank and leaching lines, and is discharged over the eastern slope of the mountains. Waste discharge requirements are being processed for the discharge and the Air Force proposes to construct an activated sludge treatment plant and to discharge over the eastern mountain slope after filtration and chlorination.

PART 11 – WEST SALTON SEA HYDRO UNIT

Description of Area

The West Salton Sea Hydro Unit comprises a broad plain of Recent and older sediments which slopes upward in a westerly direction from the southwest shoreline of Salton Sea. Travertine Rock at the most northerly corner of the Unit is considered to prevent Coachella Valley groundwater from entering the the Unit. However, most communities in the Unit receive pumped groundwater from Coachella Valley via pipeline along State Highway 86. Soil permeability in the valley floor is generally moderate to high. Permeability is more moderate in the upper slope areas. There are no perennial streams and runoff normally infiltrates into the stream alluvium at the higher elevations.

Water Quality Conditions

Groundwater analyses taken between 1950 and 1956 indicate that brackish water underlies the entire unit. The basic water quality indicators range as follows:

Water Quality Indicators	Range	Unit
TDS	2,241–16,600	mg/l
Sulfate	1–1,810	mg/l
Hardness	52–1,924	mg/l
Fluoride	0–6.2	mg/l
Boron	0–22.3	mg/l
Chloride	700–8,220	mg/l
Percent Sodium	58–96	%

Existing Waste Discharges

The following communities are contained within the Unit:

Community	Population
Desert Shores	700
Salton Sea Beach	500
Salton City	800

The communities are of residential-recreational character, with no waste discharging industries. Growth has been somewhat retarded in recent years, due to concern over whether salinity control will be implemented in Salton Sea.

Salton Community Services District provides sewerage service for Desert Shores and Salton City. Sewage from Desert Shores is pumped westward to 15 acres of lagoons. Sewage from Salton City is discharged by infiltration and evaporation via lagoons. Also, the District has a 483-acre site, which is presently unused, at a location approximately three miles southeast of the present lagoon site. The District requires that all connections to the Salton City sewerage system shall be preceded by septic tanks.

Sewage disposal at Salton Sea Beach is conducted via private subsurface disposal facilities. The community is experiencing difficulties in sewage disposal, and consideration is being given to providing community sewerage facilities via Salton Community Services District.

PART 12 – IMPERIAL HYDRO UNIT

Description of Area

Imperial Hydro Unit consists largely of the broad Imperial Valley, with the Chocolate Mountains and sand hills along the northeastern boundary, and coast range mountains in the most westerly corner. The hydro unit contains two subunits as follows:

1. Imperial Subunit, which comprises practically all of the hydro unit, except for an approximately 150 square mile area in the most westerly corner.

2. Coyote Wells Subunit, which is the approximately 150 square mile area referred to above.

The water-oriented topography of the Imperial Subunit is determined by the extensive irrigation system which is developed and operated by Imperial Irrigation District. The District imports Colorado River water via All American Canal, conveys same to the farmlands via canals, and conveys farm drainage and seepage waters to Salton Sea via a drainage system which includes drainage ditches and the New and Alamo Rivers. The District's drainage system also receives drainage waters and sewage from Mexicali Valley in the Republic of Mexico. Thus, New and Alamo Rivers are interstate waters.

The irrigation system and the existing community sewerage facilities are all contained within the Imperial Valley portion of the subunit, within the area bounded by the West Side Main Canal and the East Highline Canal. The irrigation drainage system also serves to convey treated sewage effluent towards Salton Sea.

Rainfall on Imperial Subunit averages about three inches per year, most of which occurs during a very short season. The rain water is quickly drained to Salton Sea, and cannot contribute appreciably to groundwater replenishment, because most of the soil is very tight. However, the drainage and seepage waters do provide a beneficial use in that they are fresh water replenishment for Salton Sea.

Water Quality Conditions

Imperial Subunit

Ground Waters

Analyses of groundwaters from seven sources during 1964 indicate that water quality is not suitable for domestic, irrigation or comparable beneficial uses. The range of basic water quality indicators are as follows:

Water Quality Indicators	Range	Unit
TDS	818–15,120	mg/l
Sulfate	5–4,502	mg/l
Hardness	305–2,373	mg/l
Fluoride	0.1–3.5	mg/l
Boron	.08–6.6	mg/l
Chloride	129–5,337	mg/l
Percent Sodium	45–83	mg/l

Surface Waters

The surface waters consist of imported Colorado River water and waters of the Imperial Valley drainage system. The drainage system consists of many drainage ditches and New and Alamo Rivers.

Imported Colorado River Water

The quality of imported Colorado River water is indicated by the following results of analyses made at Imperial Dam during 1969:

Constituent or Characteristic	Units	Max.	Average
Temperature	°F	82	75
pH	Scale	8.2	8.1
Conductivity	Micromhos	1322	1286
Calcium (Ca)	mg/l	95	92
Magnesium (mg)	mg/l	34	33
Sodium (Na)	mg/l	152	141
Potassium (K)	mg/l	5	5
Carbonate (CO_3)	mg/l	0	0
Bicarbonate (HCO_3)	mg/l	171	170
Sulphate (SO_4)	mg/l	353	344
Chloride (C1)	mg/l	136	125
Nitrate (NO_3)	mg/l	2.5	2.1
Fluoride (F)	mg/l	0.7	0.6
Boron (B)	mg/l	0.19	0.18
Total Dissolved Solids (TDS)	mg/l	1,070	862
Dissolved Oxygen (DO)	mg/l	9.4	8.3

As indicated by the above data, imported Colorado River water is sodium-calcium sulfate in character. 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 dissolved solids content and the sulfate content of Colorado River water exceed the numerical values listed in paragraph 5.21 of the USPHS Drinking Water Standards. The water is suitable for agriculture.

Irrigation Drainage Waters

The quality of these drainage waters is indicated by the quality of New and Alamo River water shortly upstream of their discharge to Salton Sea. The range of water quality indicators is as follows:

Water Quality Indicators	Range of Values: New River	Range of Values: Alamo River	Unit
TDS	2175–3550	2664–4528	mg/l
Sulfate	705–971	647–860	mg/l
Hardness	767–1229	826–1158	mg/l
Fluoride	0.5–1.0	0.7–1.1	mg/l
Boron	0.52–0.85	0.88–1.85	mg/l
Chloride	570–1101	886–1838	mg/l
Percent Sodium	53–56	61–67	%

Coyote Wells Subunit

Two wells were sampled in 1964, and the tests indicate excellent water quality for all beneficial uses. The basic water quality indicators range as follows:

Water Quality Indicators	Range	Unit
TDS	367–409	mg/l
Sulfate	40–75	mg/l
Hardness	92–271	mg/l
Fluoride	0.5–0.7	mg/l
Boron	.08–0.2	mg/l
Chloride	86–87	mg/l
Percent Sodium	29–64	%

Existing Waste Discharges

All of this Hydro Unit's community and discrete industrial waste discharges are contained within the Imperial Subunit. Sewage in the Coyote Wells Subunit is discharged entirely by individual subsurface facilities. The existing community and discrete industrial waste discharges in Imperial Subunit are shown below in Table 3.

TABLE 3
EXISTING WASTEWATER DISCHARGES
Imperial Subunit
Municipal

City of District and Designator	Population Served	Flow MGD	Type or Degree of Treatment	Discharge Sludge	Discharge Effluent
City of Calexico	10,200	0.65	Activated Sludge with Separate Sludge Digestion and Drying Beds	Sanitary Landfill Sites	New River
Heber Public Utilities District	500	.085	Raw Sewage Lagoons	Lagoons	Central Drain No. 3
City of Imperial	3,500	0.45	Primary Sedimentation Sludge Digester and Stabilization Ponds; Sludge Drying Beds	Landfill at Plant Site	Private Drain Dolson Drain
City of Brawley	15,750	1.38	Primary Sedimentation Sludge Digester and Drying Beds	Agricultural Lands and City Parks	New River
Seeley County Water District	651 275	.081 .04	Raw Sewage Lagoons	Lagoons	New River
Pioneers Memorial Hospital District	275	.04	Activated Sludge, Sludge Digester and Drying Beds	Agricultural Lands	New River
City of Westmorland	1,600	0.21	Imhoff Tank, Sludge Drying Beds	Incineration on site	Trifolium Drain Ditch No.6
City of Holtville	3,700	0.3	Imhoff Tank, Trickling Filter and Chlorine Contact Tank. Sludge Drying Beds	Agricultural Lands and Private Individuals	Alamo River

TABLE 3 (con't.)

City of District and Designator	Population Served	Flow MGD	Type or Degree of Treatment	Discharge Sludge	Effluent
City of Calipatria	2,500	0.25	Raw Sewage Lagoons	Lagoons	Alamo River
Niland Sanitary District	1,200	0.19	Imhoff Tank Sludge Drying Beds	Agricultural Lands	R. Drain
County of Imperial Country Club	100	0.03	Biofiltration Plant Aerobic Digester	Sanitary Landfill Site	Barbara Worth Drain
Meadows Union School District	380	.006	Septic Tank and Leach Lines	Sanitary Landfill Site	Sub Surface
City of El Centro	20,000	2.7	Primary Sedimentation Tanks, Primary and Secondary Sludge Digesters and Stabilization Lagoons, Sludge Drying Beds	Stored at Plant Site	Central Drain
Imperial Junior College District	2,700	.038	Package Activated Sludge and Aerobic Digester	Sanitary Landfill Sites	Central Drain Alamo River
McCabe Union School District	325	.006	Package Activated Sludge	Sanitary Landfill Sites	Wildcat Drain New River
County of Imperial, Red Hill Marina	95	.001	Raw Sewage Lagoons	Lagoons	Evaporation and Infiltration
County of Imperial, Bombay Beach	60	.0007	Septic Tank Wastes Lagoons	Lagoons	Evaporation
California Department of Fish & Game Wister Unit	30	.005	Septic Tanks, Stabilization Lagoons	Sanitary Landfill Sites	Evaporation and Infiltration
			DISCRETE INDUSTRIAL		
Imperial Irrigation District Steam Power Plant	–	.1	None	None	Central Drain Alamo River
U.S. Gypsum	–	.06	Lagoons	Lagoons	Evaporation
Agriform Company	–	.0007	Lagoons	Lagoons	Evaporation

TABLE 3 (con't.)					
City or District and Designator	Population Served	Flow MGD	Type or Degree of Treatment	Discharge Sludge	Discharge Effluent
Southwest Marketing Corp.	–	.06	Ponds	Ponds	Evaporation
Anza Meat Packing Company	–	.0002	Burial in Trenches	None	Evaporation
Anza Meat Packing Company	–	.005	Lagoons	Lagoons	Evaporation and Pasture Irrigation
Sinclair Geothermal Wells	–	0	Temporary Storage Only	None	Evaporation
Union Oil Company	–	.20	Temporary Storage Only	None	Evaporation
Imperial Thermal Products	–		Temporary Storage Only	None	Evaporation
Valley Nitrogen Producers, Inc.	–	1.4	pH Control and Chromate Reduction	Lagoons	Date Drain Alamo River
C & D Truck Service	–	.005	Raw Sewage Lagoons	Lagoons	Alamo River
Walker Livestock Transporation	–	.001	Sedimentation Tanks	Agricultural Lands	Trifolium Drain No. 6 New River
Rockwood Chemical Company	–	.0005	Impervious Basin	Impervious Basin	Evaporation
Holly Sugar Corporation	–	1.11	Clarifier, Stabilization Lagoons, Sludge Lagoons	Agricultural Lands	Newside Drain Alamo River
FEDERAL INSTALLATIONS					
USN – Naval Air Facility – El Centro	2600	.3	Raw Sewage Lagoons	Lagoons	New River

PART 13 – DAVIES HYDRO UNIT

Description of Area

This Unit encompasses an area of approximately 20 square miles near the southwest corner of the Basin, being along the International Boundary. Nearly all of this Unit's surface is rock, and is impermeable.

Water Quality Conditions

No water quantity or quality data are available for this Unit, and it has hardly any population.

Existing Waste Discharges

There are no known waste discharges in the Unit, except possibly a few subsurface discharges of sewage from isolated dwellings.

PART 14 – AMOS–OGILBY HYDRO UNIT

Description of Area

This unit is located at the southeast corner of the Basin, adjacent to and east of the Imperial Hydro Unit. The area is typically low desert and sparsely inhabited. It contains the very small railroad communities of Amos, Glamis and Ogilby.

Water Quality Conditions

Groundwater from the deeper aquifers near the center of the valley has a high TDS content. This water is inferior for irrigation, domestic or municipal purposes. Water of suitable quality for all uses occurs in the southeastern portion of the Valley. Analyses of two groundwater sources indicates the following range for basic water quality indicators:

Water Quality Indicators	Range	Units
TDS	1185–1900	mg/l
Sulfate	244–275	mg/l
Hardness	145–339	mg/l
Fluoride	1.8–3.4	mg/l
Boron	.96–.98	mg/l
Chloride	430–897	mg/l
Percent Sodium	78–84	%

Existing Waste Discharges

There are no community wastewater discharges in this Hydro Unit. Sewage is discharged via individual subsurface facilities.

PART 15 – SALTON SEA

Description of the Sea

The Salton Sea is a saline body of water located in a geologic sink between Imperial and Coachella Valleys. Salton Sea is about 30 miles in length, and varies from 10 to 15 miles in width. It has average depth of 30 feet and covers a surface area of 360 square miles. The Sea's surface elevation is approximately 232 feet below mean sea level. Salton Sink is the natural reservoir for storage of drainage water from the gross Salton watershed, which encompasses all of the Whitewater, Imperial, East and West Salton Sea Hydro Units and the drainage from Mexicali Valley in the Republic of Mexico. The gross contributing watershed comprises 7,500 square miles. The climate is arid and average annual precipitation is 2.6 inches.

The source waters of Salton Sea are obtained primarily from the Sea's use as a reservoir to store farm drainage and seepage waters from Mexicali, Imperial and Coachella Valleys.

Annual inflows to Salton Sea since 1965 are essentially as follows:

Source	Quantity (MAF/Y)*	% of Total
1. Republic of Mexico	0.107	8.1
2. Imperial Valley irrigation returns	0.996	75.8
3. Imperial Valley Communities and institutions	0.008	0.6
4. Coachella Valley irrigation returns	0.099	7.5
5. Coachella Valley Communities and institutions	0.005	0.4
6. Natural runoff and seepage	0.100	7.6
TOTAL FLOW TO SALTON SEA	1.315	100.0

*MAF/Y – Million acre-feet per year

Water Quality Conditions

The total inflow of water to Salton Sea is 1.32 million acre-feet per year. This water conveys approximately 5.8 million tons of salt per year into Salton Sea, and it also conveys a considerable amount of nutrients. Due to the desert's warm and arid climate, a six-foot depth of water is evaporated from Salton Sea surface annually. Since the salts and nutrients are not removed through surface evaporation, these remain in the sea body. The result is a gradual increase of salinity. However, the nutrient content of Salton Sea water remains rather constant as nutrient materials are trapped permanently in the bottom muds.

The present total dissolved solids content of Salton Sea water is approximately 38,000 mg/l. This is ten percent higher than ocean water salinity. When the total dissolved solids content of Salton Sea water reaches 40,000 mg/l, the sports fishery will become unstable due to sporadic reproduction and stress-induced malnutrition. As the salinity increases appreciably above the 40,000 mg/l level, the fishery will eventually be destroyed. The rising salinity will also adversely affect the growth of shoal grass which is a food for waterfowl, will reduce the Sea's attractiveness as a water-contact sports area, and will limit pleasure-boating activity.

Existing Waste Discharges

There are no direct waste discharges to Salton Sea. However, waste materials are conveyed to Salton Sea via the various irrigation drains, including New and Alamo Rivers. The following are major sources of wastes being conveyed towards Salton Sea:

1. Untreated sewage from the City of Mexicali (in Mexico), which has a population of approximately 400,000 people.

2. Treated sewage and industrial wastes from communities in Imperial and Coachella Valleys (in California).

PART 16 – CLARK HYDRO UNIT

Description of Area

Clark Hydro Unit is located between Borrego Valley and the ridgeline of Santa Rosa Mountains. Approximately 30 percent of the Unit's surface consists of permeable sediments; and the remainder is essentially impermeable rock. The Unit drains internally to Clark Dry Lake. The Unit is very sparsely inhabited.

Water Quality Conditions

Analyses of water from three sources in the Unit indicate that water quality is unsuitable for domestic and irrigation use. The basic water quality indicators range as follows:

Water Quality Indicators	Range	Units
TDS	560–4677	mg/l
Sulfate	170–2049	mg/l
Hardness	58–1590	mg/l
Fluoride	0.9–2.5	mg/l
Boron	0–.12	mg/l
Chloride	16–765	mg/l
Percent Sodium	51–84	%

Existing Waste Discharges

There are no community waste discharges in this Unit. Sewage from private residences is discharged via individual subsurface facilities.

TABLE 4

INDEX TO EXISTING WASTE DISCHARGES

WEST COLORADO RIVER BASIN

(Keyed to Code Numbers on Figure 4)

MUNICIPAL WASTEWATER TREATMENT PLANTS

Code Number	Agency or Organization	Service In or Near
7A–33–19C2–001	City of Banning	Banning
7A–33–19D7–001	City of Palm Springs	Palm Springs
7A–33–19D7–002	Coachella Valley County Water District Wastewater Reclamation Plant R.P.No.1	Palm Desert Country Club Estates
7A–33–19D7–003	Valley Sanitary District	City of Indio and Surrounding Area
7A–33–19D7–004	City of Coachella	Coachella
7A–33–19D7–005	Thermal Sanitary District	Thermal
7A–33–19D7–006	Mecca Sanitary District	Mecca
7A–33–19D7–007	Coachella Valley Junior College District	College of the Desert in Palm Desert
7A–33–19D7–008	Riverside County Department of Airports	Thermal Airport

TABLE 4 (con't.)

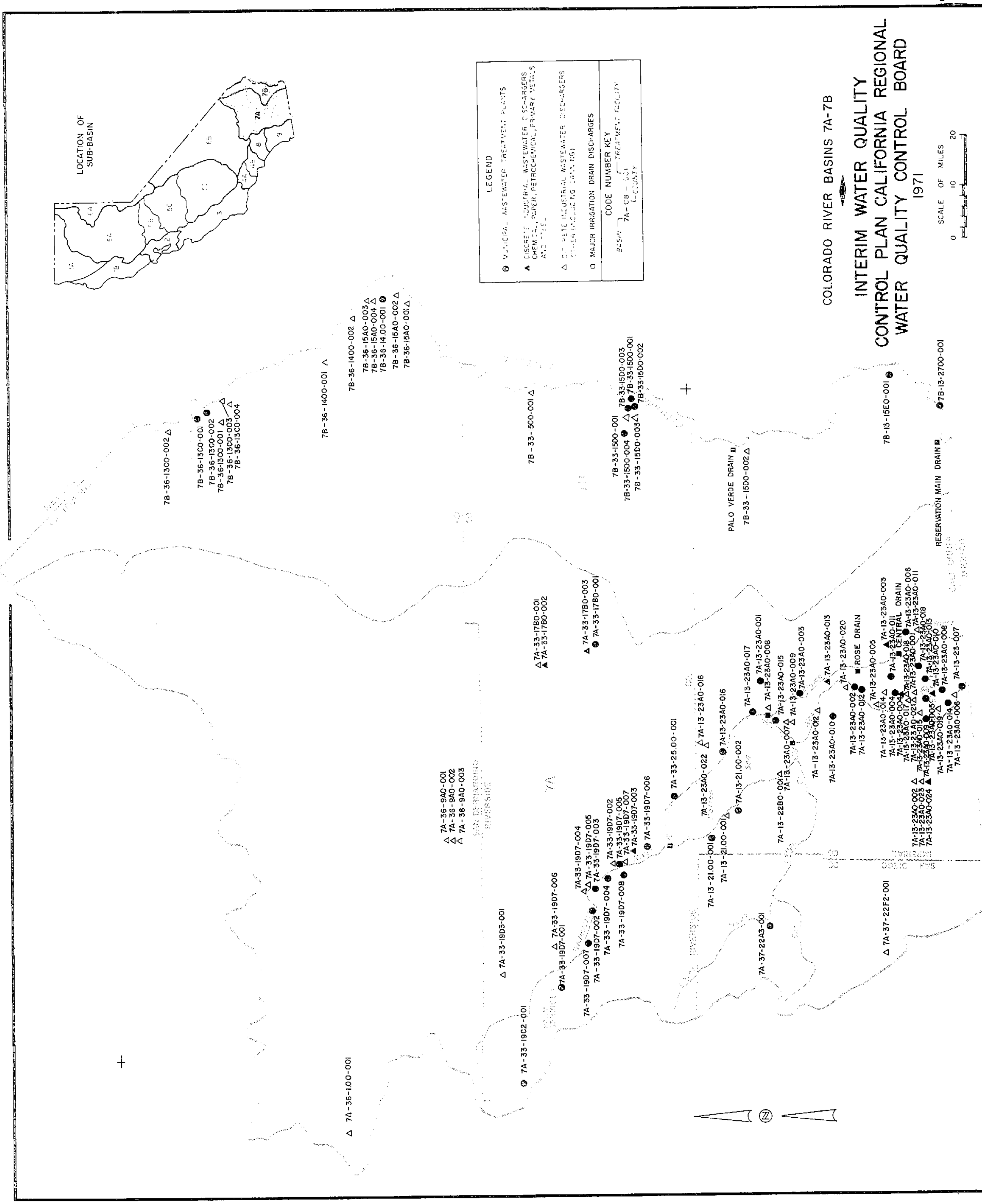
Code Number	Agency or Organization	Service In or Near
7A–33–17BO–001	Riverside County Services Area No. 51	Lake Tamarisk
7A–33–2500–001	Salton Sea State Recreational Area	North Shore and Mecca Beach Units
7A–13–2100–001	Salton Community Services District	Desert Shores
7A–13–2100–002	Salton Community Services District	Salton City
7A–13–23AO–001	Niland Sanitary District	Niland
7A–13–23AO–002	City of Brawley	Brawley
7A–13–23AO–003	City of Calipatria	Calipatria
7A–13–23AO–004	City of Imperial	Imperial
7A–13–23AO–005	City of El Centro	El Centro
7A–13–23AO–006	City of Holtville	Holtville
7A–13–23AO–007	City of Calexico	Calexico
7A–13–23AO–008	Heber Public Utilities District	Heber
7A–13–23AO–009	Seeley County Water District	Seeley
7A–13–23AO–010	City of Westmorland	Westmorland
7A–13–23AO–011	Imperial Junior College District	Imperial
7A–13–23AO–012	Pioneers Memorial Hospital District	Brawley
7A–13–23AO–013	Meadows Union School District	El Centro
7A–13–23AO–014	McCabe Union School District	El Centro
7A–13–23AO–015	Imperial County Department of Public Works	Red Hill Marina
7A–13–23AO–016	Imperial County Department of Public Works	Bombay Beach
7A–13–23AO–017	California Department of Fish and Game	Imperial Wildlife Area – Wister Unit
7A–13–23AO–018	Imperial County Department of Public Works	Imperial Valley Country Club – Holtville
7A–13–22A3–001	Borrego County Water District	Borrego
	DISCRETE INDUSTRIAL	
7A–36–100–001	Kaiser Cement & Gypsum Corporation	Lucerne Valley
7A–36–9AO–001	Twentynine Palms Cleaners, Inc.	Twentynine Palms
7A–33–17BO–001	Kaiser Steel Corporation	Eagle Mountain
7A–33–17BO–002	Kaiser Steel Corporation	Eagle Mountain
7A–33–17BO–003	Riverside County Services Area No. 51	Lake Tamarisk
7A–33–19C2–001	Deutsch Company	Banning
7A–33–19C2–002	Polytron Mfg. Co.	Banning
7A–33–19D7–002	Heggblade–Marguleas Co.	Thermal
7A–33–19D7–003	Chevron Chemical Co.	Thermal
7A–33–19D7–004	Richard A. Glass, Inc.	Indio
7A–33–19D7–005	Safeway Stores, Inc.	Indio
7A–13–23AO–001	Imperial Irrigation District Steam Power Plant	El Centro
7A–13–23AO–002	U. S. Gypsum Co.	Plaster City
7A–13–23AO–003	Agriform Company of Imperial Valley	Holtville

TABLE 4 (con't.)

Code Number	Agency or Organization	Service In or Near
7A–13–23AO–004	Southwest Marketing Corporation	Imperial
7A–13–23AO–005	Anza Meat Packing Co.	El Centro
7A–13–23AO–006	Anza Meat Packing Co.	El Centro
7A–13–23AO–007	Sinclair Geothermal Wells	Salton Sea –SE Area
7A–13–23AO–008	Union Oil Co. – J. J. Elmore Unit #1 Geothermal Well	Salton Sea –SE Area
7A–13–23AO–009	Imperial Thermal Products	Salton Sea –SE Area
7A–13–23AO–010	Valley Nitrogen Producers, Inc.	El Centro
7A–13–23AO–011	C & D Truck Service	Holtville
7A–13–23AO–012	Walker Livestock Transportation	Westmorland
7A–13–23AO–013	Rockwood Chemical Co.	Brawley
7A–13–23AO–014	Holly Sugar Corp.	Brawley
	DISCRETE INDUSTRIAL FEDERAL INSTALLATIONS	
7A–36–9AO–002	U.S. Marine Corps	Base at Twentynine Palms
7A–36–9AO–003	U.S. Marine Corps	Base at Twentynine Palms
7A–13–22BO–001	U.S. Navy	Base at SW Salton Sea
7A–37–22F2–001	U.S. Air Force	Base at Mt. Laguna
7A–13–23AO–015	U.S. Navy	Base at El Centro
	DISCRETE INDUSTRIAL OTHERS	
7A–33–19D3–001	Desert Crest, Inc.	Desert Hot Springs
7A–33–19D7–006	Mobile Life of California, Inc.	Tri-Palms Estates at Thousand Palms
7A–33–19D7–007	Valley View Trailer Village	Thermal
7A–13–2100–001	Sandpoint Marina	Salton City
7A–13–23AO–016	Fountain of Youth Trailer Park	Bombay Beach
7A–13–23AO–017	Imperial Valley Bowl	El Centro
7A–13–23AO–018	Marvin T. Ryan	Imperial
7A–13–23AO–019	Sunset Estates	El Centro
7A–13–23AO–020	York's Animal Clinic	Brawley
7A–13–23AO–021	California Highway Patrol Office	El Centro
7A–13–23AO–022	Imperial Hot Mineral Spa	Bombay Beach
7A–13–23AO–023	U. S. Gypsum Company	Plaster City
7A–13–23AO–024	U. S. Gypsum Company	Plaster City
	UNSEWERED AREAS	
7A–33–19D7–001	Desert Water Agency	Cathedral City
7A–33–19D7–002	Coachella Valley County Water District Improvement District No. 53	Rancho Mirage, Palm Desert, Tamarisk – Clancy Lane

TABLE 4 (con't.)

Code Number	Agency or Organization	Service In or Near
7A–33–19D7–003	Coachella Valley County Water District	Indian Wells, City of
7A–33–19D3–001	Desert Hot Springs County Water District	Desert Hot Springs
7A–36–8AO–001	Yucca Valley County Water District	Yucca Valley
7A–36–9AO–001	Twentynine Palms County Water District	Twentynine Palms
7A–33–2500–001	Coachella Valley County Water District	North Shore – Salton Sea
7A–13–23AO–001	Coachella Valley County Water District	Bombay Beach


COLORADO RIVER BASINS 7A-7B
INTERIM WATER QUALITY
CONTROL PLAN CALIFORNIA REGIONAL
WATER QUALITY CONTROL BOARD
1971
SCALE OF MILES
0 10 20
LEGEND
MAJOR IRRIGATION DRAIN DISCHARGES
CODE NUMBER KEY
7A - C8 - 001
LOCATION OF SUB-BASIN
PALO VERDE DRAIN
RESERVATION MAIN DRAIN
ROSE DRAIN
CENTRAL DRAIN
7B-36-1300-002
7B-36-1400-001
7B-36-1400-002
7B-33-1500-001
7B-33-1500-002
7B-13-1500-001
7B-13-2700-001
7A-36-1.00-001
7A-33-1902-001
7A-33-1903-001
7A-36-9A0-001
7A-36-9A0-002
7A-36-9A0-003
7A-33-17B0-001
7A-33-17B0-002
7A-33-17B0-003
7A-33-25.00-001
7A-13-21.00-002
7A-37-22A3-001
7A-37-22F2-001

CHAPTER IV

BENEFICIAL USES OF WATER

The beneficial uses of water bodies in the West Colorado River Basin are defined for each hydrologic unit and subunit within the basin, and are presented in Table 5. Additional uses may be identified during the interim period July 1, 1971 and July 1973. Water quality objectives presented in Chapter VI 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 5.

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, esthetic enjoyment, pleasure boating, and waterfowl hunting.

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

Fresh Water Replenishment (FWR) – provides fresh water or less saline water for replenishment of inland saline lakes.

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.

Saline Water Habitat (SWH) – provides inland saline water habitat for aquatic and wildlife resources.

TABLE 5

LISTING OF BENEFICIAL WATER USES

Hydrologic Unit and Water Source	MUN	AGR	IND	DOM	REC 1	REC 2	FRSH	FWR	POW	WILD	GRW	SWH
Lucerne Unit Groundwater	x	x	x	x						x		
Johnson Unit Groundwater		x		x						x		
Bessemer Unit Groundwater										x		
Means Unit Groundwater										x		
Emerson Unit Groundwater	x			x						x		
Lavic Unit Groundwater										x		
Deadman Unit Groundwater	x			x						x		
Joshua Tree Groundwater	x			x						x		
Warren Subunit Groundwater	x			x						x		
Copper Mountain Subunit Groundwater	x			x		x				x		
Dale Unit 29 Palms Subunit Groundwater	x		x	x						x		
Dale Subunit Groundwater										x		
Bristol Unit Bristol Subunit Groundwater		x	x	x						x		
Fenner Subunit Groundwater		x	x	x						x		
Lanfair Subunit Groundwater		x	x	x						x		

TABLE 5 (con't.)

Hydrologic Unit and Water Source	MUN	AGR	IND	DOM	REC 1	REC 2	FRSH	FWR	POW	WILD	GRW	SWH
Cadiz Unit Groundwater		x	x	x						x		
Ward Unit Groundwater		x	x	x						x		
Rice Unit Groundwater		x	x	x						x		
Chuckwalla Unit Ford Subunit Groundwater										x		
Palen Subunit Groundwater	x	x	x	x						x		
Pinto Subunit Groundwater	x	x	x	x						x		
Pleasant Subunit Groundwater							x			x		
Whitewater Unit Morongo Subunit Groundwater	x			x	x		x			x		
Streams						x	x	x		x	x	
Big and Little Morongo Creeks						x	x			x	x	
Shavers Subunit Groundwater				x		x	x			x		
San Gorgonio Subunit Groundwater	x	x	x			x	x					
Streams	x	x	x	x	x	x	x		x	x	x	
Coachella Subunit Groundwater	x	x	x	x	x	x	x			x		
Streams		x	x	x		x	x		x	x	x	
C. V. Storm Channel							x	x		x		
Hayfield Unit Groundwater				x						x		

TABLE 5 (con't.)

Hydrologic Unit and Water Source	MUN	AGR	IND	DOM	REC 1	REC 2	FRSH	FWR	POW	WILD	GRW	SWH
East Salton Sea Unit												
Groundwater										x		
Streams							x	x				
Anza-Borrego Unit												
Borrego Subunit												
Groundwater	x	x		x		x	x			x		
Streams						x					x	
Ocotillo-Los Felipe Subunit												
Groundwater				x		x	x			x		
Streams						x		x				
Mescal Bajada Subunit												
Groundwater				x		x	x			x		
Streams						x	x					
San Felipe Subunit												
Groundwater				x		x	x			x		
Streams						x	x					
Mason Subunit												
Groundwater						x	x					
Vallecito-Carrizo Subunit												
Groundwater				x		x	x			x		
Jacumba Subunit												
Groundwater	x			x		x	x			x		
Streams						x	x			x		
West Salton Sea Unit												
Groundwater							x			x		
Streams							x			x		

TABLE 5 (con't.)

Hydrologic Unit and Water Source	MUN	AGR	IND	DOM	REC 1	REC 2	FRSH	FWR	POW	WILD	GRW	SWH
Imperial Unit Imperial Subunit Groundwater								x				
Canals	x	x	x	x		x	x		x	x		
Drains						x	x	x		x		
New River						x	x	x		x		
Alamo River						x	x	x		x		
Coyote Wells Subunit Groundwater	x		x	x			x			x		
Davies Unit Groundwater	(None Known)						x			x		
Amos-Ogilby Unit Groundwater				x			x			x		
Salton Sea*					x	x						x
Clark Unit Groundwater							x					
Streams							x			x		

*The Federal Government reserved specific parcels of land for the purpose of creating a reservoir in Salton Sea for storage of waste and seepage water from irrigated land in Imperial Valley. This reservoir also receives waste and seepage water from irrigated land in Coachella Valley, and receives natural drainage waters from the combined watershed.

CHAPTER V

POLICY GUIDELINES

GOALS

In view of the limited water resources in the West 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, but with due consideration to retaining reclaimable wastewaters as far upstream 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. The discharge of untreated sewage into New River from the City of Mexicali, Mexico, must cease.
9. The administration of grants and loans to sewerage entities shall include determination of implementation of adequate source control and industrial waste ordinances.

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

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

12. The primary purpose of Salton Sea is to receive natural and agricultural drainage and seepage 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.

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 are applicable to all ground and surface waters in West 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 AGREASE** – No visible effect other than of background origin.
5. **ODORS** – None other than of background origin.

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.

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*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.

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, or that create undesirable tastes or odors in the waters or in fish, wildlife, or agricultural stock flesh shall be discharged to the receiving waters.

11. **RADIOACTIVITY** – Radionuclides shall not be present in concentrations that exceed the maximum permissible concentration 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°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.

Waters serving a cold water biota shall be maintained free of temperature changes as result of waste discharges.

13. **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.

14. **DISSOLVED SOLIDS** – No dissolved solids shall be added in quantities found to be deleterious to the beneficial uses.

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

Substance	Recommended limits of concentrations (In milligrams per liter)	Mandatory limits of concentrations (In milligrams per liter)
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 (C1)	250	–
Chromium (hexavalent) (Cr^{+6})	–	0.05
Copper (Cu)	1.0	–
Cyanide (CN)	0.01	0.2
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 Excellent	Class 3 – Injurious to unsatisfactory
Electrical conductance, EC x 10^6 at 25^oC	Less than 1000	1000–3000	More than 3000
Boron, ppm	Less than 0.5	0.5–2.0	More than 2.0
Chloride, ppm	Less than 175	175–350	More than 350
Percent sodium	Less than 60	60–75	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)	0.1–0.4
Percent sodium (%Na)	5–15**
Sodium (Na)	40–70
Potassium (K)	7–15
Magnesium ($MgCO_3$)	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

SPECIFIC OBJECTIVES

Explanation of New and Alamo River Source Waters

The source water of Alamo River and of New River is supplied predominantly from the use of these channels as collectors and transporters of control and drainage (including subsurface) waters from irrigated lands in Imperial Valley. This is their primary beneficial use; and this use does not unreasonably affect the quality of the waters of the state.

The objective is to protect the quality of this "source water" from degradation by unreasonable impairment (1) by pesticidal wastes from any source, and (2) by other industrial wastes, or by sewage. The term "other industrial wastes" as used hereafter means all industrial wastes other than the industrial wastes consisting of "control and drainage (including subsurface) waters from irrigated lands in Imperial Valley.

Listings of Specific Objectives

Waste discharges shall not cause the 20 C BOD and the total filtrable residue (TFR) concentration of the following waters to exceed the levels shown below:

Stream	20^{0} C BOD_5	Total Filtrable Residue		Units
		Average	Maximum	
New River	2	4000	4500	mg/l
Alamo River	2	4000	4500	mg/l
Imperial Valley Irrigation Drains	2	4000	4500	mg/l
Coachella Valley Irrigation Drains	2	1800	2000	mg/l

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

Giving due allowance for the primary purpose of Salton Sea, as explained in Chapter III, the objective is to limit the rate of increase of the total filtrable residue content of Salton Sea water to the lowest possible value.

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 listing below is not intended to be comprehensive, but rather is provided to indicate the 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

Whitewater Hydro Unit

1. The discharge of natural geothermal waters of the Miracle Hill Subarea outside of the Subarea is prohibited.

2. The use of surface streams, including irrigation drainage streams to dilute and/or treat wastewater discharges is prohibited.

3. The extension of sewer collection systems across Jefferson Street is prohibited.

Imperial Hydro Unit

New and Alamo Rivers and other Irrigation Drains

1. Discharge of wastes which may reasonably be expected to contain pesticides, and particularly the discharge of pesticidal wastes from pesticide manufacturing, processing, or tank-cleaning operations towards these waters is prohibited.

2. Discharge of wastes, whose total filtrable residue concentration exceeds the following values, towards these waters is prohibited. This prohibition shall not be bypassed by diluting the wastes.

Occurrence	TFR (mg/l)
Average	4000
Maximum	4500

3. Notwithstanding the above TFR limitation, the discharge of wastes whose TFR level is unreasonably concentrated in relation to that of the beneficial use(s) being obtained from the Colorado River water is prohibited.

4. 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 irrigation drains (not including direct discharges to New River and Alamo River), is prohibited.

		Limiting Values		
Constituent	Unit	Median	80 Percentile	Maximum
Suspended Matter	mg/l	20	30	–
20^{o} C BOD_5	mg/l	20	30	40

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

Salton Sea

1. Discharge of sewage (whether treated or untreated) to Salton Sea is prohibited.
2. Subsurface discharge of sewage within 100 feet laterally from the anticipated high shoreline of Salton Sea or at any other location which might result in effluent channelling to Salton Sea is prohibited.
3. The discharge of wastes, whose total filtrable residue concentration exceeds the following values, towards Salton Sea is prohibited. This prohibition shall not be bypassed by diluting the wastes.

Occurrence	TFR (mg/l)
Average	4000
Maximum	4500

4. Notwithstanding the above TFR limitation, the discharge of wastes whose TFR level is unreasonably concentrated in relation to the beneficial use(s) being obtained from the Colorado River water or other water source is prohibited.
5. Discharge of sewage to New River or Alamo River which is not preceded by treatment at least sufficient to result in substantially complete removal of settleable and floatable materials is prohibited.

CHAPTER VII

PROGRAM OF IMPLEMENTATION

The program of implementation is designed particularly to achieve the goals and management principles contained in Chapter V, 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 July 1, 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. The below 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 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. Wastewater from other basins is acceptable for discharge into the West Colorado River Basin provided that:

   a. the effluent infiltrates before entering a surface stream the waters of which are used beneficially.
   b. the total filtrable residue content, and the contents of specific constituents are below the maximum values allowable in "USPHS Drinking Water Standards",
   c. the effluent and discharge conditions comply with waste discharge requirements which would be prescribed therefor by the California Regional Water Quality Control Board, Colorado River Basin Region, and
   d. provided that the method of discharge is such as to not cause adverse conditions along the flow route.

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

5. Eventual discharge of salinized waters shall be to dry lake areas, in those instances where there will not be percolation back into an aquifer containing usable waters.

Implementation Plans Applicable to Specific Hydrologic Units

Joshua Tree Hydro Unit

Yucca Valley will probably need community sewerage facilities by 1975. The future sewage treatment facilities should be located at least as far eastward as Section 32, T1N, R6E, SBB&M. The sewerage entity would need to provide source controls, to produce the lowest possible level of mineral content in the discharge. The wastewater must be reused or infiltrated. The Yucca County Water District has authority under State law to be the sewerage entity. Also, the Mojave Water Agency is authorized to treat and discharge wastewaters.

Community sewerage for the community of Joshua Tree is expected to occur sometime between the years 1980 and 2000. Source controls and discharge conditions are essentially the same as for Yucca Valley. The Joshua Tree Basin County Water District has authority under State law to be the sewerage entity. Also, Mojave Water Agency is authorized to treat and discharge wastewater.

A combined sewerage system for Yucca Valley and Joshua Tree is not expected to be feasible until after the year 2000.

Dale Hydro Unit

The Twentynine Palms County Water District has scheduled a community sewerage system for Twentynine Palms with construction to commence during the first half of 1972, with completion during the first half of 1973. The treatment plant site under consideration is located in the NE¼ of Section 21, T1N, R9E, SBB&M. The wastewaters will be used beneficially as a substitution for extraction of native groundwater, or will be infiltrated with minimum evaporation.

The U.S. Marine Corps Base shall immediately provide adequate disinfection of all effluent used for golf course irrigation.

The U.S. Marine Corps Base shall provide sewerage service to nearby community developments, where feasible.

Chuckwalla Hydro Unit

It is not anticipated that Lake Tamarisk community or Kaiser Mine Village will need additional sewerage facilities of any appreciable magnitude by the year 2000.

Whitewater Hydro Unit

1. General

In view of the tremendous overdraft of groundwater in the Whitewater Hydro Unit, the basic plan is to reclaim and beneficially use or infiltrate wastewaters as near as possible to the area of extraction, and, where at all feasible, to deliver treated sewage effluent from the pressure zone of the Indio Subarea to the central plain for use and infiltration, so that there shall be only minimal wastage of high-quality (low total filtrable residue) water towards Salton Sea. The concept of amalgamation of sewerage areas is utilized, but not to exceed area limits which are most conducive to reuse and/or infiltration of effluent in accordance with the aforesaid basic plan.

2. Water Reclamation and Reuse

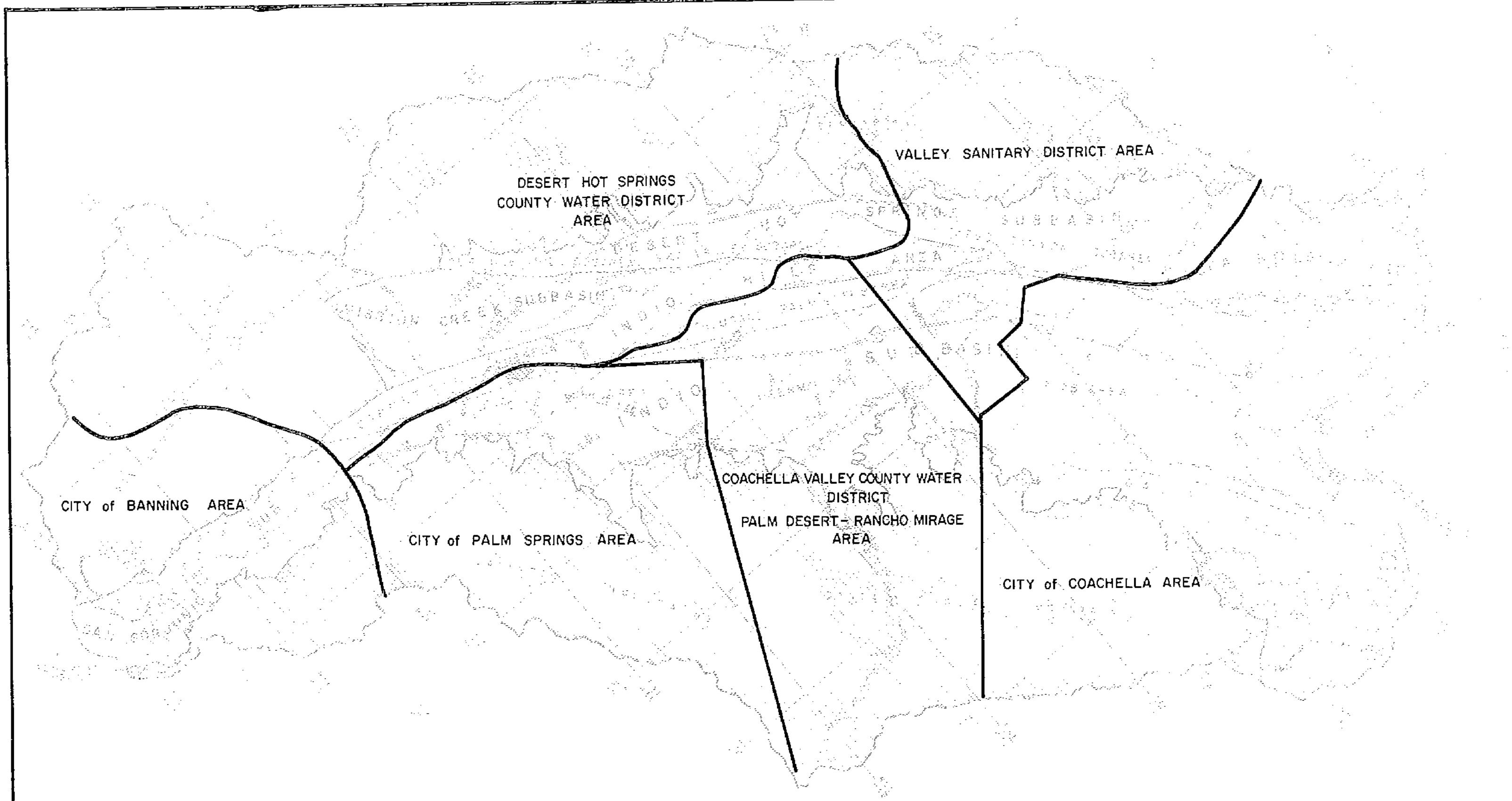
Optimum water reclamation and reuse shall be the goal demanded of each and every discharger of waste.

Local water-oriented agencies shall determine areas west of Jefferson Street for infiltration of high-quality effluent which cannot feasibly be directly reused in substitution for pumping groundwater. Where project feasibility and need are determined coordinated project action shall be undertaken.

3. Amalgamation of Sewerage Systems

At the time that plant expansion or upgrading becomes necessary, Thermal Sanitary District's sewage treatment and discharge facilities shall be relocated downstream to provide sewerage services for a more extended area, including Thermal Airport vicinity.

Sewerage agencies shall provide sewerage service to fringe areas to the maximum extent feasible.



SEPTIC TANK AND CESSPOOL PUMPING AREAS in COACHELLA SUBUNIT OF WHITEWATER HYDROLOGIC UNIT

Figure 5

COLORADO RIVER REGIONAL WATER QUALITY CONTROL BOARD

4. Septic Tank and Cesspool Pumpings

The disposal of cleanings from septic tanks and seepage pits is becoming increasingly more difficult in Coachella Valley as the desert areas become more populated. Therefore, it is desirable that this sewage be disposed of at those sewage treatment plants where adequate facilities are available to treat these wastes and dispose of the resulting sludge. The existing treatment plants are capable of handling only a small portion of the wastes originating from this source. Selected sewerage agencies will be required to include facilities for acceptance, treatment, and discharge of septic tank and seepage pit pumpings, when these entities apply for grants-in-aid to finance additional construction of sewage treatment and discharge facilities, and thereafter, these sewerage entities shall accept septic tank and cesspool pumpings under reasonable rules and regulations, which may include rejection of grease and other materials which are generally expected to adversely affect conventional sewage treatment processes.

The selected sewerage agencies and their service areas for acceptance of septic tank and cesspool pumpings are listed below, with area boundaries extending to the ridgelines of adjacent mountains.

Sewerage agencies and service areas for acceptance of septic tank and cesspool pumpings (see also Figure 5)

City of Banning

All of San Gorgonio Subunit

Desert Hot Springs County Water District

1. Those areas of Palm Springs forebay zone and Garnet Hill Subarea which are located northeast of Interstate 10.
2. Mission Creek Subarea
3. Miracle Hill Subarea
4. Sky Valley Subarea

City of Palm Springs

Those areas of Palm Springs forebay zone and Garnet Hill Subarea which are located southwest of Interstate 10.

Palm Desert – Rancho Mirage

1. Thousand Palms Subarea
2. Central Plain

Valley Sanitary District

1. Fargo Canyon Subarea
2. That portion of the pressure zone bounded by Jefferson Street, Avenue 53, Jackson Street, Avenue 48 and the Blythe Highway, per Figure 5.
3. Shavers Subunit

City of Coachella

All portions of Indio Subarea which are located south of the Valley Sanitary District area and the Palm Desert-Rancho Mirage area.

Other sewerage agencies may accept septic tank and cesspool pumpings to the extent that their facilities will allow.

East Salton Sea Hydro Unit

As the imported supply waters to the Unit are of a substantially higher quality than existing groundwater, the sewerage entities shall reuse the treated wastewaters either directly, or by removing the reclaimed water to areas where reuse is possible, to the maximum extent feasible.

West Salton Sea Hydro Unit

As the imported supply waters to the Unit are of substantially higher quality than existing groundwater, the sewerage entities shall reuse the treated wastewaters either directly, or by removing the reclaimed water to areas where reuse is possible, to the maximum extent feasible.

Salton Sea Beach is expected to become sewered prior to 1975. The sewerage facilities shall be provided by Salton Community Services District, with connection to the District's Desert Shores system. Expansion of the District's treatment facilities at Desert Shores shall include mechanical treatment equipment in order to facilitate reuse of effluent.

Expansion of the sewage treatment facilities for Salton City is not anticipated prior to 1975, although some expansion will probably be needed by the year 2000.

Imperial Hydro Unit

1. **Sewage**

   The Cities of Calexico, El Centro, Brawley, and Holtville shall accept septic tank and cesspool pumpings into their sewerage system, under reasonable rules and regulations which may include rejection of grease and other materials expected to adversely affect conventional sewage treatment processes.

   The County of Imperial operates a sewage lagoon approximately one mile north of Bombay Beach for the receipt of septic tank and cesspool pumpings. This installation should remain, until superseded by a community sewage treatment plant of sufficient capacity to receive these wastes, as it is vitally needed in order to serve the northerly portion of Imperial Hydro Unit.

2. **Amalgamation of Wastewater Treatment Facilities**

   Cities of El Centro and Imperial

   The individual sewage treatment plants for these two cities are three (3) miles apart. Further grants-in-aid for construction of additional sewage treatment and discharge facilities will include consideration of the feasibility of combining their sewerage facilities.

   City of Holtville; Imperial County's (Barbara Worth) Country Club Sewer Maintenance District; and adjacent areas

   The City of Holtville sewage treatment plant shall serve all of the above area. Grants will not be provided for separate sewage treatment facilities elsewhere in the indicated area.

   City of Brawley; Pioneers Memorial Hospital District, and adjacent areas

   Pioneers Memorial Hospital District and adjacent areas shall anticipate connection to the City of Brawley sewerage system with eventual abandonment of individual facilities.

   Bombay Beach

   Coachella Valley County Water District's proposed sewage treatment plant for Bombay Beach shall serve that community and adjacent area as needed.

City of Westmorland, and Niland Sanitary District

Each of these communities discharge Imhoff tank effluent to irrigation drainage ditches. These communities shall provide secondary treatment of sewage prior to discharge.

Other Communities

The communities which are not specifically listed above are expected to continue their sewerage practice as presently conducted. These communities are expected to develop very slowly.

3. Geothermal Operations

As incident to prescription of waste discharge requirements, operators of geothermal facilities are required to submit engineering plans, so that determination may be made as to possibility of threatened pollution.

Salton Sea

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 implementation of salinity control in Salton Sea.

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 statewide 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 West Colorado River Basin is as follows:

Waste Discharges

1. Self-monitoring by dischargers, in accordance with prescribed monitoring schedules.
2. Staff review of self-monitoring data, and report of irregularities to discharger, including followup.
3. Staff's annual field check on the waste discharge. Includes sampling and analyses essentially similar to those submitted by discharger.
4. Physical inspection of waste treatment facilities under the following schedule:

Monthly inspections

(a) Sewage discharges exceeding 0.5 mgd.
(b) Pesticide container solid wastes disposal sites.
(c) Discrete industrial waste discharges.

Quarterly inspections

(a) Sewage discharges less than 0.5 mgd.
(b) Classes 1 and 2 solid waste disposal sites.
(c) Cattle feed yards.
(d) 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 Water Resources Control Board.

Receiving Waters

(a) Quarterly investigations along entire length of New River and Alamo River.

(b) Review of New River and Alamo River monitoring data as received from other agencies.

(c) Semi-annual chemical analyses of Rose Drain and Central Drain discharge to Alamo River, under contract with DWR.

(d) Semi-annual coverage of all pertinent irrigation drains.

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°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 basis**

20°C BOD_5, total filtrable residue, MBAS, and fluoride.

PROJECT LISTS

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.

Projects will be scheduled according to the following criteria.

(a) Those needed to correct an existing water quality or water pollution problem or to conform to an area-wide sewage collection plan will be scheduled at the earliest practicable date.

(b) Projects affecting a common receiving water or that can be logically included in an area-wide or consolidated system will be scheduled as close together in time as water quality needs permit.

(c) Treatment plants nearing flow or treatment design capacity will be scheduled so the expanded facilities will be available before a problem develops.

(d) Water reclamation projects which beneficially improve water quality and which conserve water resources through feasible reuse will be scheduled as soon as practicable.

(e) Not foregoing any of the above criteria, projects will be scheduled for a uniform level of construction for each fiscal year within the five-year period.

Following these criteria, project lists indicating 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 were prepared. They are attached as Appendix A.

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.

Corresponding Industrial Project Lists are also presented. Grants are not available for projects on on the Industrial Project List. The projects listed, however, are necessary to assure basinwide improvement in water quality and the regional water quality control board will take the necessary action to insure conformance.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

COLORADO RIVER BASIN REGION

BASIN 7A – WEST COLORADO RIVER BASIN

MUNICIPAL PROJECT LIST

1971–72

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
Niland Sanitary District	I	Construct package plant	$ 102,500
Desert Hot Springs County Water District	I	Construct plant	300,300
Coachella Valley County Water District #50	I	Construct plant at North Shore, Salton Sea	570,800
Coachella Valley County Water District #51	I	Construct Ponds at Bombay Beach	406,000
Coachella, City of	I	Plant modifications	180,000
Palm Springs, City of	I	Plant modifications	105,000
Banning, City of	I	Plant modifications	50,000
Coachella Valley County Water District #53	I	Construct 0.5 mgd plant	400,000
Mecca Sanitary District	I	Install standby power	5,000
Brawley, City of	I	Construct digester	55,000
El Centro, City of	I	Construct 5 mgd plant	1,550,000
El Centro, City of	I	Install aerators	75,000

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

COLORADO RIVER BASIN REGION

BASIN 7A – WEST COLORADO RIVER BASIN

MUNICIPAL PROJECT LIST

1971–72

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
Twentynine Palms County Water District	I	Construct plant	$ 650,000
Pioneers Memorial Hospital District	I	Chemical feed equipment	1,000
Coachella Valley County Water District	I	Construct central lab.	20,000
Twentynine Palms County Water District	III	Interceptors	450,000
Coachella Valley County Water District #53	III	Interceptors	300,000
Coachella Valley County Water District	III	Interceptor for Indian Wells	108, 300
Desert Hot Springs County Water District	III	Interceptor	118,900
Coachella Valley County Water District #50	III	Pump station and interceptor for North Shore	73,400
Coachella Valley County Water District #51 (Ripley Treatment Plant)	III	Pump station and force main for Bombay Beach	172,200

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

COLORADO RIVER BASIN REGION

BASIN 7A – WEST COLORADO RIVER BASIN

MUNICIPAL PROJECT LIST

1972–73

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
Salton Community Services District	I	Construction of an 0.3 mgd package act activated sludge plant, lift station and outfall to existing ponds	$ 500,000
Imperial Valley Junior College District	I	Construct additional treatment facilities with separate sludge digestion with minimum capacity .05 mgd	125,000
Valley Sanitary District	I	Construction of pumping station and 2.75 miles of 8'' force main	339,000
City of Brawley	I	Construction of an activated sludge plant	689,000
Imperial County Department of Public Works	I	Construction of additional septic tank wastes disposal ponds	500
Salton Community Services District	I	Construct 0.3 mgd plant and lift station	500,000
Imperial Valley Junior College District	I	Expand plant to 0.05 mgd	125,000
Desert Water Agency (or) Coachella Valley County Water District (or) City of Palm Springs	I	Construction of a treatment plant, outfall sewer and infiltration basins	600,000
Coachella Valley County Water District	I	Enlargement of existing plant to 1.0 mgd	720,000
Salton Community Services District	III	Construction of Lift station and force main interceptor; part of Group I project	150,000

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

COLORADO RIVER BASIN REGION

BASIN 7A – WEST COLORADO RIVER BASIN

MUNICIPAL PROJECT LIST

1972–73

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
City of Coachella	III	Construction of pump station, and five miles of relief interceptor 15" VCP	$ 350,000
Desert Water Agency (or) Coachella Valley County Water District (or) City of Palm Springs	III	Construction of an interceptor sewer as part of the Group I project	87,000
Pioneers Memorial Hospital District	III	Construction of interceptor conveying laundry and other wastes from hospital treatment plant	2,500

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

COLORADO RIVER BASIN REGION

BASIN 7A – WEST COLORADO RIVER BASIN

MUNICIPAL PROJECT LIST

1973–74

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
City of Palm Springs	I	Plant expansion, consisting of trickling filter, two secondary clarifiers, one digester, and replacement of distributor arms on roughing filter	$ 695,000
Coachella Valley County Water District	I	Enlargement of treatment facilities from 1.0 mgd to 1.5 mgd	300,000
Valley Sanitary District	I	Construction of .25 miles of 18" main	26,000
City of Coachella	I	Construction of pumping station and three miles of 12" force main	355,000
City of Holtville	I	Modifications and additions to existing plant	265,000
Coachella Valley County Water District	I	Enlargement of existing treatment plant	500,000
Coachella Valley County Water District	III	Construction of lift station	35,000
Coachella Valley County Water District	III	Construction of lift station	100,000
Twentynine Palms County Water District	III	Construction of one mile of interceptor sewer	150,000

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

COLORADO RIVER BASIN REGION

BASIN 7A – WEST COLORADO RIVER BASIN

MUNICIPAL PROJECT LIST

1974–75

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
City of Coachella	I	Construct additional plant capacity	$ 300,000
City of Imperial	I	Construction of a grit chamber	40,000
Yucca Valley County Water District	I	Construction of an activated sludge type plant	487,500
City of Brawley	I	Lift station and 2500' of force main	40,000
Mecca Sanitary District	III	Construction of interceptor sewer	285,120
Yucca Valley County Water District	III	Construction of interceptor sewer	50,000

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

COLORADO RIVER BASIN REGION

BASIN 7A – WEST COLORADO RIVER BASIN

MUNICIPAL PROJECT LIST

1975–76

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
City of Imperial	I	Replacement of existing lift station pumps	$ 32,000
City of Calexico	I	Addition of an extended aeration basin	500,000
City of Westmorland	I	Replace lift station pumps and controls	15,000
Imperial County Department of Public Works	I	Construction of additional septic tank	500
Imperial County Department of Public Works	I	Interceptor and lift station	130,000
Coachella Valley County Water District	I	Enlarge treatment facilities	200,000
Coachella Valley County Water District	I	Enlargement of Existing facilities	500,000

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

COLORADO RIVER BASIN REGION

BASIN 7A – WEST COLORADO RIVER BASIN

INDUSTRIAL PROJECT LIST

1972–73

Responsible Agency	Description of Project	Estimated Eligible Cost
Holly Sugar Corporation	Recycle of Water to Reduce Wastewater Discharge and Longer Lagoon Retention	$ 15,000

APPENDIX B

SUMMARY OF PUBLIC HEARING

WEST 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 West Colorado River Basin.

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

There were nine 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 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. John Day, State Department of Fish and Game

Recommends that fish and wildlife be enunciated as beneficial uses to be protected in the following hydro units: Whitewater Hydro Unit, West Salton Sea Hydro Unit, Anza Borrego Hydro Unit, East Salton Sea Hydro Unit; that wildlife only be listed in the remainder of the hydro units. (Johnson, Bessemer, Means, Emerson, Lavic, Deadman, Joshua Tree, Dale, Bristol, Cadiz, Ward, Rice, Chuckwalla, Hayfield, Davies, Amos-Ogilby, Clark.

Revision of beneficial uses of the Whitewater Hydro Unit to protect aquatic and wildlife resources will require omission of 1(b) on page 33 of the report.

Page 63 Beneficial Water Uses – Recommends paragraph be revised to read as follows:

"The Salton Sea is used beneficially for:

1. Disposal of agricultural and municipal wastes
2. General esthetic enjoyment
3. Aquatic and wildlife habitat
4. Fishing and waterfowl hunting
5. Water contact sports
6. Boating
7. Shoreline development
8. Recreational-residential communities
9. Waterfowl feeding area to prevent Imperial Valley crop depredation"

Such revision delineates beneficial uses in more meaningful manner in keeping with spirit of sound water quality management for all beneficial uses.

Water Quality Objectives – Recommends the following objectives be prescribed for the plan:

Whitewater Hydro Unit

a. **pH.** The pH shall not be depressed below 6.5 units nor raised above 8.5 units as a result of waste discharge.
b. **Dissolved Oxygen.** Dissolved oxygen concentrations shall be maintained at or above an average of 5.0 mg/l, except for those 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.
c. **Pesticides.** The concentration of the total summation of individual pesticides shall not be greater than 0.1 micrograms per liter, nor shall concentrations of pesticides be allowed that are detrimental to fish and wildlife.
d. **Toxic Materials.** There shall be no organic or inorganic substances in concentrations which are toxic to animal, plant or aquatic life, or which create undesirable tastes or odors in the waters or in fish, wildlife or agricultural stock.
e. **Turbidity.** Turbidity shall not exceed natural background unit levels by more than 20%.
f. **Nutrients.** Dissolved nutrients of waste origin shall be limited to additions which do not cause undesirable agal, slime, bacteriological or undesirable biological growths.
g. **Temperature.** Waters supporting a cold water biota shall be maintained free of temperature changes as a result of waste discharges. The temperature of water supporting a warmwater biota shall not be increased by more than 5°F as a result of elevated thermal wastes.
h. **Bottom Deposits.** Waters shall be maintained free from bottom deposits or sludge banks of organic or inorganic waste origin at all times.
i. **Floatables.** Waters shall be maintained free from floating solids, liquids or foams of waste origin at all times. Waters shall be free from visible floating grease and oil.

West Salton Sea Hydro Unit
Anza Borrego Hydro Unit
East Salton Sea Hydro Unit

a. **pH.** The pH shall not be depressed below 6.5 units nor raised above 8.5 units as a result of waste discharge.
b. **Dissolved Oxygen.** Dissolved oxygen concentrations shall be maintained at or above an average of 5.0 mg/l.
c. **Pesticides.** The concentration of the total summation of individual pesticides shall not be greater than 0.1 micrograms per liter, nor shall concentrations of pesticides be allowed that are detrimental to fish and wildlife.
d. **Toxic Materials.** There shall be no organic or inorganic substances in concentrations which are toxic to animal, plant or aquatic life, or which create undersirable tastes or odors in the waters or in fish, wildlife or agricultural stock.
e. **Nutrients.** Dissolved nutrients of waste origin shall be limited to additions which do not cause undesirable agal, slime, bacteriological or undesirable biological growths.
f. **Temperature.** The temperature of water supporting a warmwater biota shall not be increased by more than 5° F as a result of elevated thermal wastes.

g. **Bottom Deposits.** Waters shall be maintained free from bottom deposits or sludge banks of organic or inorganic waste origin at all times.
h. **Floatables.** Waters shall be maintained free from floating solids, liquids or foams of waste origin at all times. Waters shall be free from visible floating grease and oil.

Johnson, Bessemer, Means, Emerson, Lavic, Deadman, Joshua Tree, Dale, Bristol, Cadiz, Ward, Rice, Chuckwalla, Hayfield, Davies, Amos-Ogilby, and Clark Hydro Units:

a. **pH.** The pH shall not be depressed below 6.5 units nor raised above 8.5 units as a result of waste discharge.
b. **Pesticides.** The concentration of the total summation of individual pesticides shall not be greater than 0.1 micrograms per liter, nor shall concentrations of pesticides be allowed that are detrimental to fish and wildlife.
c. **Toxic Materials.** There shall be no organic or inorganic substances in concentrations which are toxic to animal, plant or aquatic life, or which create undesirable tastes or odors in the waters or in fish, wildlife or agricultural stock.
d. **Nutrients.** Dissolved nutrients of waste origin shall be limited to additions which do not cause undesirable agal, slime or undesirable biological growths.
e. **Bottom Deposits.** Waters shall be maintained free from bottom deposits or sludge banks of organic or inorganic waste origin at all times.
f. **Floatables.** Waters shall be maintained free from floating solids, liquids or foams of waste origin at all times. Waters shall be free from visible floating grease and oil.

Recommends that objectives for the Whitewater River include the following: pH, Dissolved Oxygen, Pesticide, Toxic Materials, Turbidity, Nutrients, Temperature, Bottom Deposits, Floatables.

Recommends lower dissolved oxygen level in Coachella area of the Whitewater River because there are no trout there.

Recommends 5 ppm dissolved oxygen level in the East Salton Sea Unit, with same nutrient, temperature, same bottom deposits, and floatables.

Recommends only wildlife as beneficial uses in the 15 remaining hydrologic units and recommends pH, pesticides, toxic materials, nutrients, bottom deposits and floatables in these areas as objectives.

Page 53 Item 1. (for Alamo River) – Recommends the following additions to Item 1, after h.:

i. **Nutrients.** Dissolved nutrients of waste origin shall be limited to additions which do not cause undesirable agal, slime, bacteriological or undersirable biological growths.
j. **Pesticides.** The concentration of the total summation of individual pesticides shall not be greater than 0.1 micrograms per liter, nor shall concentrations of pesticides be allowed that are detrimental to fish and wildlife. (This revision will require the deletion of the word "biocides" from objective 1. (h) page 53).

Recommends revision of Item 2 to read: "There shall be no discharge of the following substances to any watercourse tributary to the Alamo River:

Wastes containing biocides from manufacturing, processing, or tank-cleaning operations.

Page 54 (beginning this page) Recommends same revisions and additions be made for the New River as recommended for the Alamo River. (See full texts in two letters dated May 18, 1971).

2. **William Teague, General Manager, Valley Sanitary District**

Concurs with basic concept of the report as it relates to the Valley Sanitary District, with one minor change.

Recommends sewer connections west of Jefferson Street be curtailed only to extent that the District fails to comply with the Regional Board's requirement that waste water collected from Indio subarea be returned to the Central Plain Area for reuse and infiltration. (See also letter dated May 12, 1971).

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

Page 33, last line in first paragraph – Requests correction of word east to read "west".

(Executive officer suggested using "Well No. 8S8E311", to which Mr. Longenecker agreed.)

Page 38A, Plate 12 – Requests correction of words Palm Desert – Rancho Mirage Area to read "Coachella Valley County Water District."

Pages 73 to 80, Project List – Referred to previous conversation with executive officer regarding proposed revisions to Coachella Valley County Water District portions of the project list; and stated that letter would follow with details of these revisions.

Requests Group Numbers I, II, and III be explained or described, as to what the numbers mean.

(Full text is contained in Coachella Valley County Water District letter dated May 19, 1971.)

4. **Maurice Hawkins, Sanitary Engineering Assistant, Riverside County Department of Public Health.**

Page 27, San Gorgonio Subunit Plate 10, third paragraph – This water is also used by the Banning Bench. The plants are not being used anymore for hydroelectric power. The water from Millard Canyon is also used by the Cabazon County Water District.

(The executive officer and staff engineer, J. Harry Hanson, explained to Mr. Hawkins that hydroelectric power is being produced and Mr. Hawkins conceded the point.)

Page 31, 5th and 6th lines – The report states " – non water-bearing areas in San Jacinto and Santa Rosa Mountains." There are some basins in that area being used for domestic water. Several water systems up there are using that water.

Page 34, Table I – There are other disposal units in the Whitewater Hydro Unit which are private and not tax supported.

Page 35, City of Coachella – The reference here is made to Coachella's present plant, rather than to their new plant under construction.

Page 38A, Plate 12 – Opposes this designation of areas for receipt of septic tank and cesspool pumpings into sewage treatment plants. The designated areas may not be the most convenient, or the most acceptable. Many treatment plants are not capable of taking this material. To adopt this map would be setting up a precedent which may become an economic burden on an area. If adopted for general purposes only, it could be a guide rather than a fact, and would be more in line with reasonable disposal of this material.

Page 64, 4a – Recommends addition of industrial and domestic wastes which may be deleterious to to aquatic and wildlife resources and to plant life which toxic materials are subject to bacterial action, and could affect the food chain and become detrimental to health.

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

Page 8, Water Quality Objectives, 2, and
Page 9, Existing Waste Discharges – The report states "Sewage effluent discharged into the Hydro Unit from another basin shall be of such quality that it may be a source of raw water for domestic use."

Wishes to make it absolutely clear that State Department of Public Health will not accept sewage effluent as a source of raw water supply for domestic use. To the best of his knowledge there is no intent of the proposed dischargers in the Big Bear Lake area to discharge a waste intended to be used directly as a source of raw domestic water supply.

Page 33, Beneficial Water Uses, 2. – Recommends clarification of statement "All surface and ground waters are used for recreational purposes."

Page 43, Recommends addition of communities of Kentwood and Whispering Pines.

Page 47, Wastewater Management Plan, 2. – Recommends that the feasibility of reuse should be included. (Complete text is in letter dated May 10, 1971.)

(In letter dated June 4, 1971, Mr. Reinhardt recommended some alleviation on the requirement of 20 mg/l maximum for 20^{o}C BOD_5 of waste waters discharged to irrigation drains.)

6. **Thomas Essen, Director, Department of Public Works, City of Palm Springs**

Page 33, Water Quality Objectives – It is necessary to maintain the highest possible water quality. Degradation of our water quality is already a matter of record referring to the contracts on exchanging State Water Plan water for Colorado River water). Thinks it is possible Colorado River water will not even be potable by the time delivery is taken on it in the upper Coachella Valley.

Page 37, 3(b) and 4. – The City of Palm Springs has never refused to take septic tank and cesspool pumpings brought to its plant. Pumpings can be handled without trouble in a well-managed plant.

Concerned about grease from grease traps, which is not mentioned in the report.

Page 71, Unsewered Areas – Cathedral City is shown under the agency of Desert Water Agency, and Desert Hot Springs is shown with the agency of Desert Hot Springs County Water District. These designations for particular areas disregard the need for areawide management, and they are being designated to political entities, rather than to areawide management.

Page 76, Community of Cathedral City Treatment Plant – Opposes this portion of the report, which is delineated in great specific detail, going to press while other reports (of which there are many) are being received and others are under preparation.

7. **Leonard E. McClintock, City Manager, City of El Centro**

Page 55, 4. Individual Irrigation Drainage Ditches – Opposes the requirement that waste discharges must have an unfiltered 20^{o}C BOD_5 of not more than 20 mg/l. Believes that it is unjustified.

8. **Louis P. Orleans, Plant Manager, Holly Sugar Corporation**

Page 53, 1.d. – The report states maximum TDS shall not exceed 4500 mg/l. Our experience shows us that with our system we can expect 5300 to 5800 mg/l. Because of evaporation, the longer we hold the wastewater the more concentrated it becomes.

Page 55, 4. Individual Irrigation Drainage Ditches – With a 6-month retention time in the oxidation ponds the Company is not able to get the BOD below 38 to 40 mg/l. This is the lowest that it ever becomes regardless of how long it is held. Therefore, it would be very difficult to reach 20 mg/l.

9. **Don Wilson, Chief Operator, City of Palm Springs Sewage Treatment Plant**

Recommends that some one plant in a given area be qualified and set up to handle whatever materials may be taken to a treatment plant.

10. **Orville Zimmerman, General Manager, Twentynine Palms County Water District**

Page 15, 1. Second Paragraph – Wishes to point out that problem of fluoride concentrations in groundwaters generally exists in the east and north portions of the subunit.

Beneficial Water Uses 1.– Believes ground waters of this subunit do not supply the Marine Corps or a considerable part of the Marine Corps population.

Page 16, Water Quality Objectives 1. – The Twentynine Palms County Water District plan is to beneficially use treated waste waters once the quantities become sufficient to be economically feasible.

Existing Waste Discharges, Twentynine Palms Subunit – The present schedule is for construction of a community sewerage system to commence during the first half of 1972, with completion during the first portion of 1973.

Page 17, Wastewater Management Plan, 2. – Treated wastewaters from the proposed Twentynine Palms sewerage system will be used beneficially either by infiltration to the groundwaters, for irrigation, or for reclamation.

4. – Understands the U.S. Marine Corps Base will provide sewerage for its own facilities, and that Twentynine Palms County Water District will have an independent sewage collection, treatment and disposal system. (See complete text in letter dated May 7, 1971.)

11. **Bob Shubeck, Southern California Edison Co.**

Page 53, Item 3 – Recommends a more comprehensive definition of what constitutes "geothermal wastes."

Page 55, Item 3 and Page 64, Item 5 – Believes a restrictive definition of term geothermal wastes and the limiting disposition of these wastes would inhibit development and prevent utilization of geothermal energy for beneficial growth of these areas.

Page 46, Water Quality Objectives 2. – Recommends acceptable limits on "toxicants, and other deleterious chemicals" be established in order to allow beneficial commercial utilization of these groundwaters. In lieu of limits, methods for deep disposal of geothermal brines into the groundwater basin should be considered an acceptable alternative. Recommends permission of a method of discharge so that full beneficial use is made of available water resources. Recommends the method incorporate reasonable concern over its effects on quality of the receiving waters and long term use of these waters. Deep well disposal is a reasonable method of achieving these objectives.

(Also see letter of May 21, 1971, in which the Company:

(a) Objects to the prohibition of geothermal discharges towards New and Alamo Rivers, and Salton Sea.
(b) Requests a more comprehensive definition of what constitutes "geothermal wastes."
(c) States that acceptable limits of toxicants should be set so that deep well disposal may be utilized.)

12. **George M. Minturn, City Manager, City of Indian Wells**

(Correspondence dated May 28, 1971)

Page 37, 3(b). and Plate 12 – City of Indian Wells objects strongly to the concept described here which would restrict sewerage of Indian Wells to those treatment plants located west of Jefferson Street.

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

(Read a prepared statement, dated May 13, 1971, stating that:

(a) The data concerning quality of Colorado River at Imperial Dam should be dated, apparently 1969.

(b) On November 19, 1969, River salinity at Imperial Dam reached 1070 mg/l, which is substantially higher than the maximum value shown on page 50.)