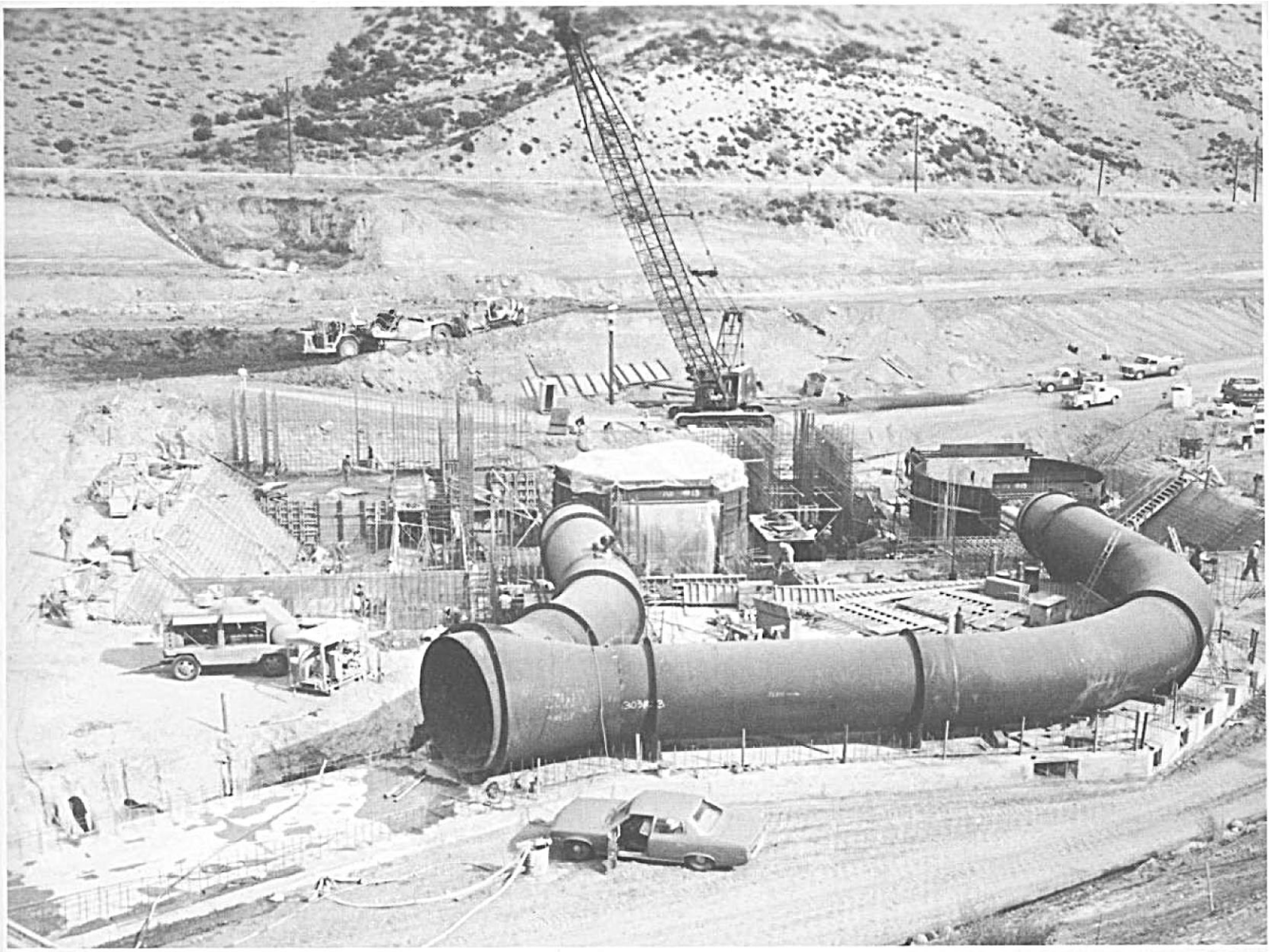

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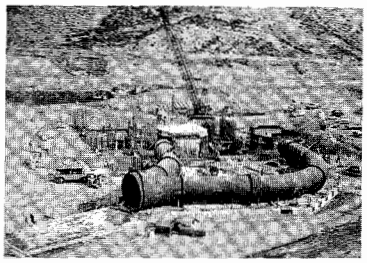

Initial construction work at Pyramid Hydroelectric Powerplant is shown on the cover. The penstock sections leading to twin 37.5 megawatt generators are in place. The powerplant will be located on the California Aqueduct West Branch in Southern California. Phase I hydroelectric facilities will include the upstream Peace Valley Pipeline to transport Project water from Quail Lake to the penstocks. Construction site work began in November 1978, and the facilities are planned to be completed and operational in 1982.

Department of
Water Resources
Bulletin 132-79

The California State Water Project— 1978 Activities and Future Management Plans.

November 1979

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Secretary for Resources
The Resources Agency

Edmund G. Brown Jr.
Governor
State of California

Ronald B. Robie
Director
Department of Water Resources

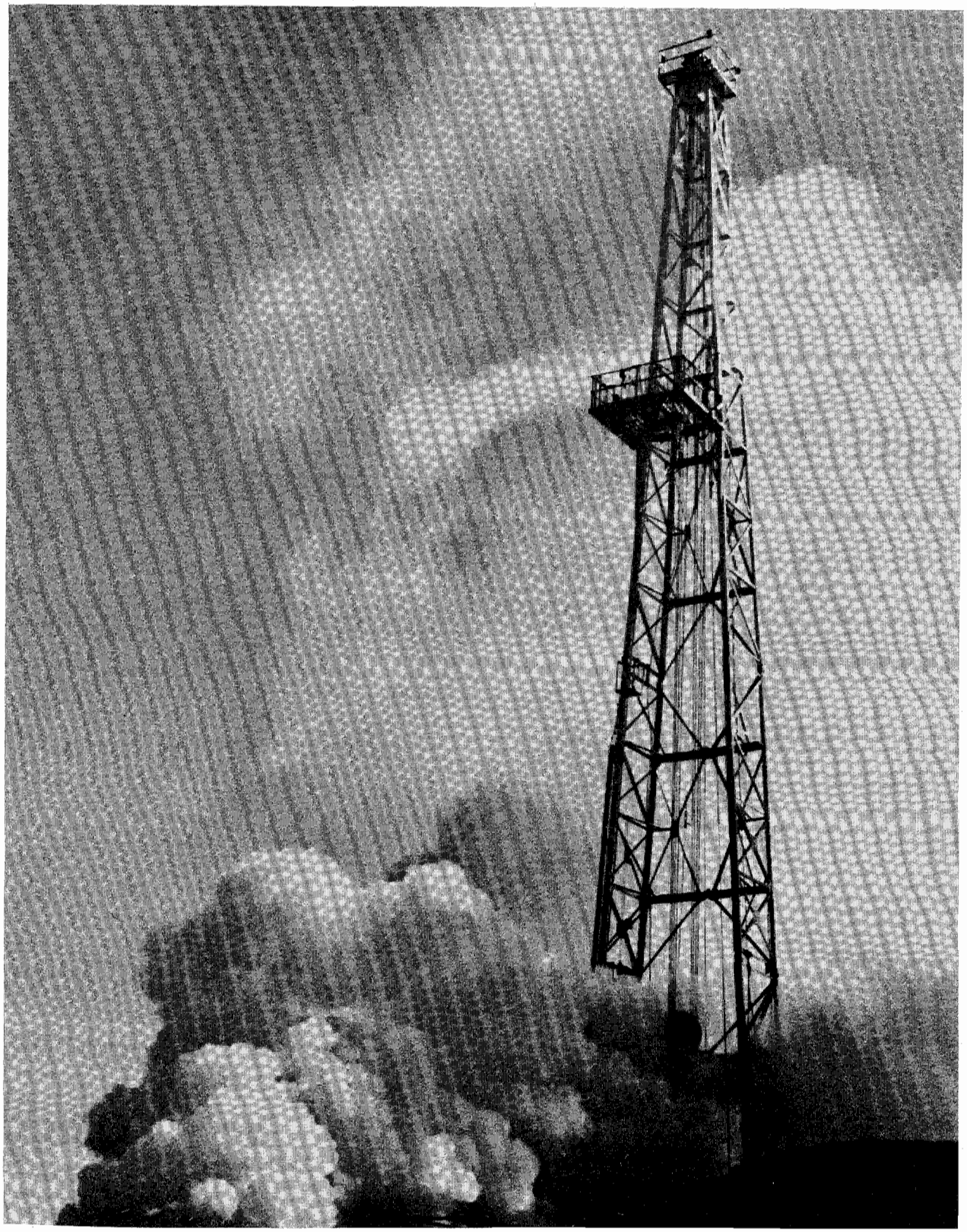

Photo taken at the time drill struck geothermal fracture. This is the first well at South Brawley Prospect in Imperial Valley. DWR has a 25 percent interest in this project.

FOREWORD

In 1978, the State Water Project experienced a dramatic recovery from the effects of the 1976-77 drought. Above average rainfall through the spring, from north to south, reversed the two years of drought conditions in California. This precipitation, together with an above-normal Sierra snowpack, provided quick recovery of water storage in Project reservoirs from the record lows experienced in late 1977. Before the end of summer the Department was able to announce that Project reservoirs were essentially full again and there would be an abundant carry-over supply for the fall and into the 1978-79 water year.

The Delta Alternatives Review came to completion in 1978. The Department published its report, "Bulletin 76, Delta Water Facilities", which concluded a two-year review of the Delta, the Peripheral Canal and its alternatives, and the future water needs and operations for the State Water Project and the Central Valley Project. The Bulletin summarized the Department's plan for protecting the Sacramento-San Joaquin Delta and meeting the water export needs of the State Water Project through year 2000. The plan incorporates water conservation, water reclamation, development of new surface water storage reservoirs, a ground water storage program to store water in wet years to be available for withdrawal in years when water is in short supply, construction of the Peripheral Canal as the best alternative to meet the many and varied needs in the Delta, construction of facilities to guarantee that Suisun Marsh remains a major habitat for birds and wildlife in the Delta, and implementation of SWP and CVP agreements to guide the projects' future operations in the best interest of Californians.

An initial step was taken in 1978 to protect and restore Suisun Marsh to its proper place in the Delta's environment. Suisun Resources Conservation District, the Department of Fish and Game and the Department of Water Resources executed a three-party agreement to construct and operate initial facilities in the vicinity of Roaring River Slough near Collinsville and in Goodyear Slough which lies adjacent to Suisun and Grizzly Bays. The initial facilities will divert water during certain times of the year for flooding wetland areas in the Marsh. The new supply will replace the saltier water now diverted for flooding.

Water Right Decision 1485 on the Sacramento-San Joaquin Delta and Suisun Marsh was adopted on August 16, 1978 by the State Water Resources Control Board. The decision, which included a new water quality control plan for the Delta, directly affects State Water Project operations. The balanced plan will provide better overall protection for the various beneficial uses of water in the Delta. The plan identified water quality standards to coincide with five categories of water years -- wet, above normal, below normal, dry, and critical -- based on unimpaired flows in four major basins in the Sacramento Valley. The Department continues to monitor water quality at numerous test stations in the Delta. This information will become extremely important in years to come, as the SWP and CVP reach their full export potential.

Flexibility of the State Water Project again was demonstrated in the spring of 1978. Potential flood waters from spring rains were captured in Pyramid and Castaic Reservoirs, preventing those waters from causing flood damage on their normal path down the Santa Clara River to the Pacific Ocean. By April, a total of 168 037 cubic dekametres (136,228 acre-feet) had been diverted into the West Branch reservoirs. The Kern River Intertie diverted spring snowmelt waters into the California Aqueduct, preventing flooding in the Tulare Lake and Buena Vista Lake areas. To make maximum use of the water, the Metropolitan Water District agreed to reduce its normal diversion of Colorado River water in exchange for an equal amount of supply from the Intertie. A total of 52 542 cubic dekametres (42,596 acre-feet) of Intertie water was deliveried to Metropolitan through this exchange.

Both flood preventing operations saved energy the Project would have used to pump an equivalent amount of water from the Delta. The savings was passed on to Project water contractors in the form of lower transportation charges. The operation of the Kern River Intertie again demonstrated that State and local entities can cooperatively work together in the best interests for all in California.

During 1978, steady progress was made in the Department's program to assure reliable and economic supplies of electrical energy for project pumping operations after March 31, 1983 -- the date when current firm power purchase contracts expire. A significant milestone was passed with the Federal Energy Regulatory Commission's granting of a license for power generating facilities on the California Aqueduct -- 13 years after the Department had originally filed an application in 1965. The Department signed a contract to purchase the generation from a small hydroelectric development by The Metropolitan Water District of Southern California (Phase I, 30 MW). The Department also entered into a planning and feasibility study agreement with the Kings River Conservation District looking to a purchase contract for generation from Pine Flat Power Project (165 MW). The Department embarked on a specific program to develop a 1,000 MW coal-fired plant -- approximately one-third of which would be retained for SWP use and the remainder offered to potential participating utilities. The Department filed its first Notice of Intention with the California Energy Commission for Bottle Rock Powerplant (55 MW), the first of a series of geothermal units the Department plans to construct in The Geysers area. The Department secured the potential supply from an additional leasehold for a possible fourth 55 MW unit in the area. The Department also entered into agreements for joint exploration and development of geothermal resources in the Imperial Valley and entered into discussions for the development of a unique wood-waste geothermal proposal for the Honey Lake area in Lassen County. In 1978, the Department expanded its research and development activities to evaluate the potential of wind generators, biomass and manufactured gas from agriculture and forest wastes as potential energy sources for the Project.

This report is the seventeenth in a series of annual reports by the Department of Water Resources published to present information on the continuing activities of the State Water Project, together with the Project's future management plans.

Ronald B. Robie

Ronald B. Robie, Director
Department of Water Resources
The Resources Agency
State of California

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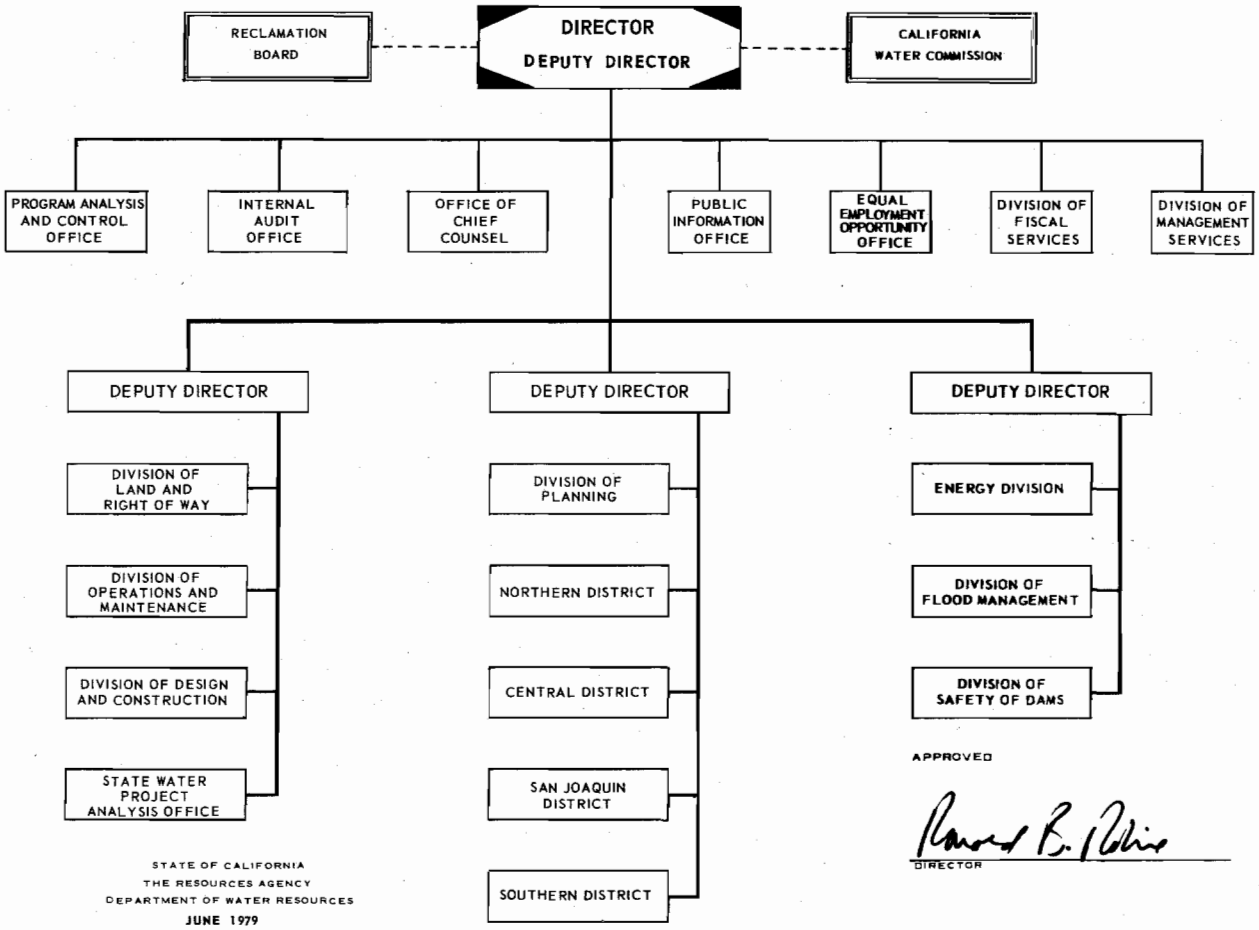
The California Water Commission serves as a policy advisory body to the Director of Water Resources on all California water resources matters. The nine-member citizen Commission provides a water resources forum for the people of the State, acts as liaison between the legislative and executive branches of State Government, and coordinates Federal, State, and local water resources efforts.



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CHAPTER I

CONTINUING HISTORY OF THE PROJECT

This chapter for 1978 continues the record of actions affecting the State Water Project, includes a progress report on the Department's activities in the continuing management of the State Water Project, highlights the years activities, and includes a summary of significant litigation involving the State Water Project.

ACTIONS CONCERNING PROJECT WATER SUPPLY AND FACILITIES

Delta Alternatives Review

Since the initial authorization in 1952 of what is now the State Water Project (SWP), the Department has invested over $40 million in extensive technical studies and restudies of numerous alternative Delta water facilities and related measures for protecting the beneficial uses of the Delta-Bay estuary and exporting water for the SWP.

Review of Events Prior to 1978

In 1960 the Department proposed the Delta Water Project -- a nonisolated Delta waterway control system of barriers, channel enlargements, and levee improvements to reroute fresh water through the central Delta channels and prevent it from commingling with saline waters of the western Delta. This proposal met with firm opposition from Delta boaters, fish and wildlife enthusiasts, Delta water users, and others.

In 1965, after extensive restudy and after consulting with various interest groups, the Interagency Delta Committee[1/] recommended the Peripheral Canal be constructed. The Peripheral Canal would hydraulically isolate both State (SWP) and Federal (Central Valley Project) export water from the estuary, would correct existing problems through change in diversion point from south of the Delta to north of the Delta, and would provide controlled releases at channel crossings to meet the water supply, water quality, and fishery needs of the Delta.

In 1966 the Department issued Project Order No. 12, adopting the Peripheral Canal as the Delta facility of the SWP.

In 1969 the Federal Government issued a feasibility report on the Peripheral Canal as a joint-use facility of the Central Valley Project (CVP) and SWP with costs to be shared equally by both projects. In 1970 the State endorsed the joint-use proposal and urged early congressional authorization on the condition that Delta protection have priority over water export. In 1974 the Department released a draft Environmental Impact Report (EIR) on the Peripheral Canal in compliance with the California Environmental Quality Act (CEQA) of 1970. (The draft has not been finalized.)

In April 1975, the Department, under new leadership, began a reappraisal of

1/ A committee organized by the Department (Department of Water Resources, United States Bureau of Reclamation, and the United States Corps of Engineers) whose purpose was to reach agreement on a mutually acceptable coordinated Delta plan to meet Delta, SWP and CVP needs.

the Peripheral Canal and all the surrounding issues. This action was taken because of: (1) changed conditions in the 10 years since 1965, e.g., inflation, slower population growth, and reduced water demands, and (2) the controversy that has erupted since the Peripheral Canal was first recommended in 1965.

In the spring of 1977, after extensive restudy and numerous public hearings, the Department again concluded that the Peripheral Canal -- with strong guarantees for protecting the Delta, Bay, and Suisun Marsh -- was the best alternative for efficient water transfer across the Delta and for protection of the estuary. However, it was also recognized that no single action could fully protect the estuary and meet the increasing requirements in those areas of the State receiving a portion of their water supply from the Delta. Accordingly, the Department's recommended program also specified measures providing (1) protection of Delta and beneficial uses of Suisun Marsh, (2) water conservation and reclamation in export service areas, and (3) additional surface and ground water storage facilities to augment project yield. Also in the spring of 1977, preparation of Bulletin 76 was begun to report on the Delta Alternatives review and recommended program.

Independent of the Department program, Senator Ruben Ayala in February 1977 introduced SB 346 in an attempt to break the longstanding impasse on construction of the Peripheral Canal. After being amended to incorporate the primary elements of the Department's recommended program and a number of other provisions suggested by various regional and statewide groups representing municipal, industrial, farming, environmental, and labor interests[2/] SB 346 passed the Senate on June 23, 1977. Further amendments were added to SB 346 before passing the Assembly and the bill was returned to the Senate floor September 15, the closing day of the session. There the bill received a majority vote, but failed to get the required two-thirds passage vote needed to send it to the Governor. During this period, Department staff was very active in drafting language for suggested amendments, in undertaking special studies and in preparing correspondence in response to numerous questions asked by legislative leaders.

Subsequently, SB 346 was assigned to a six-member Senate/Assembly joint conference committee, which held six more public hearings throughout the State.

Activities and Events During 1978

In January 1978 the joint conference committee adopted its final conference report and recommended 107 additional amendments to SB 346. The vast majority of these were technical and noncontroversial, but some contained substantial changes, primarily related to protection of the Delta estuary and implementation of the Peripheral Canal[3/]. While additional support was gained from some former opponents, the conference committee report failed to get the necessary two-thirds affirmative vote when

---

2/ The main purpose of including all the elements of the Department's plan--many of which are already authorized--was to unite Californians in support of a compromise plan to meet the needs of the many diverse interest groups and to serve as a basis for complementary federal legislation for CVP participation in Delta protection, the Peripheral Canal, and other aspects of the plan.

3/ The full test of SB 346 and the final conference committee report are published in the Appendix to the Department's Bulletin 76, July 1978. Minority reports by two committee members are also included.

it was considered in the Senate on February 2, 1978. Senator Ayala was given the privilege of reconsideration at a later date, and advocates continued to try to work out additional compromises to gain the necessary support.

Meanwhile, Department staff involvement with legislative activities subsided, and efforts were resumed toward completing Bulletin 76. However, this proved to be a dynamic process, as many significant events occurred that required revision and rewriting.

For example, in March 1978, the State Water Resources Control Board (SWRCB) released its draft report on a new basin plan for Delta water quality to be used in modifying terms and conditions of water rights -- and, in turn, the operation -- of the SWP. The most significant change was recognition of variations in fish and wildlife criteria corresponding to water year types based on unimpaired flows in the Sacramento Valley (the "Four-River Index"). This change gave fish and wildlife better protection in most years, while saving Project water in drier years. It followed the concepts in the Department's recommended plan, but was sufficiently different in detail so that the draft bulletin had to be modified. A discussion of this decision and its impact on SWP operations occurs in the SWP Operations Section of Chapter I.

The Peripheral Canal received a new verification of support from the Department of Fish and Game in June 1978. Fish and Game issued a 16-page report entitled "Restoration of Fish and Wildlife in the Sacramento-San Joaquin Estuary" which reviewed, from the fish and wildlife perspective, the facility construction and operating alternatives of the Central Valley Project and the State Water Project.

In looking at alternatives, the report evaluated the impacts of continued Delta diversions without a Delta project, of two alternative Delta facility projects which would not isolate SWP and CVP water from the Delta channels, and the Peripheral Canal.

The conclusion reached was that "the Peripheral Canal, with adequate water quality and flow standards and Suisun Marsh facilities, could increase fish and wildlife substantially in relation to present conditions and to other alternatives, restoring them almost to historical levels". The Fish and Game Report concluded with a recommendation that the Peripheral Canal be constructed.

In another example, the United States Supreme Court on July 3, 1978, issued a landmark decision[4/], holding that in operating the CVP, the U. S. Bureau of Reclamation (USBR) must comply with conditions imposed in State water right permits regarding control, appropriation, use, and distribution of water, that are not in conflict with clear congressional directives respecting such federal projects. In the Delta, it means that the CVP must abide by water standards identical to those imposed on the SWP as provided in SWRCB Decision 1485, which was issued in final form in August 1978. Both the Department's recommended plan for the Delta and SB 346 were based on this fundamental premise. The decision is discussed in full under a following section in this chapter, "State Water Resources Control Board Decision".

Bulletin 76 also had to be revised to reflect steps then being taken to implement key elements of the recommended plan.

For example, early in 1978 the Department drafted a legislative bill to

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4/ California v. United States -- 438 U. S. 645 (1978).

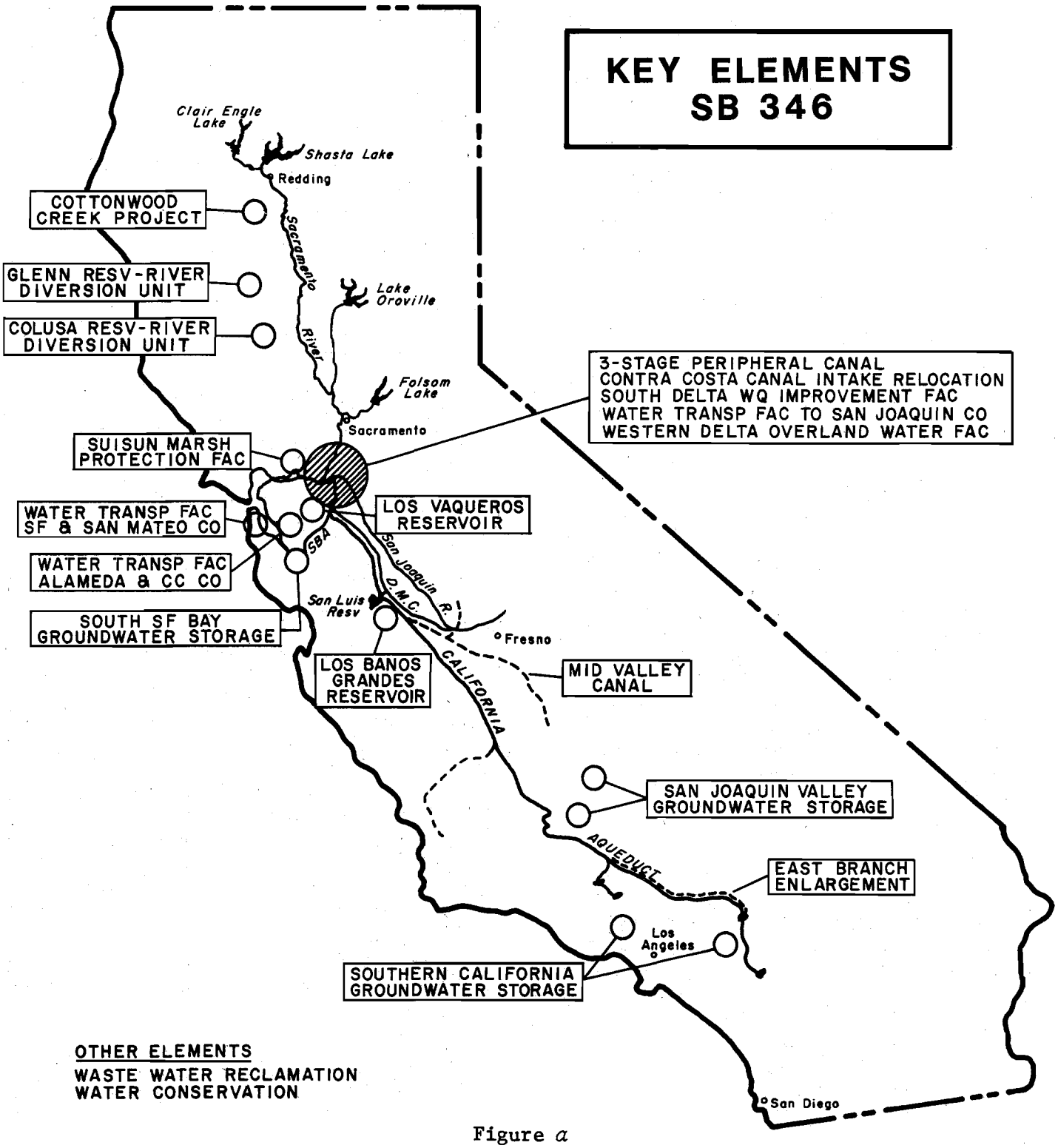
KEY ELEMENTS
SB 346
Clair Engle Lake
Shasta Lake
Redding
COTTONWOOD CREEK PROJECT
Sacramento River
GLENN RESV-RIVER DIVERSION UNIT
Lake Oroville
COLUSA RESV-RIVER DIVERSION UNIT
Folsom Lake
Sacramento
3-STAGE PERIPHERAL CANAL
CONTRA COSTA CANAL INTAKE RELOCATION
SOUTH DELTA WQ IMPROVEMENT FAC
WATER TRANSP FAC TO SAN JOAQUIN CO
WESTERN DELTA OVERLAND WATER FAC
SUISUN MARSH PROTECTION FAC
WATER TRANSP FAC SF & SAN MATEO CO
LOS VAQUEROS RESERVOIR
SBA
WATER TRANSP FAC ALAMEDA & CC CO
San Joaquin R.
D.M.C.
San Luis Resv
SOUTH SF BAY GROUNDWATER STORAGE
Fresno
LOS BANOS GRANDES RESERVOIR
MID VALLEY CANAL
CALIFORNIA
SAN JOAQUIN VALLEY GROUNDWATER STORAGE
AQUEDUCT
EAST BRANCH ENLARGEMENT
Los Angeles
SOUTHERN CALIFORNIA GROUNDWATER STORAGE
OTHER ELEMENTS
WASTE WATER RECLAMATION
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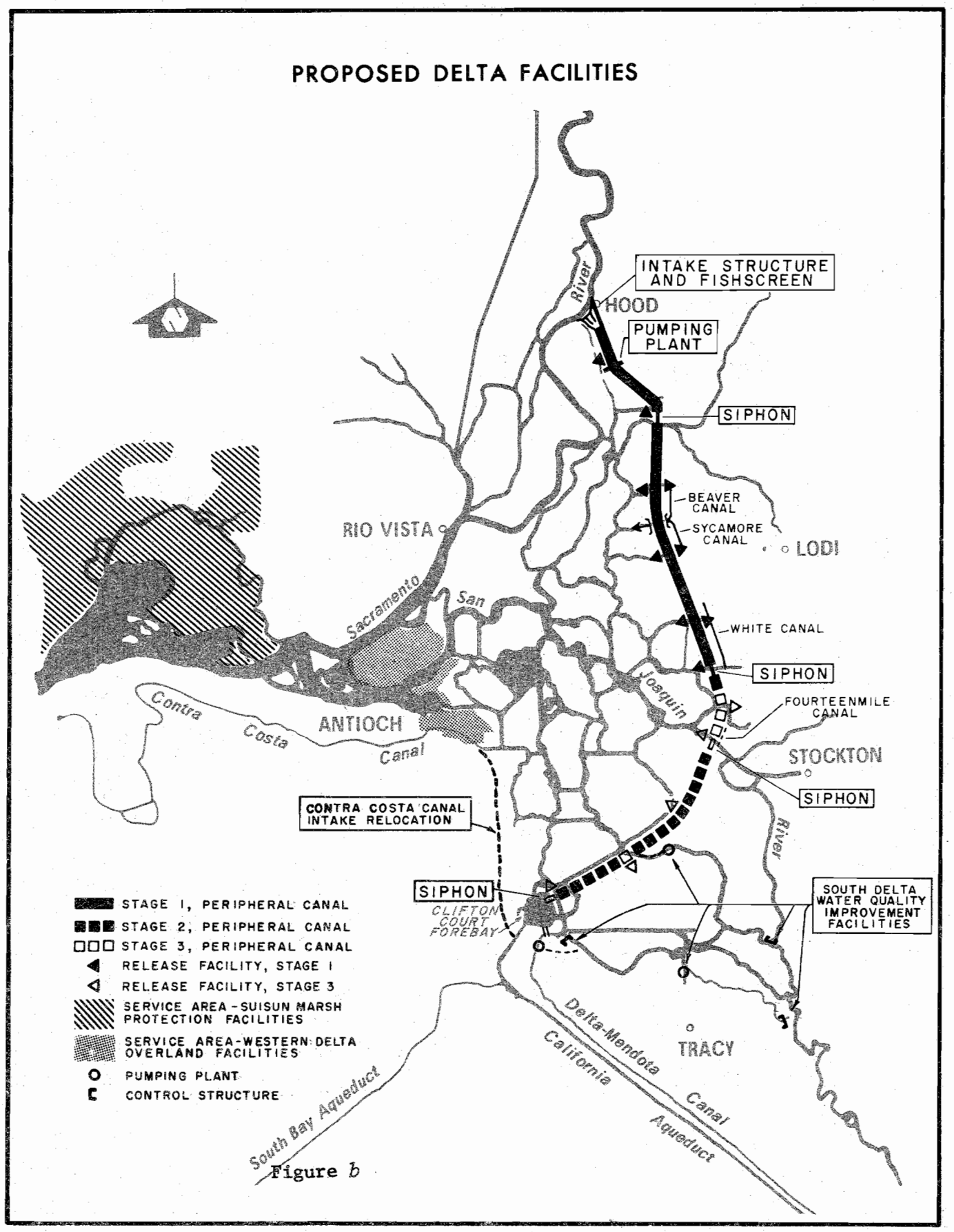
Figure *a*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WHITE CANAL
SIPHON
FOURTEENMILE CANAL
STOCKTON
SIPHON
ANTIOCH
Contra Costa Canal
Sacramento
San Joaquin
River
CONTRA COSTA CANAL INTAKE RELOCATION
SIPHON
CLIFTON COURT FOREBAY
SOUTH DELTA WATER QUALITY IMPROVEMENT FACILITIES
TRACY
Delta-Mendota Canal
California Aqueduct
South Bay Aqueduct
STAGE 1, PERIPHERAL CANAL
STAGE 2, PERIPHERAL CANAL
STAGE 3, PERIPHERAL CANAL
RELEASE FACILITY, STAGE 1
RELEASE FACILITY, STAGE 3
SERVICE AREA - SUISUN MARSH PROTECTION FACILITIES
SERVICE AREA - WESTERN DELTA OVERLAND FACILITIES
PUMPING PLANT
CONTROL STRUCTURE

Figure *b*

authorize federal participation in the Project's initial facilities (and share equally in the costs) for protecting Suisun Marsh areas most seriously affected by salinity intrusion. The Department also completed a report on the interim facilities to accompany the federal legislation.

In compliance with CEQA, a negative declaration was filed for the initial facilities, and preparation of design, specifications, and agreements was begun.

Early in 1978, the Department began working with State water contractors which overlie ground water basins in southern San Joaquin Valley and Southern California as a step toward implementing the recommendation that ground water storage be utilized to augment the yield of the SWP. Parallel to this effort, the Department entered into agreements with the Mojave Water Agency and the San Bernardino Valley Municipal Water District to implement demonstration ground water storage projects. These programs are explained in a following section, "Ground Water Storage Programs".

Publication of Bulletin 76, "Delta Water Facilities"

It was decided that July 1978 would be the cutoff date for reflection of new developments in Bulletin 76. The oft-revised report was sent to the printer early in September. Printing was completed in mid-February 1979 and distribution began immediately. In accordance with section 10004 of the Water Code, the bulletin was submitted to the California Legislature and is now a part of the California Water Plan.

Review of Final Action on SB 346.

From early February to mid-July 1978, the Legislature remained deadlocked over SB 346 and the conference committee report. Substantial efforts to reach additional compromises were unproductive. Passage of Proposition 13[5/] and implementation of the Proposition dominated the legislative scene.

Consequently, during late July and early August, the Department developed draft amendments that deleted funding from the bill and would have required only a majority vote on SB 346. With passage of Proposition 13, funding sources for certain programs in the bill, such as the $50 million Agricultural Water Conservation Revolving Loan Fund, were no longer available. It should be noted that none of the funding in the bill was for the Peripheral Canal or other project facilities, since funds for these purposes are already available to the Department without additional legislative approval. Nevertheless, these amendments were not acceptable to a number of SB 346 supporters (both within and outside the Legislature). The Department was unable to gain sufficient agreement among affected groups either on the legislative conference report, which was pending since January or on possible additional amendments. While this bill enjoyed broad support, a number of water leaders in the San Joaquin Valley still opposed the bill. In view of this, on August 10, the Director of the Department of Water Resources requested Senator Ayala to set aside action on the bill for the balance of the legislative session.

5/ A tax limitation initiative which amended Article 13 of the California Constitution, effective June 6, 1978.

Summary of Legislative Actions on Peripheral Canal Bills, January to June, 1979

Early in the 1979 legislative session, several bills relating to important policy issues on Delta protection and future construction and operation of the SWP, including the Peripheral Canal, were introduced. All major elements of water use, development, control, conservation, ground water, water rights, and management were included. Participation of the Federal CVP through either agreements or congressional legislation was also involved. The four main bills were SB 200, AB 303, AB 442, and AB 1328.

Senate Bill 200 (1979), by Senator Ayala, is similar to SB 346 (1977-78) and contains the Department's proposal to build the Peripheral Canal and related facilities within and outside the Delta. These include:

1. A three-staged Peripheral Canal
2. Relocation of the intake to the Contra Costa Canal
3. Los Vaqueros Reservoir facilities
4. South Delta water quality improvement facilities
5. Suisun Marsh protection facilities
6. Facilities for using ground water storage space south of the Delta.
7. Glenn Reservoir-River Diversion facilities
8. Colusa Reservoir-River Diversion facilities (as alternative to Glenn)
9. Water conservation and waste water reclamation programs
10. Mid-Valley Canal Unit
11. Western Delta overland water facilities
12. Water transportation facilities to serve water to San Joaquin and several Bay area counties.

Assembly Bill 303, by Assemblyman Lehman, would authorize the same facilities except for water transportation facilities to serve San Joaquin and Bay area counties and the Glenn and Colusa projects. It would require DWR to report to the Legislature by December 31, 1981, on the time schedule for constructing additional conservation facilities in the Sacramento River watershed and south and west of the Delta, including joint-use facilities with the United States. AB 303 would also authorize DWR to participate in federal studies of enlarged Shasta Dam and Reservoir or other federal reservoirs for joint-use of the SWP and CVP. There are some identical provisions and some differences in Delta-Bay protection measures.

Assembly Bill 442 by Assemblyman Kapiloff would establish a comprehensive State water policy regarding State supervised local management of areas with critical ground water overdraft, instream uses of water, appropriative water rights, and other water matters. The original bill authorized SWP facilities identical to SB 200; however, because of lack of support in the Committee on Water, Parks, and Wildlife, the Peripheral Canal, Los Vaqueros Reservoir, Glenn and Colusa Reservoirs, and Mid-Valley Canal were deleted from the bill. Water conservation, waste water reclamation, ground water storage, Delta-Suisun Marsh facilities and strong guarantees for Delta-Bay protection remain in the bill.

Assembly Bill 1328, by Assemblyman Perino, would require that any Delta water facility constructed as part of

the SWP be a nonisolated facility, thereby, prohibiting an isolated water transfer facility such as the Peripheral Canal. The Delta package would also include: channel control structures, a submerged sill or sills in Carquinez Strait to retard salinity intrusion, and Suisun Marsh protection facilities. However, no specific provisions for project operation to guarantee Delta quality are included.

AB 1328 would also authorize the Cottonwood Creek Project (already authorized by the federal government) as a feature of the SWP. The project would be constructed by the State or jointly constructed by the State and the federal government under terms of the bill. Also the bill would declare as State policy support of full utilization of New Melones Reservoir, early construction of a safe Auburn Dam and completion of the Folsom-South Canal. It would also require DWR to prepare recommendations for a ground water management program that would be implemented solely at the discretion of local governmental agencies.

The Department continues to work with both Senator Ruben Ayala, Chairperson of the Senate Agriculture and Water Resources Committee, and Assemblyman Larry Kapiloff, Chairperson of the Assembly Committee on Water, Parks, and Wildlife, toward getting the best bill possible.

SWP Operations During the Year

Following one of the driest years of record during 1977, the wet year of 1978 was a welcome relief. The Project was able to meet all requests for entitlement water during the year. The Department delivered a total of 1 962 299 cubic dekametres (1,590,838 acre-feet) through Project facilities during the year, which includes many various categories of water as shown in Table 3.

Figure *c* shows cumulative natural runoff to Shasta and Oroville reservoirs for the last three years, runoff in the basins for 1923-24, and a multiyear average for the basins. The above-average runoff in northern California during the early months of 1978 allowed a quick recovery of water storage in the State Water Project reservoirs. Storage at the end of 1977 had reached the lowest levels since the initial filling of the reservoirs. The precipitation as a percentage of normal during water year 1977-78 is shown in Figure *d* (a water year begins October 1 and extends through September 30 of the following year). Most of the State received above-normal rainfall during the year.

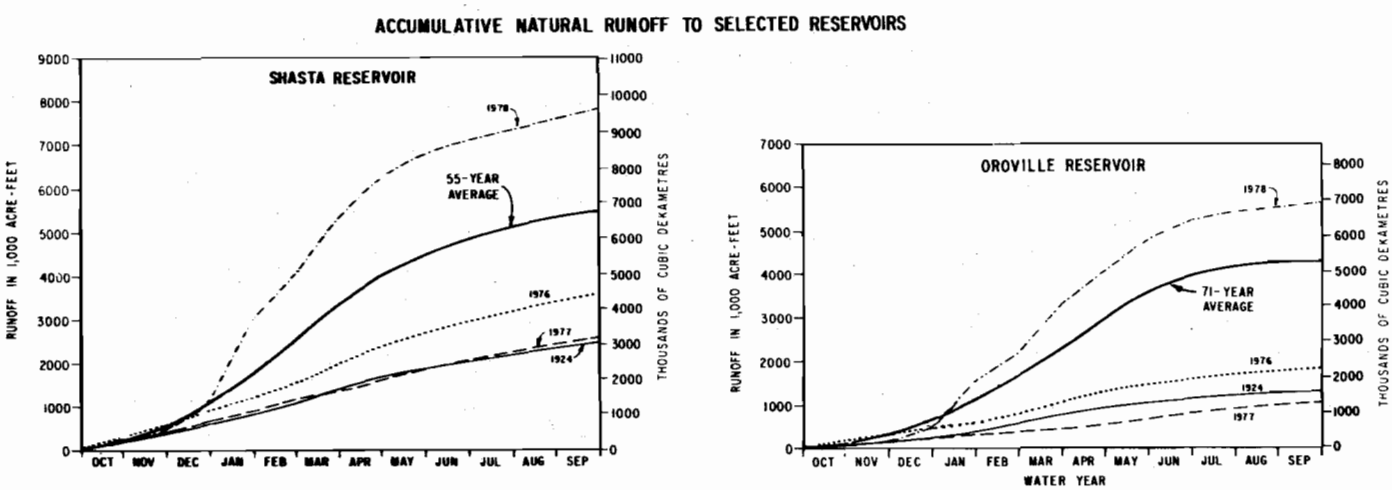


Figure *c*

WATER YEAR PRECIPITATION IN PERCENT OF NORMAL
OCTOBER 1, 1977 - SEPTEMBER 30, 1978

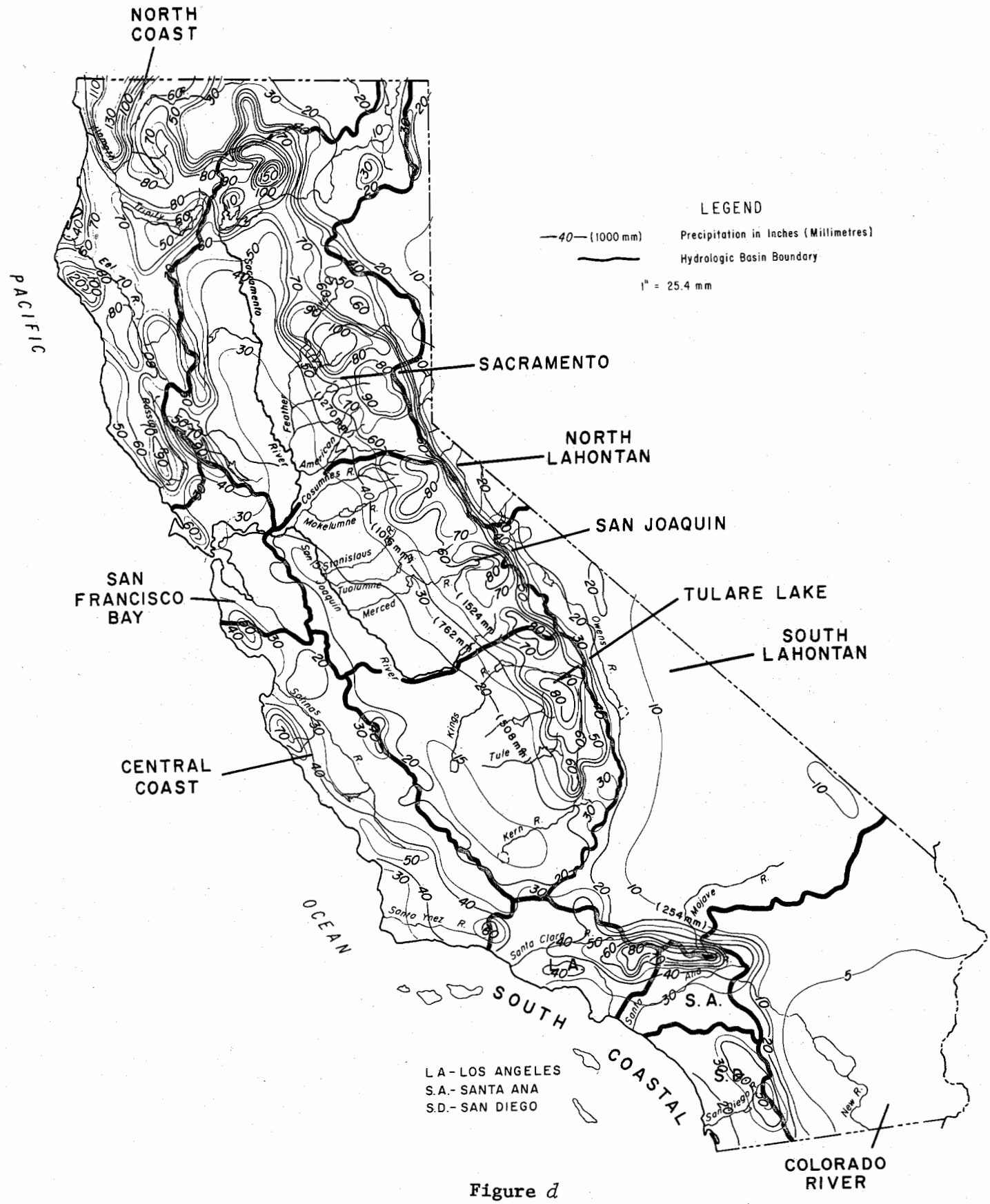


Figure *d*

Figure *e* illustrates the storage in Oroville and San Luis reservoir during 1978. Overall, storage in the Project's seven major reservoirs increased almost 3 566 000 cubic dekametres (2,891,000 acre-feet) during the 1977-78 water year. Included in this amount was 168 037 cubic dekametres (132,287 acre-feet) of flood runoff waters originating south of the Tehachapi. In March 1978 the SWRCB granted the Department a temporary water rights permit, for 1978 only, to divert flood runoff waters from Piru Creek, through the Angeles Tunnel and into Castaic Lake for storage providing the water would have been lost to existing beneficial use if it were not diverted into storage.

This September 30, 1978, storage was higher than the beginning of any previous water year since 1973, the initial storage year for Lake Perris. The following table shows the storage in the SWP's seven major reservoirs on September 30, the beginning of each water year.

SWP Major Reservoir Total Storage
on September 30 of the following years

Year	Cubic Dekametres	Acre-feet
1978	5 404 000	4,381,000
1977	1 838 000	1,490,000
1976	3 564 000	2,889,000
1975	4 973 000	4,032,000
1974	4 917 000	3,986,000
1973	4 849 000	3,931,000

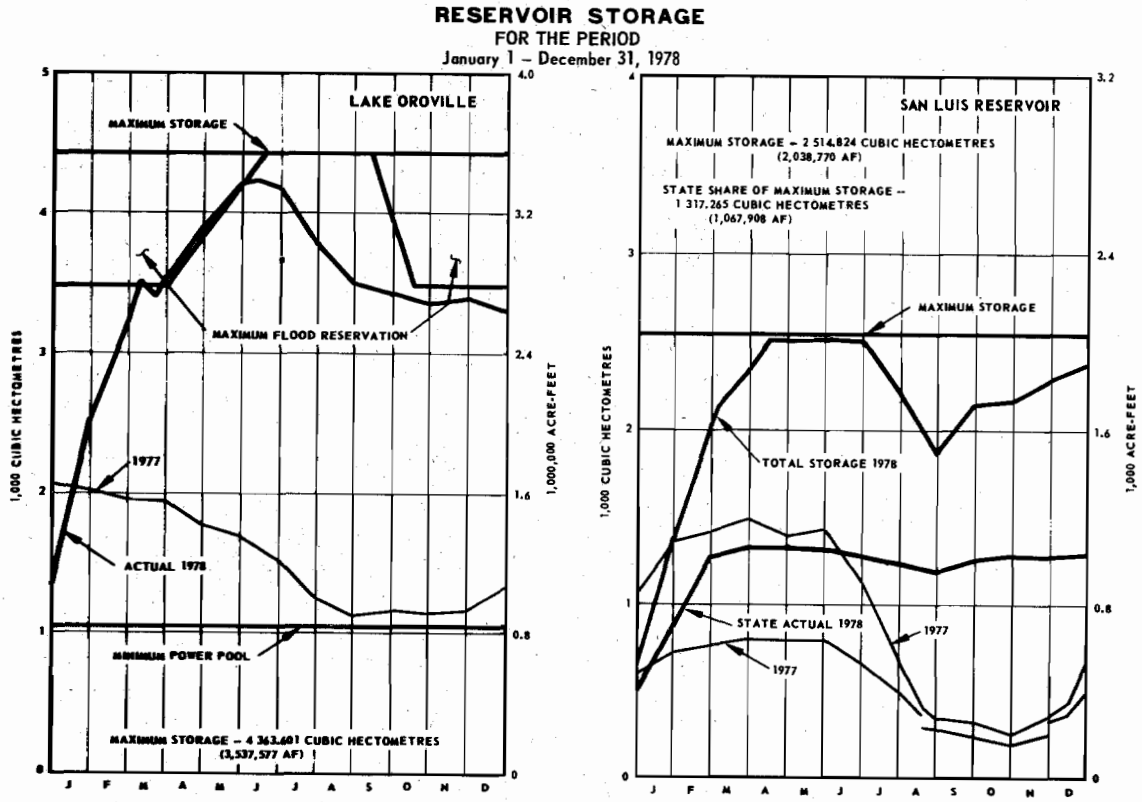


Figure *e*

As mentioned in Bulletin 132-78 (page 16) during December 1977, the Department had negotiated for additional water exchanges for 1978 in anticipation of 1978 also being a dry year. In January 1978, The Metropolitan Water District of Southern California (MWD) pumped 37 005 cubic dekametres (30,000 acre-feet) of water from the Colorado River under terms of the 1978 exchange agreement with the Department of Water Resources. Since the water supply picture had changed dramatically in January and February 1978, the water exchanges were no longer necessary, and the exchanges were cancelled except for the amount pumped from the Colorado River during January. This resulted in a situation in which the Project had incurred costs of pumping Colorado River water but had no committed purchasers of the water. The final disposition of this water was arrived at in December 1978, when Kern County Water Agency (KCWA) and Dudley Ridge Water District (DRWD) agreed to purchase 30 837 cubic dekametres (25,000 acre-feet) and 6 168 cubic dekametres (5,000 acre-feet), respectively. These agreements provide that the water will be delivered prior to March 31, 1983 on a schedule mutually agreed on by the agencies and the Department. In the meantime, MWD has agreed to store the water within its service area, where it can be substituted for entitlement deliveries to MWD from the SWP and an equal amount of water scheduled for MWD delivered to KCWA or DRWD when they request delivery of such water. Again, as in 1976 and 1977, the Pacific Gas and Electric Company, Southern California Edison Company and San Diego Gas and Electric Company provided a portion of the power required to pump the exchange water from the Colorado River, at rates similar to those under the Suppliers Contract.

Another effort to increase water supply during 1978 was an attempt to increase both precipitation and snowpack in the Sacramento and Feather River watersheds by cloud seeding. This was an emergency program to be terminated if precipitation returned to normal. The cloud seeding operation was carried out for only six days during January and February. On the basis of the February 1, 1978 snow survey, it was forecast that all of the major reservoirs would fill; therefore, the program was cancelled.

The Kern River Intertie, a U. S. Corps of Engineers project constructed in 1976 (see Bulletin 132-77, page 24), was used to divert floodwaters into the California Aqueduct for the first time during 1978. Diversion of floodwaters was used for deliveries and storage downstream. As the diversion continued, however, it became apparent that the Project would be unable to utilize a sufficient amount to prevent flooding in Buena Vista and Tulare Lakes because of the lack of storage space and delivery requests downstream from the Intertie. To further maximize the use of the Intertie, the Department negotiated two agreements to make beneficial use of the increased supply to the Project.

- The Delta Lands Reclamation District No. 770, located in Corcoran, California, installed temporary pumps at two check structures in the California Aqueduct upstream of the Intertie and pumped water back upstream. These pumps allowed flood waters to be used for additional Project deliveries as far north as the Coastal Branch. These additional deliveries would not have been possible within the operating capability of the California Aqueduct without the pumps. The District paid all costs incurred and benefited from the program by not having the floodwater damage farmland within the District. This

operation allowed nearly 22 200 cubic dekametres (18,000 acre-feet) of such deliveries upstream of the Intertie.

- MWD agreed to reduce its diversion of Colorado River water in exchange for an equivalent increased supply from the SWP. The additional cost as a result of the exchange was paid by the Delta Lands Reclamation District No. 770. Again, the Reclamation District benefited by not having the floodwater damage farmland within the District. This agreement allowed 56 243 cubic dekametres (42,596 acre-feet) of additional water to be delivered to MWD from the SWP.

A total of 219 478 cubic dekametres (177,931 acre-feet) of floodwater was diverted through the Intertie during 1978 for use within SWP.

The operation of the Kern River Intertie during 1978 once again demonstrated the flexibility of the SWP and the resulting benefits that can be derived by cooperation between the State and local water entities.

The development of a decision tool to forecast water deliveries for the next operational year was described in Bulletin 132-78, pages 15 and 16. The operational criteria developed was to relate project storage and projected precipitation to contractor requests for the next year. Generally the procedure follows that after the initial schedule is approved in December, based on a conservative projection of runoff, actual reservoir storage and snowpack conditions are reviewed on the first of the following several months and a revised estimate of project water availability is made. If it is determined that the available supply will be greater than previously estimated, scheduled deliveries are increased.

The basic purpose of the decision tool is to insure that there will be sufficient water to meet both quality requirements in the Delta, exports during the year, and to end the year with water in storage which is available for entitlement deliveries during the following year.

In the latter part of 1978, operational criteria were developed for 1979 and were distributed to the SWP contractors and others interested for review. At the request of the contractors, in addition to announcing the projected 1979 deliveries based on known precipitation and existing project storage, the Department also made forecasts for the upcoming months based on probabilities of 99 percent, 90 percent, 75 percent, and 50 percent that the forecast would be exceeded. (The approved delivery each month is based on a 99 percent probability).

With respect to water supply forecasting techniques, the Department had contracted with engineering consultants, Sierra Hydrotech, to recommend possible improvements in the Department's procedures. The Sierra Hydrotech report was received in the latter part of 1977. The consultants made three recommendations as follows:

1. That an assessment be made, and forecast procedures developed and upgraded to meet specific operational needs of the SWP.

2. That improvements be made in water supply techniques and methodology to expand our forecasting products and services to meet the public's needs for information.

3. That the Department's forecasting staff be reinforced to both update and provide continuation of our forecast services and products.

Regarding the first recommendation, the Department will develop a procedure to convert forecasts of natural Feather

River runoff -- unimpaired by physical works or diversions - to forecasts of actual (impaired) inflow to Lake Oroville. However, to do this, the SWP operational criteria for upper Feather reservoirs, in addition to Pacific Gas and Electric Company's operational criteria for its facilities on the Feather River must be taken into account.

The Department will make improvements to increase our forecasting flexibility including making forecasts:

- At various times, other than monthly;
- For various time periods, other than for April through July; and
- With additional probability alternatives, other than 10 and 90 percent.

In addition, the Department will determine the remaining volume in the snowpack at various times during the snowmelt-runoff period and will improve procedures for forecasting extreme years, such as 1977 drought conditions.

Some of the work included in Sierra Hydrotech's report was underway when we received the recommendations. That work can be done with present staff and within budgeted funds. However, the Department's staff would have to be augmented to improve time-distribution of runoff measurements and forecasts of remaining-snowpack volume.

As mentioned previously, 1978 brought relief from the drought experienced in 1976-77; however, weather actions still caused problems to operations of the SWP. An intensive dust storm with winds from 120 to 160 kilometres per hour (75-100 mph) in the San Joaquin Valley during late December 1977 necessitated an extensive cleanup of the damage which extended into 1978. Then, in mid-February 1978, heavy rains hit the San Joaquin Valley and Southern California, and the Department was beset with flood problems. Damage was so extensive that these areas south of the Kings-Kern County line were declared disaster areas by the Governor. The Department applied for Federal Flood Disaster funds for reimbursement of the repair work. $897,250 was received as partial payment. The Department expects an additional $234,250 to be forthcoming in 1979. The $1,131,500 constitutes 75 percent of the total amount applied for by the Department. The remaining 25 percent will be received upon inspection, audit and approval by the federal government. Some examples of the damage were:

- Extensive mud flows piled up against protective dikes in numerous locations along the uphill side of the California Aqueduct in the San Joaquin Field Division. The mud flows prevented runoff from reaching cross-drainage structures and resulted in subsidence, ponding, and deposits of many thousands of cubic metres of material within the Project right of way.
- Mud and water flowed into the approach canal to Las Perillas Pumping Plant, undermining the concrete lining and causing several panels to fail. Due to this, the Coastal Branch had to be shut down until March 20.
- Slides, erosion, and plugging of cross-drainage structures caused the shutdown of both the East and West Branches of the Southern Field Division for a short time.
- Downstream of Pearblossom Pumping Plant on the East Branch, a large washout of a county road deposited between 11 500 and 15 300 cubic metres (15,000 and 20,000 cubic yards) of material in Pool 60. The Department issued an emergency contract, and the material was removed by March 12.

This damage, plus other flood related damage kept the maintenance crews in the San Joaquin and Southern Field Divisions very busy well into March.

Overall, the Project was able to operate to meet necessary deliveries and to provide a valuable service by taking flood waters into the aqueduct from water-distressed areas and conveying it to areas where it could be stored or used beneficially.

In March 1978 the State Water Resources Control Board granted the Department a temporary permit to divert up to 123 335 cubic dekametres (100,000 acre-feet) of flood runoff from Piru Creek through the Angeles Tunnel into Castaic Lake storage. The water would have been lost to existing beneficial use if it were not diverted into storage. The Department actually diverted 52 796 cubic dekametres (42,802 acre-feet) of flood runoff during February, March and April from Piru Creek to Castaic Lake and also stored approximately 36 440 cubic dekametres (29,540 acre-feet) of Piru Creek water in Pyramid Lake. During the same period, approximately 131 600 cubic dekametres (106,688 acre-feet) of flood runoff from the Castaic Creek watershed was stored in Castaic Lake.

In May an agreement was arranged with United Water Conservation District for release of stored water from the West Branch reservoirs. The water provided a summertime supply for water users downstream from Castaic and Pyramid Lakes.

A total of 37,000 cubic dekametres (30,000 acre-feet) was released to United through October 1978, 25 900 dekametres (2,100 acre-feet) from Castaic Lake storage and 11 100 cubic dekametres (9,000 acre-feet) from Pyramid Lake.

In an agreement executed in December, the Department, the County of Los Angeles, the Newhall County Water District, the United Water Conservation District and the Newhall Land and Farming Company agreed on a program to conserve local floodflows in Castaic Lake. The operating procedures in the 50-year agreement were designed to conserve the maximum amount of water not only in the Castaic Creek watershed but in the Santa Clara River as a whole.

Under the 50-year agreement, floodflows originating in the Castaic watershed would be stored. Regulated releases would be made to downstream users and, above their needs, the floodflows will become the property of the SWP.

In late December 1977, early winter storms brought above average quantities of water to the Delta. The USBR began having difficulty at the O'Neill Pumping Plant inlet when tumbleweeds began restricting their ability to pump their share of Delta water. To assist the Bureau in recovery of storage depleted by the drought, the SWP Delta Pumping Plant pumped 26 690 cubic dekametres (21,638 acre-feet) for the Bureau. The SWP pumped during on-peak power periods and the Bureau provided all of the power for the pumping.

In August 1978, a crop dusting plane had an engine failure near the aqueduct north of Kettleman City. The pilot attemped to land on the aqueduct access road, but the plane went out of control after touching ground and came to rest upside down in the aqueduct. Within an hour of the crash, Pool 21 was isolated, deliveries from the pool were halted, and deliveries below the pool were curtailed to maintain the integrity of the aqueduct. The plane was carrying moderately toxic insecticides and while the plane was being removed from the aqueduct, some of the mixture spilled into the aqueduct. However, the State Department of Health Services officials in Fresno judged that the degree of contamination was not a health hazard, and

flow in the aqueduct was resumed. As a precautionary measure, the Department advised customers taking water for domestic use not to resume delivery until after the contaminated water had passed their diversion point. Customers farther south were also advised to curtail domestic deliveries during the period the contaminated water was expected to pass their area. The Department monitored the dilution of the contaminated water until it was fully dispersed.

Also on the subject of chemicals, in the latter part of 1978, the Director of the Department of Water Resources established a task force to develop methods for replacing chemicals used by the Department as pesticides and for weed control on SWP system levees to minimize any potential detrimental effect on the environment. The Director has prohibited use of some chemicals (Amitrole, Cacodylic Acid, MSMA, Chlordane) and will consider whether more need be added to the prohibited list during 1979. The task force will meet with independent consultants regarding rodenticides, herbicides, insecticides, and biological control measures.

In January 1978, the Director requested the Department staff to develop an energy conservation program that would reduce the demand on existing energy supplies by 25 percent or more at Department facilities. The program was developed and is being implemented to conserve energy in the existing installations. Those same energy conservation principles are being used in the design of new facilities. The program includes such concepts as the use of the computer control of large heating and air conditioning complexes and the use of alternative energy sources, such as solar and wind power, to replace or supplement energy now supplied by hydro and fossil, nuclear, and geothermal fuels.

State Water Resources Control Board Actions

The SWRCB played an important role during the drought year of 1977 and early 1978. The Board modified the Delta water quality objectives twice during 1977, once on February 8 and again on June 2. The modifications adjusted the water quality in the Delta to reflect the effect of the drought so that all users would receive appropriate quantities (also see Bulletin 132-78, pages 6-9).

On December 15, 1977 the SWRCB amended its emergency regulations for conservation of water supplies and protection of the Sacramento-San Joaquin Delta water quality. The December amendment extended the emergency regulations into 1978 and rescinded the February "Interim Water Quality Control Plan for 1977".

These amended regulations further modified the restriction on storage in San Luis Reservoir, from 370 000 cubic dekametres (300,000 AF) to 617 000 cubic dekametres (500,000 AF), and on export of excess uncontrolled Delta flows when specifically relaxed water quality objectives of applicable SWRCB Basin Plans adopted in August 1975 were being met.

Following the storms of December 1977 and January 1978, the water supply situation improved, and the emergency regulations were lifted on February 9, 1978. This action reverted the SWP to operation under the unmodified water quality objectives of the August 1975 SWRCB Basin Plans.

Since November 1976 the SWRCB had been conducting hearings and formulating revisions to Decision 1379 (see Bulletin 132-77 page 12 and Bulletin 132-78 page 17). On March 15, 1976 the SWRCB released its draft revised

Basin Plan along with a draft environmental impact report. On June 15, 1978, final written comments by the Department on the draft revised Basin Plan were forwarded to the SWRCB. On August 16, 1978 the Board adopted a Basin Plan for the Delta, substantially along the lines described for the draft plan, but which recognized and affirmed many of the comments raised by the Department. The adopted Basin Plan served as the basis for modification of terms and conditions in the water rights permits for the SWP and the federal CVP through water right Decision 1485, which was adopted concurrently with the new plan.

The most significant point is that the plan takes into account the variations in water year types (i.e., "wet", "above normal", "below normal", "dry", and "critical") based on the unimpaired flows from the four major basins in the Sacramento Valley. Previously, year types were determined solely on the basis of unimpaired inflow to Shasta Reservoir. It recognizes that in "wet" years the Delta has a greater availability of better quality water and that the projects have greater flexibility to provide such conditions. During water-short years, it recognizes that the Delta entitlement is lower and Project flexibility is at a minimum. As conditions become increasingly dry, the plan and water right standards are progressively less stringent. This sliding scale is applied to the municipal, industrial, agricultural, and fish and wildlife uses in the Delta. Another important revision was the adoption of standards for fishery protection contained in the draft Four Agency Fish Agreement.

Shortly after D 1485 was issued by the SWRCB, several lawsuits were filed challenging the decision, the adequacy of the EIR prepared for the revised Basin Plan and the water rights decision, and the water quality standards themselves, which were contained in both Board actions. These lawsuits are discussed in the litigation section.

On November 13, 1978, the United States filed a petition against the SWRCB in Sacramento Superior Court (No. 277544). This is a petition for judicial review of SWRCB Decision 1485 and revised water quality control plan for the Delta and Suisun Marsh. The Department of Water Resources intervened on November 21, 1978 and The Metropolitan Water District of Southern California intervened on December 28, 1978. The Attorney General requested coordination with the seven other cases for review of D 1379 and six EIR cases.

State-Federal Water Activities

The SWP and the CVP have been operated annually under terms of interim letter agreements since January 9, 1968. Currently, the projects are operating under a draft agreement entitled "Supplemental Agreement Between the United States of America and the State of California for Coordinated Operation of the Central Valley Project and the State Water Project", dated May 13, 1971. The annual letter agreements provide that the projects will operate as though the 1971 supplemental agreement had been executed except for agreed upon specific modifications. The annual letter for operational year 1978, dated December 28, 1977, had one such modification. At that time the drought was still continuing and in recognition of this the State and USBR agreed that any water conserved as the result of specific operational changes would be shared in accordance with the provisions of the 1971 draft agreement.

One of the most important events during 1978 which will have an effect on the SWP was the Supreme Court decision in California vs. United States. The following statement was made by Department Director Ronald B. Robie to the California Water Commission on July 7, 1978:

"As you know,on July 3 the United States Supreme Court decided California v. United States in the State's favor. Justice Rehnquist wrote the decision for the six member majority (Rehnquist, Burger, Blackman, Stevens, Stewart, and Powell). A dissent was filed by Justice White (joined in by Justices Brennan and Marshall).

"Governor Brown termed the Supreme Court's action, 'a landmark decision that vindicates the rights of the State to preserve and protect its water resources. California can now protect our water quality and make wise decisions regarding our rivers, streams, lakes and watersheds in a way that will serve not only this generation, but many generations to come.

"California v. United States was filed by the United States. A little background probably is in order. I was fortunate enough to be in Washington during March when this case was argued before the Supreme Court and an interesting question was asked with regard to past practices of the Bureau of Reclamation. The attorney for the government commented that the Federal Government had always gone along with decisions of State agencies in terms of water rights. One of the justices pointed out the fact that as long as the permit terms were agreeable to the Bureau, it complied. The federal policy was really a question of 'if the shoe pinches there is going to be an ouch.'

"What we really had in the history of American western water development during the last seventy-five years is that none of the permit terms pinched in most of the earlier years, and therefore there was no conflict. Then, beginning in the early 60s, the State of California began to apply permit terms that were objected to by the Federal Government. While attention has been drawn to the more recent D-1379 of the State Water Resources Control Board, which was issued in 1971, the major conflict between the State and Federal Governments surfaced in 1961 in D-990, which was the major water rights decision on the Central Valley Project and granted permits for Shasta Dam. At that time, the Water Rights Board, by 2 to 1 vote, held that salinity control in the Delta was a project obligation and that authority existed for the State to impose terms on the Federal Government for that purpose. Decision 990 did not set forth specific outflow requirements, but reserved jurisdiction which was not exercised until D-1379, ten years later. So this court case culminates at least a 20-year controversy.

"Now, with regard to the selection of the case, there were several State Board decisions that the Federal Government disagreed with, beginning with D-1379 in 1971. D-1400 followed in 1972 relating to minimum flows in the American River downstream from Auburn Dam. There also was a decision that most people are not aware of, D-1408, concerning the federally constructed Buchanan Dam on the Chowchilla River, which in many respects is a very significant decision by the Board. In effect, it said that Chowchilla Irrigation District could not use the water from Buchanan Dam to increase its service area until ground water levels within the existing service area were restored non-overdraft conditions. All these were challenged in court by various parties. The Federal Government relied on its allies, its water contractors, to bring such lawsuits.

"Then came the New Melones decision, D-1422, in which the Board established conditions for filling and

utilizing New Melones Reservoir. The State of California, through the State Water Resources Control Board, filed the first lawsuit, a request for a declaratory judgment on the whole issue of Section 8 of the Reclamation Act. The Federal Government, however, determined it would sue the State, so it filed what has become California v. United States. It selected New Melones as presenting the best issue to go to the Supreme Court from the federal viewpoint.

"Federal officials were frankly concerned that the State's case, which covered the whole spectrum of State water rights decisions, would not be as favorable to the government. They picked the case they thought had the best facts. They asked the federal court to consider the government's case, and it agreed to set aside all the other cases while it was being litigated.

"The decision revolves around Section 8 of the Reclamation Act of 1902 which says, 'nothing in this Act shall be construed as affecting or intending to affect or to in any way interfere with the laws of any State or Territory,' and these are the key words, 'relating to the control, appropriation, use, or distribution of water used in irrigation, or any vested right acquired thereunder, and the Secretary of the Interior, in carrying out the provisions of this Act, shall proceed in conformity with such laws . . .' That fairly simple English says that in carrying out the provisions of the Reclamation Act, the Secretary shall proceed in conformity with the law of the State. However, in a series of decisions in the 50s and through the 60s, the United States Supreme Court read those words as not meaning flatly what they say. As a result, there was considerable doubt, and I shared that doubt, as to whether the State could prevail, because while the words seem clear to us as lay people reading them, the Court's interpretations of the language established a precedent favoring federal preeminence. What the Supreme Court did in Justice Rehnquist's opinion was to go back to the history of Section 8. It went through great detail, over the background, and the argument and debate over that section. This was one of the principal California arguments to the court in contending that the Act required the Bureau to comply with State water law. It may be true that State water laws were different in those days, and the impact may be different today because of what has developed; but the law is still the law. Nobody has changed the law, and it should have the same meaning it had then. So, in essence, the Supreme Court of the United States has confirmed that the law meant what it said.

"In remanding the case to the Court of Appeals, the Supreme Court specifically said that the cases of Ivanhoe Irrigation District v. McCracken, City of Fresno v. California and Arizona v. California were not to be guides in reconsidering the matter remaining before the Court.

"Those were cases that dealt with the contracting authority of the Secretary of the Interior. However, they included statements that Section 8 did not subject distribution of water by the Bureau to State law and that State law did not restrict the Bureau's power of eminent domain with regard to water rights. The Court has not held that these statements were dicta; that is, they were not necessary in making the earlier decision. These decisions never ruled directly on the point, however, so the Court was not overruling any particular past decisions, it was merely disavowing language previously used. As a result, Justice Rehnquist

and the court majority did something very fortunate by referring to the unncessary language in the earlier cases and saying 'ignore them in the future--they are not the law.' That holding improves the prospect for the State in future litigation.

"The State of California, in presenting its case, emphasized that the law involved is a statute. We are not dealing with the Constitution; Congress can change the statutes. The Federal Government must comply with State water rights permit terms unless there is a clear Congressional directive otherwise.

"The final conclusion of the Court is that because the District Court and the Court of Appeals both held that California could not impose any conditions whatever on the United States' water rights permits, these courts did not reach the contention that conditions actually imposed are inconsistent with Congressional directives, nor did they consider California's contention that it is too late for the Bureau to question the conditions.

"The Supreme Court reversed the judgment and ordered the lower courts to proceed in accordance with the decision. The Court said it accepts California's position that as long as there is no clear Congressional directive to the contrary, then State permit conditions shall apply.

"There is one other issue in the case. A similar situation came up in the case of Environmental Protection Agency v. California, which was decided by the Supreme Court more than two years ago. The issue was whether federal dischargers had to obtain a waste discharge permit from the State--EPA argued that the Government had to go with the substance of State law, but not the form, and that the EPA should issue permits for federal dischargers. That is a terrible concept because it means the Government can then decide what the State would have done, had the State done it. Justice Rehnquist said here that the Legislative history of the Reclamation Act makes it abundantly clear that Congress intends to defer to the substance as well as to the form of State water law. The Bureau must come and get a permit. If the Bureau does not like a decision of the Board, it can chalenge it in court. The Bureau could argue that the decision conflicts with Congressional directives or, like any other permittee, could assert that the Board acted improperly.

"California v. United States is a very fine decision; it certainly didn't weasel. In my opinion, California won a great victory. I was very pleased with it. The statement of Interior Solicitor Krulitz on July 6, 1978 was that he hopes the Department can work matters out with the State rather than litigate. There are questions that can be raised on the American River decision, or any other decision for that matter, as to whether there is any conflict with Congressional directives. The permit conditions could be accepted by the Federal Government, or they could be challenged. I have very little confidence in the bureaucracy of the Bureau of Reclamation. The lawyers, particularly in the Regional Solicitor's Office, have fought us every step of the way. They went so far as to initially refuse participation in SWRCB hearings. My impression is, based upon earlier meetings with the Bureau's staff, that they will do their best to make this decision ineffective. I think there is a real challenge to have the Federal Government show it has good faith and is willing to comply with California law. We will, of course, want to sit down with federal officials to

see if there are any obvious conflicts between any of the decisions the SWRCB has issued and the Congressional directives. But any attempt to interpret Congressional directives to write California out of the picture would be unwarranted and as a matter of policy, bad practice.

"Section 1258 of the Water Code authorizes the SWRCB to subject water rights permits to water quality standards established in water quality control plans. SWRCB has now issued its decision establishing identical standards in DWR and USBR permits as in the water quality control plans. Under the Supreme Court decision,[6/] these permit conditions will be binding on the Bureau."

Another lawsuit was started in November 13, 1978, when the U. S. Department of Interior petitioned the California Superior Court to review the standards the SWRCB seeks to impose on operation of the Federal CVP for water quality protection in the Delta. Interior Secretary Cecil D. Andrus stated that the petition for review is a "friendly California action" and is only a formal step to protect the Department of Interior's legal position. This action is discussed further in the Litigation Section of Chapter 1.

On January 3, 1979 Secretary Andrus announced that the CVP will be operated to meet the SWRCB water quality standard D-1485 until the legal question of mandatory federal compliance is resolved by the Congress or the Courts. This is regarded as a historic decision which will mean the SWP and the CVP will be operated under identical standards. However, the announcement did not call for a complete commitment to the protection of the Delta because the federal government did not promise to meet state water quality standards during a severe 1977 type drought. Secretary Andrus said the decision would extend to all years -- normal, dry and critical -- with the only exception being in years of extraordinary drought such as 1977. In such years, which occur very infrequently, the Secretary will reserve the right to reevaluate his commitment to meet standards when it becomes apparent that severe drought will have a substantial adverse impact on project operations.

On February 7, 1979 the Department and the USBR signed the annual letter of agreement for coordinated operation of the Central Valley Project and the State Water Project. The letter stated that the agencies agree to operate to meet all conditions of SWRCB Decision 1485 in the Delta for 1979.

On December 13, 1978 USBR announced that the annual yield of the CVP is nearly 1.64 million cubic dekametres (1.33 million acre-feet) less than had previously been assumed. The USBR said the project yield for the "intergrated facilities" in northern California and the San Joaquin Valley west side (the east side's Friant Dam, Madera and Friant-Kern Canals are hydraulically separate) is now assumed to be about 9.77 million cubic dekametres (7.92 million acre-feet) compared to a previous yield of 11.41 million cubic dekametres (9.25 million acre-feet). Previous USBR assumptions were based on Auburn Dam and the Peripheral Canal being operational by 1985 and on a lower amount of Delta outflow required to meet water quality requirements in the Delta. This analysis, for the first time, realistically pictures the CVP water supply. The Department and the SWRCB have not agreed with the USBR previously

6/ California v. U. S. - U.S.L.W. 4997 (July 3, 1978)

as to the firm yield estimates of the CVP. The analysis, together with the dedication of USBR supplies to Delta water quality, makes it obvious that the USBR needs, and should continue efforts to complete, the Peripheral Canal and other potential joint use facilities outside the Delta to meet water export needs of the SWP and CVP through the year 2000.

One of the potential facilities outside the Delta that can increase the exportable water supply is the enlargement of Shasta Reservoir. The Department has expressed willingness to participate in studies of the feasibility of this reservoir enlargement. In a December 22, 1978 letter to B. E. Martin, Regional Director of the Bureau of Reclamation, R. B. Robie, Department Director, stated:

> "It is my view that the Shasta investigation should move forward as a cooperative Federal-State endeavor, and the Department is willing to participate in the investigation and to share in its cost subject to the terms set forth in this letter."

The terms to which Department Director Robie referred are as follows:

> "First, I must have assurance that the Shasta study will not be undertaken at the expense of the effort required to obtain federal authorization of the Peripheral Canal which I consider the essential next feature for both the State Water Project and Central Valley Project. . .
>
> "The other issue that must be resolved is cost-sharing for the Four-Agency Delta Study. As I have said before, California is willing to join in funding for the Shasta investigation but we cannot provide such funding until USBR agrees to budget its fair share of Four-Agency Delta Study costs. I feel strongly about this matter and suggest that these costs be included as part of the funding request for the Peripheral Canal studies."

Another area of proposed cooperation with the federal governement to provide new water supplies is in a desalting demonstration plant program. In a letter to the Office of Water Research and Technology (OWRT), Department of Interior dated October 30, 1979, Director Robie stated:

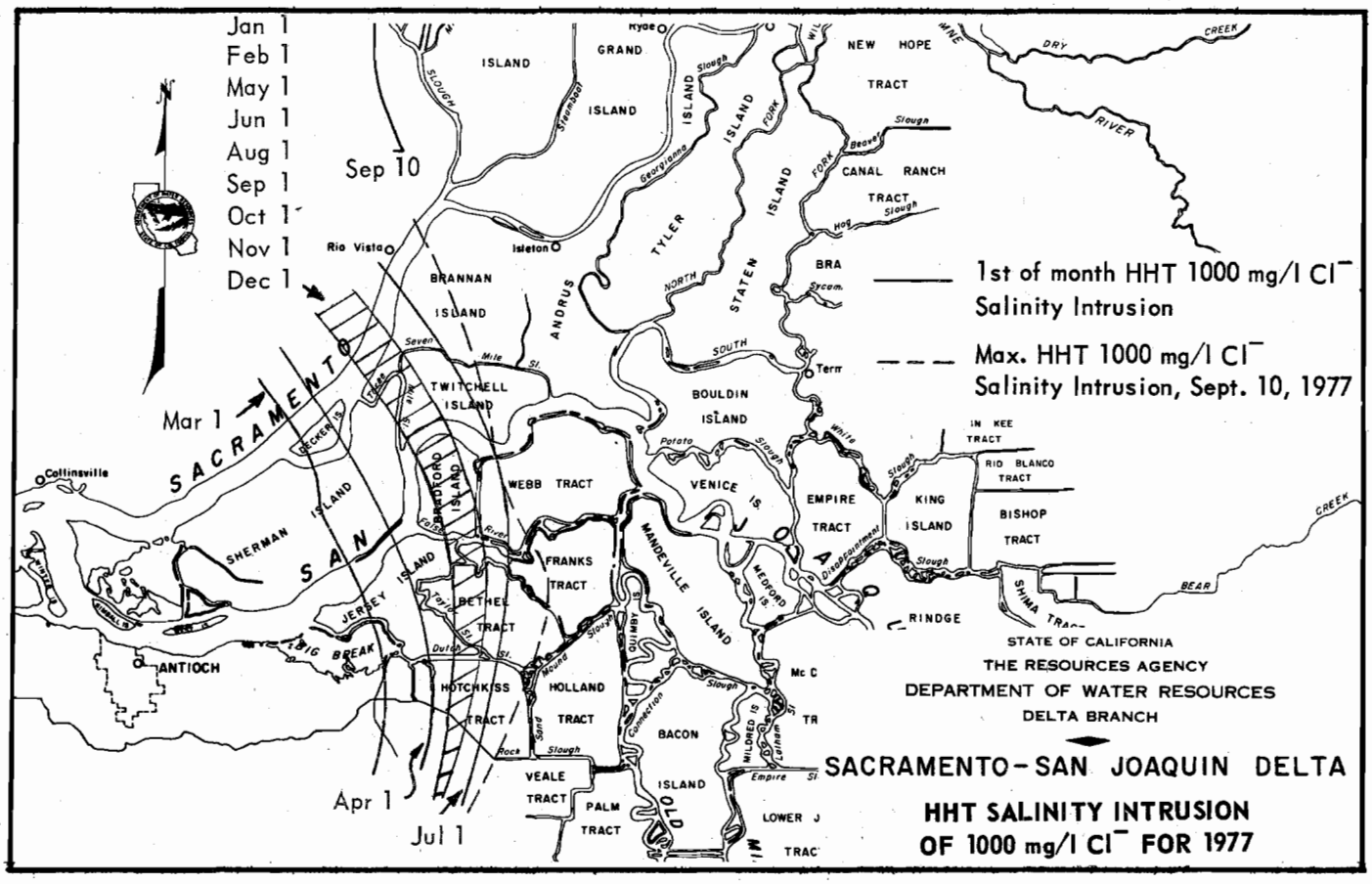
> "We have a strong interest in participating with you in the demonstration desalting plant program. As you finalize your selection of participants in the demonstration program, we would be pleased to discuss in more detail the role we might play as a contracting entity or participant in your demonstration plant program.
>
> "Before we can participate with OWRT in the operation of a desalting plant, we will have to obtain authorization from the California Legislature. In 1965, the Department of Water Resources was granted authority by the California Legislature through the Cobey-Porter Saline Water Conversion Law to cooperate with others, including the Federal Government, to make studies and evaluations in the field of saline water conversion. The law also requires specific authorization from the Legislature before our Department may cooperate with others, including the Federal Government, to finance, construct, and operate saline water conversion facilities. We will also need to know the intention of OWRT in financing the construction of the demonstration plant and the level of support for its operation and maintenance."

On June 6, 1978 President Carter sent his water policy to Congress. The President put forth a program which he said was designed to (1) improve federal planning and efficient management of water resources programs, (2) provide a new national emphasis on water

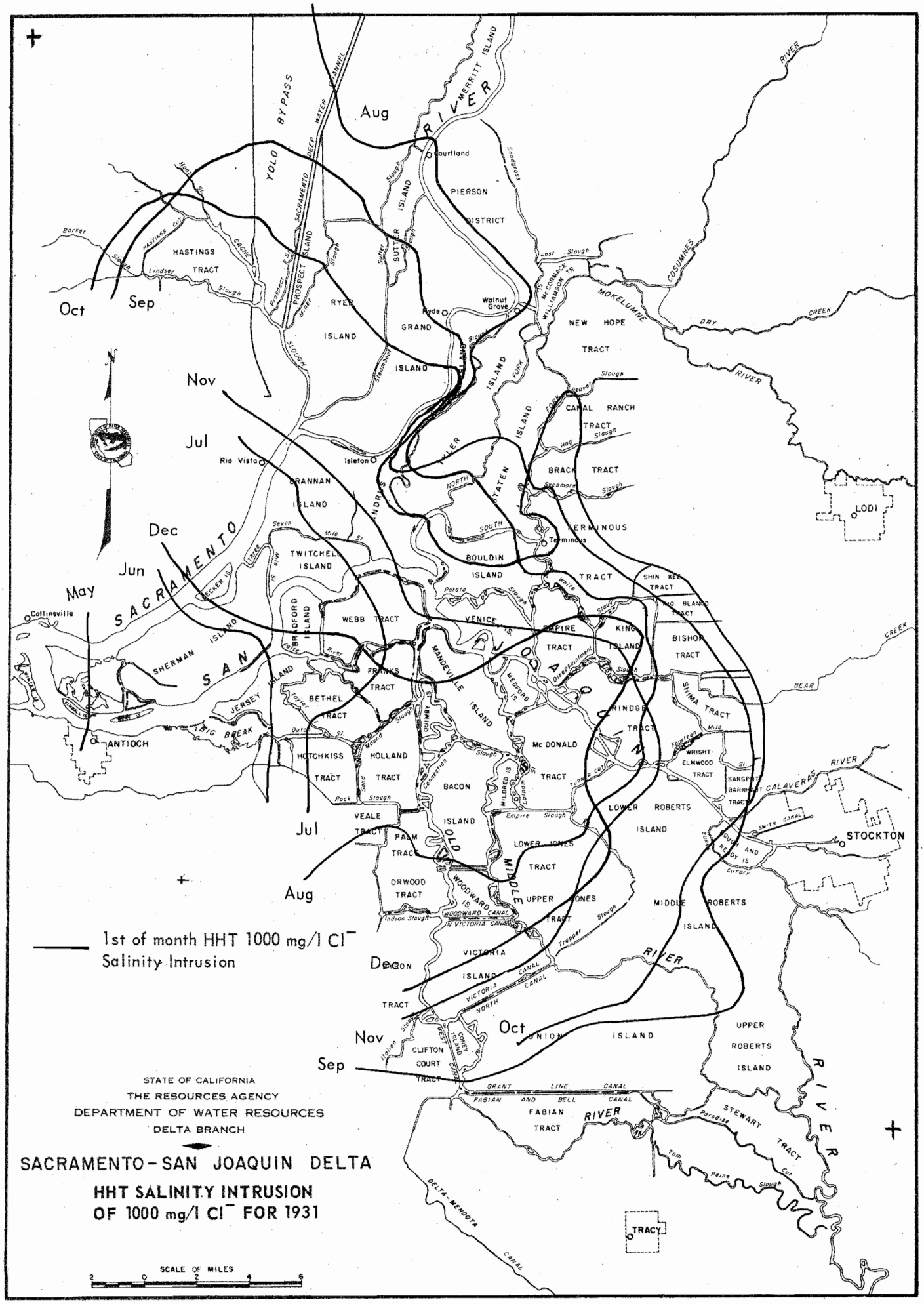
conservation, (3) enhance federal-state cooperation and improve state water resources planning, and (4) increase emphasis on environmental quality. The Department was pleased to see that the President placed such emphasis on water conservation at the federal level, since the Department has been a leader in calling for increased water conservation for several years. The Department is especially interested in specific plans to improve federal-state cooperation.

During the early part of 1978, the Department studied the economic value of Delta agriculture that would have been adversely affected by saline water had the CVP and SWP not been in operation during the 1977 drought. The estimate represented hypothetical Delta outflow and salinity conditions that would have prevailed with no water storage, releases, or exports by the projects assuming all other upstream water uses remained the same. This particular drought study did not distinguish between riparian and appropriative water rights.

The natural water supply available in 1977 was about 16 percent less than in 1931, but 1977 salinity conditions in the Delta (with current upstream development and CVP-SWP operation) were not as severe. This is illustrated on the two attached maps (Figures *f* and *g*) which show the monthly location of the high-tide salinity-intrusion line of 1 000 milligrams per litre (mg/l), or 1,000 parts per million (ppm), chlorides for 1931 and 1977, respectively.*

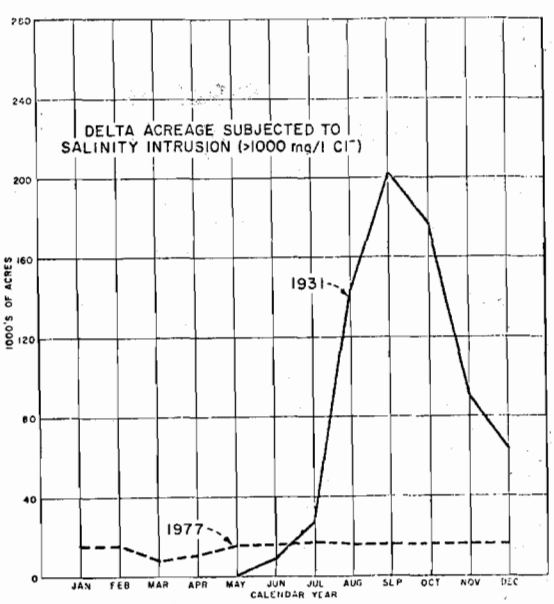


*Salinity at low tide would be much lower for both years, but the extent to which farmers limited their irrigation to low tide conditions in either 1931 and 1977 is unknown.


Aug
Oct
Sep
Nov
Jul
Dec
Jun
May
Jul
Aug
Dec
Nov
Sep
Oct
1st of month HHT 1000 mg/l Cl⁻
Salinity Intrusion
STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DELTA BRANCH
SACRAMENTO-SAN JOAQUIN DELTA
HHT SALINITY INTRUSION
OF 1000 mg/l Cl⁻ FOR 1931
SCALE OF MILES
2 0 2 4 6
SACRAMENTO RIVER
SAN JOAQUIN RIVER
OLD RIVER
MIDDLE RIVER
Courtland
Walnut Grove
Isleton
Rio Vista
Collinsville
ANTIOCH
STOCKTON
LODI
TRACY
PIERSON DISTRICT
HASTINGS TRACT
RYER ISLAND
GRAND ISLAND
NEW HOPE TRACT
CANAL RANCH TRACT
BRACK TRACT
TERMINOUS
BOULDIN ISLAND
TWITCHELL ISLAND
BRANNAN ISLAND
WEBB TRACT
VENICE ISLAND
EMPIRE TRACT
KING ISLAND
BISHOP TRACT
SHIN KEE TRACT
SHERMAN ISLAND
FRANKS TRACT
BETHEL TRACT
MANDEVILLE ISLAND
MEDFORD ISLAND
BRINGE TRACT
SHIMA TRACT
HOTCHKISS TRACT
HOLLAND TRACT
Mc DONALD TRACT
WRIGHT-ELMWOOD TRACT
BACON ISLAND
VEALE TRACT
PALM TRACT
LOWER ROBERTS ISLAND
LOWER JONES TRACT
ORWOOD TRACT
UPPER JONES TRACT
MIDDLE ROBERTS ISLAND
VICTORIA ISLAND
CLIFTON COURT TRACT
UNION ISLAND
UPPER ROBERTS ISLAND
FABIAN TRACT
STEWART TRACT
DELTA-MENDOTA CANAL
GRANT LINE CANAL
FABIAN AND BELL CANAL
WOODWARD CANAL
N VICTORIA CANAL
VICTORIA CANAL
NORTH VICTORIA CANAL
SMITH CANAL
DUCK AND GOOSE BAY IS
MOKELUMNE RIVER
COSUMNES RIVER
CALAVERAS RIVER
BEAR CREEK
DRY CREEK
YOLO BYPASS
DEEP WATER CHANNEL
SACRAMENTO SLOUGH
CACHE SLOUGH
HASTINGS CUT
Lindsey Slough
Barker Slough
Prospect Slough
Steamboat Slough
Sutter Slough
Snodgrass Slough
Lost Slough
Hog Slough
Beaver Slough
Sycamore Slough
Seven Mile Slough
Potato Slough
Disappointment Slough
Empire Slough
Tyler Island
Tyler Island
Staten Island
Andrus Island
Merritt Island
Mc Cormack Williamson Tr
Tubbs Cut
Trapper Slough
Paradise Cut
Paine Slough
Turner Cut
Indian Slough
Rock Slough
Old River
Connection Slough
Mildred Island
Bacon Island
Jones Tract
Jones Tract
Bacon Tract
Clifton Court Tract
Coney Island
West Canal
Fabian and Bell Canal
Grant Line Canal
Stewart Tract
Paradise Cut
Turner Cut
Paine Slough
Old River
Middle River
Sacramento River
San Joaquin River

The chart below shows that in 1931, 81 000 hectares (200,000 acres) of agricultural land was subjected to salinities of 1 000 mg/l chlorides or more at maximum intrusion; while in 1977, only about 8 900 hectares (22,000 acres) were similarly affected. It also shows that salinity intrusion in the western Delta started much earlier in the year in 1977 than 1931 which indicates that the affected area would have been much larger than 1931 without the operation of the storage projects.

According to the Department's 1943 Sacramento-San Joaquin Water Supervision Report, crop loss in the Delta in 1931 amounted to $1.3 million, a 5.3 percent reduction in gross income. Adjusted for inflation, the 1931 loss would be about $6.6 million in 1977 dollars. The crop loss in 1977 due to salinity was estimated to be $1.2 million, which represents a reduction in gross income of only 0.7 percent. By comparison, the 1931 loss was more than 5 to 7 times more severe than 1977. Without the upstream reservoir to provide a year-round supply to the Delta, the 1977 salinity intrusion and crop losses would obviously have been much more severe than in 1931.



Future Water Supply Plans

The Department is moving forward with its program to include water conservation and waste water reclamation as key components in its future water management plans. Implementation of the program will help stretch available supplies, will reduce demand on State resources and will provide additional time to develop the full yield of the State Water Project. The goals of the program, discussed in the Department's Bulletin 76, "Delta Water Facilities, are to reduce Delta exports by 740 000 cubic dekametres (600,000 acre-feet) per year by year 2000 from those amounts requested by water contractors in September 1977. In order to meet these goals water contractors will be expected to develop effective programs for both water conservation and waste water reclamation within their areas.

Figure *h* shows the Department's present plans for facilities in the Delta and for Additional Conservation Facilities. These facilities will develop future water supplies (yield) for SWP export. The total facilities, together with an effective ground water storage program and with implementation of water conservation and waste water reclamation programs, will provide yield for the SWP to meet water contractor demand estimates by year 2000.

From the chart, the staging (year) for initial operation of each facility, the amount of yield from each facility and the total SWP firm yield can be determined. The Department traditionally uses water conditions and hydrology information which occurred during the State's historical dry period, between 1928 and 1934, as measure for projecting yield from SWP facilities and in planning water supplies and operations. This means that if conditions which occurred during the historical dry period were repeated, the SWP would have water supplies available for export equal to those amounts shown by the "firm yield" curve on figure *h*.

Figure *h* also illustrates the accumulative total of SWP contractor requests for entitlement water as of September 1978 (Bulletin 132-79 curve), compared to total requests as of September 1977 (Bulletin 132-78 curve). The curve shows that under dry period conditions, the SWP would not be able to deliver entitlement requests after the early 1980's. The Department intends to meet contractual commitments for ultimate delivery of 4.23 million acre-feet annually. This total amount, originally scheduled for delivery in 1990, may not be required until well past the year 2000 and construction of additional facilities may be delayed accordingly.

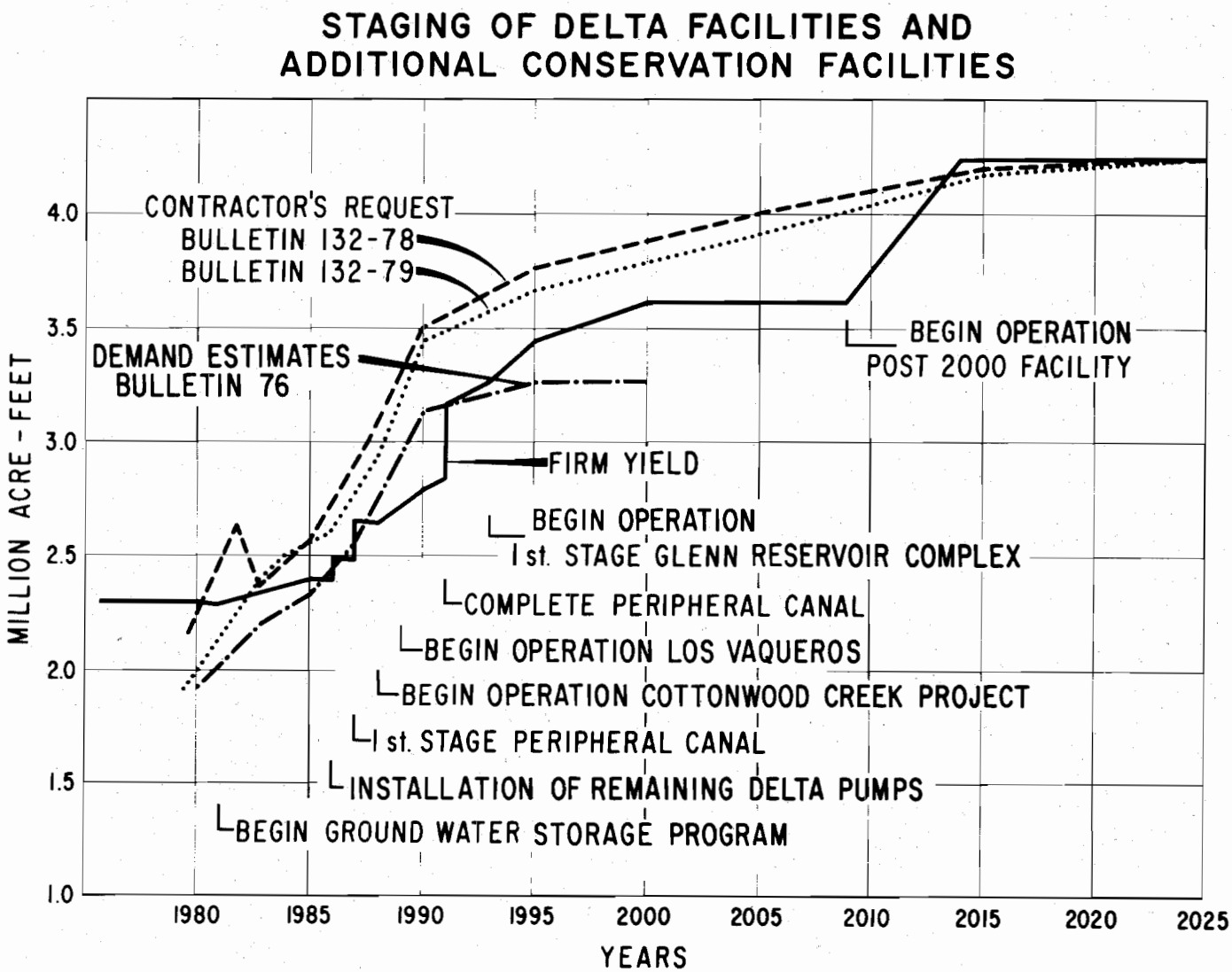


Figure *h*

Water Supplies in the San Joaquin Valley

Available water supplies in the San Joaquin Valley are adequate to meet present demands. However, present water needs in the San Joaquin Valley are being met by overdrafting ground water supplies.

San Joaquin Valley water demands in 1980 are currently estimated to be about 18 million cubic dekametres (14.6 million acre-feet) per year, while firm water supplies average 15.9 million cubic dekametres (12.9 million acre-feet) per year. The deficiency, 2.1 million cubic dekametres (1.7 million acre-feet), represents the average annual ground water overdraft, the amount by which withdrawal exceeds recharge. About three-fourths of this overdraft occurs in the southern portion of the valley. Figure *i* shows the location of areas with ground water overdraft.

If development of new lands and associated demands for irrigation water continue to increase at the current rate, annual water demands are projected to grow to 20.7 million cubic dekametres (16.8 million are-feet) by the year 2000. Without new water supplies, the imbalance between annual supply and demand would increase to 4.4 million cubic dekametres (3.6 million acre-feet). This imbalance could more than double the valley's current ground water overdraft.

In late 1978, Governor Brown signed Senate Bill 1505 (Nejedly), which requires the Department to study the State's ground water basins to identify those subject to critical conditions of overdraft. The Department is to report to the Governor and the Legislature by January 1, 1980. Under Water Code Section 12924, the Department held several public workshops around the state in early 1979 to receive input for a draft report that will be distributed in late 1979. Following the public hearings on the interim report, the final report will be prepared for the Governor and Legislature.

In Kern County alone, studies indicate that during the period 1958 through 1967, prior to SWP deliveries, annual ground water overdraft averaged 765 000 cubic dekametres (620,00 acre-feet).

The following table shows the urban and irrigated lands in the San Joaquin Valley portion of Kern County in 1959, 1969, and 1977. The gross irrigated acres are divided into lands overlying the usable ground water basin and those lands outside the ground water basin. As of 1977, only 242 000 hectares (597,000 acres) of Kern County's potential irrigable land remained undeveloped, 98 000 hectares (242,500 acres) of which overlie usable ground water supplies.

GROSS IRRIGATED AND URBAN LANDS
IN SAN JOAQUIN VALLEY PORTION OF KERN COUNTY
(in thousands of acres)

Area Served	1959		1969		1977		Total Irrigable Land
	Irrigated	Urban	Irrigated	Urban	Irrigated	Urban	
Overlying ground water basin	617.5	31.7	685.1	36.1	801.5	48.6	1044.0
Outside ground waterbasin	16.0	0.2	59.5	0.3	133.3	4.4	487.9
Total	633.5	31.9	744.6	36.4	934.8	53.0	1531.9

GROUND WATER CHANGE-SAN JOAQUIN VALLEY
1970-1975

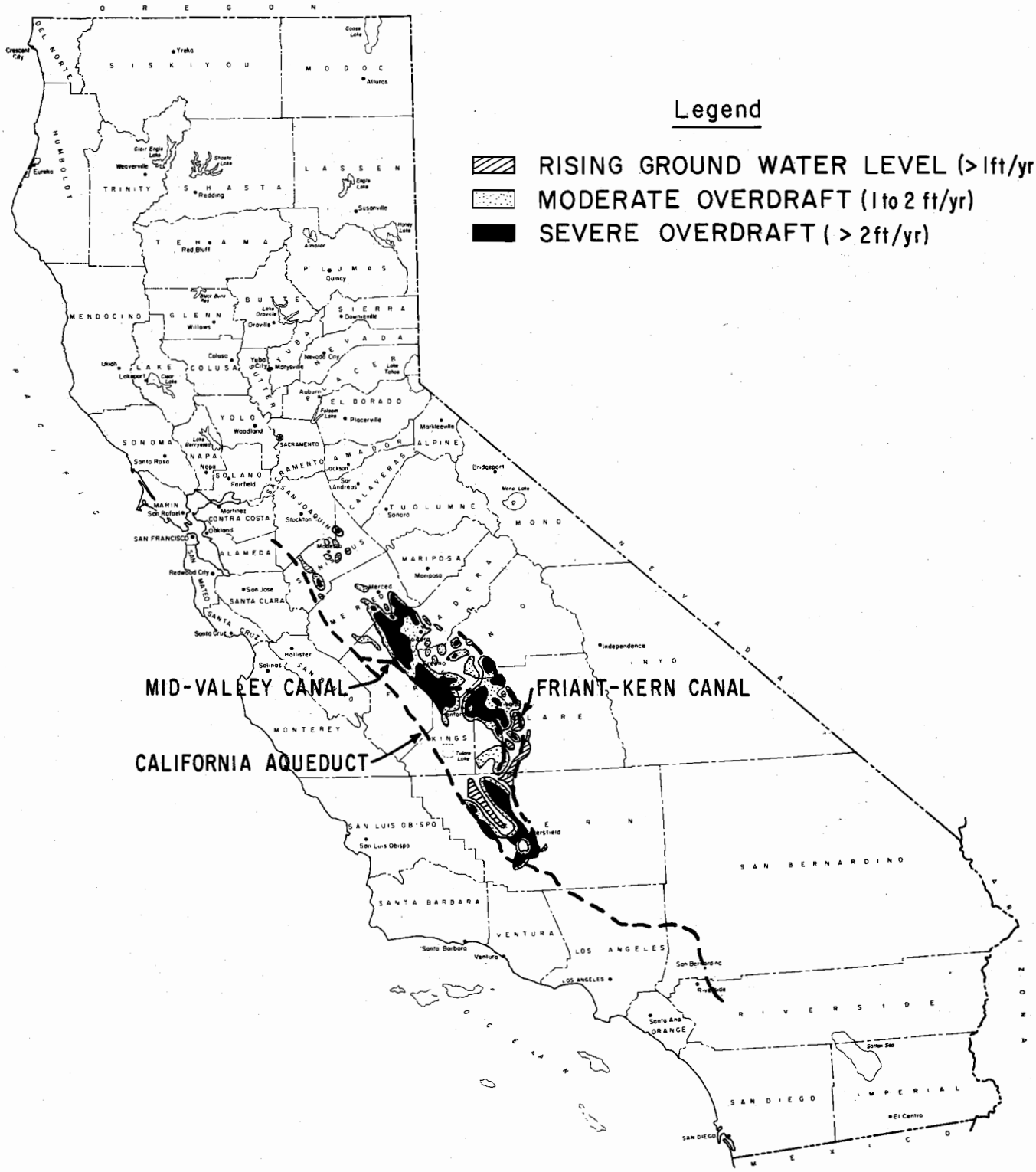


Figure *i*

Figure *j* demonstrates that, between 1958 and 1977, as Kern County's agricultural water demands increased, ground water extractions also rose significantly. Despite the influx of surface water from the SWP in 1968, the county continues to overdraft its ground water supplies. Since the outlook for additional water supplies in Kern County is dim, the potential for continued agricultural growth in this county must be measured against the danger of increasing the present ground water overdraft.

In addition to its deficient water supply, Kern County also has a drainage problem. The county now has 8 900 hectares (22,000 acres) of agricultural land affected by drainage problems, which cause brackish waters to accumulate near the surface in productive soils. The problem is growing worse, and by the year 2000, more than 32 375 hectares (80,000 acres) will be affected unless drainage facilities are installed. The San Joaquin Valley drainage problem is discussed further in a following section titled "Interagency Drainage Program".

Today, Kern County farming operations are thriving, despite overdrafting of ground water supplies, inadequate drainage facilities, rising energy costs, land subsidence, and salt buildups. If these problems are left unchecked, however, farming operations will eventually become uneconomical. The costs of reducing ground water overdrafts and constructing adequate drainage facilities are high, and the short-term benefits are few. However, to assure prolonged productivity and long-term agricultural benefits, there is no alternative.

KERN COUNTY
AGRICULTURAL APPLIED WATER DEMAND FOR PERIOD
1958 THROUGH 1977
SURFACE AND GROUND WATER COMPONENTS.

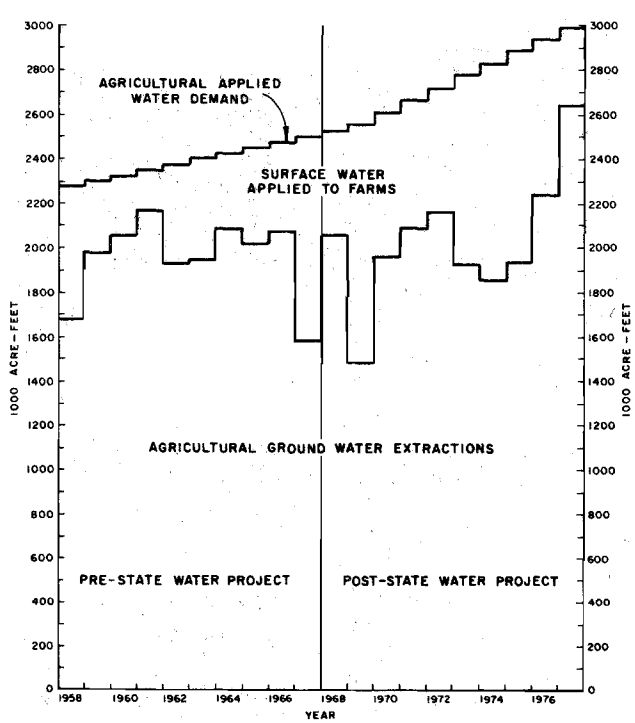


Figure *j*

The Peripheral Canal and additional conservation facilities described in Bulletin 76 must be added to the existing facilities of the SWP if the Department is to meet its long-term water delivery commitments. Figure *k* shows water demand and supplies for the San Joaquin Valley and Kern County, respectively. In the year 2000, about 21 percent of Kern County's water supply will come from facilities proposed in Department of Water Resources Bulletin 76.

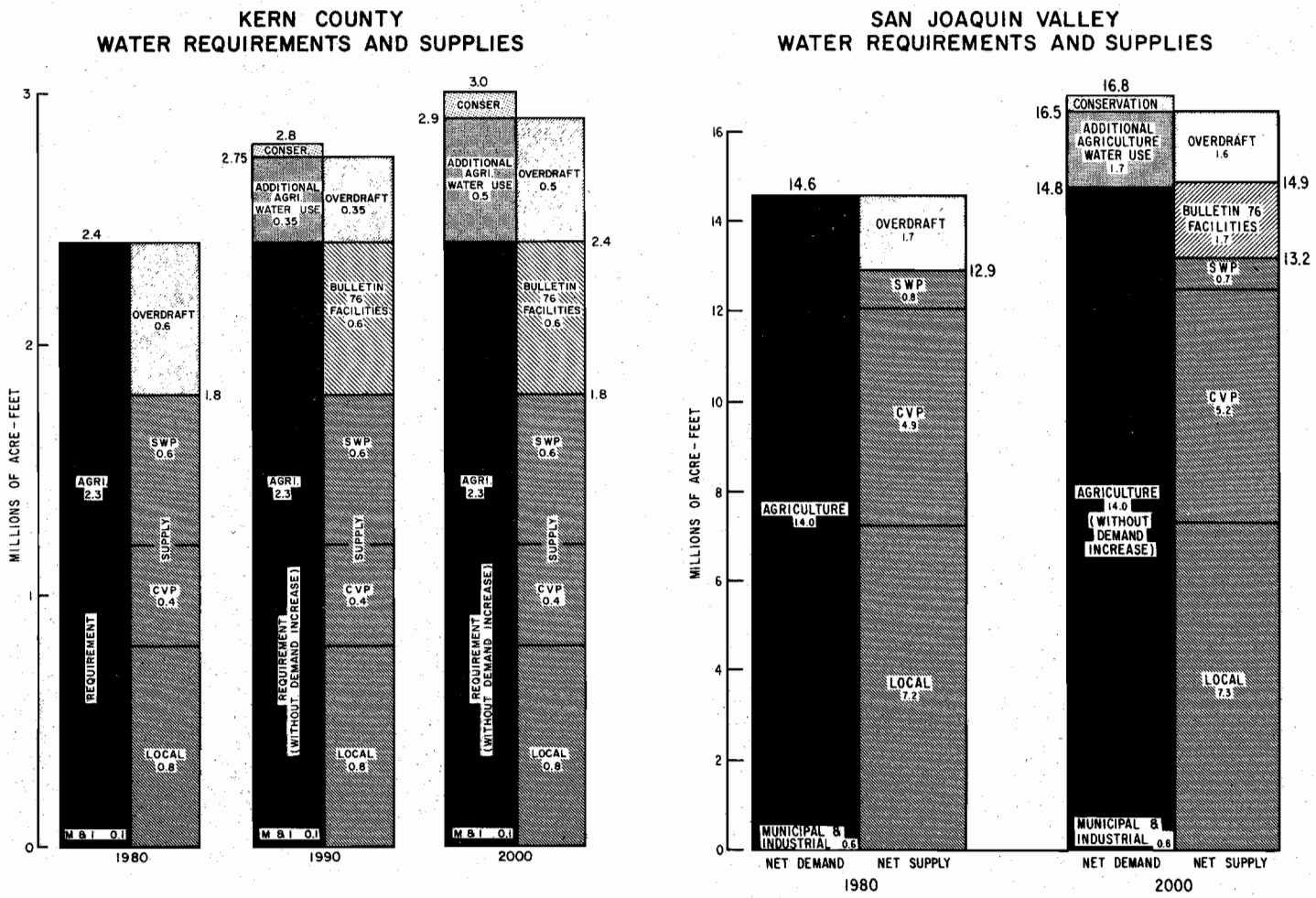


Figure *k*

Service Area Unit Water Rates

One of the most important factors to water users is the cost of water. Appendix B of each annual Bulletin 132 includes the annual water charges to the SWP contractors until the end of the assumed project repayment period, year 2035. The average unit costs of water to the SWP service areas through year 2000 are shown in Figure 7. The charts include costs that repay both existing facilities and proposed facilities; they also indicate the effect of the variable operations, maintenance, power and replacement component on the total unit cost. (The variable OMP&R component includes costs of electrical capacity and energy at project pumping and power recovery plants together with deposits for replacements of plant machinery.)

The costs shown are based on 1979 dollars. The charts generally show that the farther the water user is from the Sacramento-San Joaquin Delta, the higher the unit cost. This is because each contractor pays only for his share of the necessary facilities to transport water to user's service area (Transportation Charge). The costs of developing the water supply, such as Oroville and San Luis Reservoirs, is shared by all SWP contractors, who pay the same unit cost per acre-foot of entitlement water (Delta Water Rate), regardless of service area.

Water Conservation in SWP Service Areas

Water conservation and waste water reclamation will play siginificant and increasing roles in meeting future water requirements of SWP contractors.

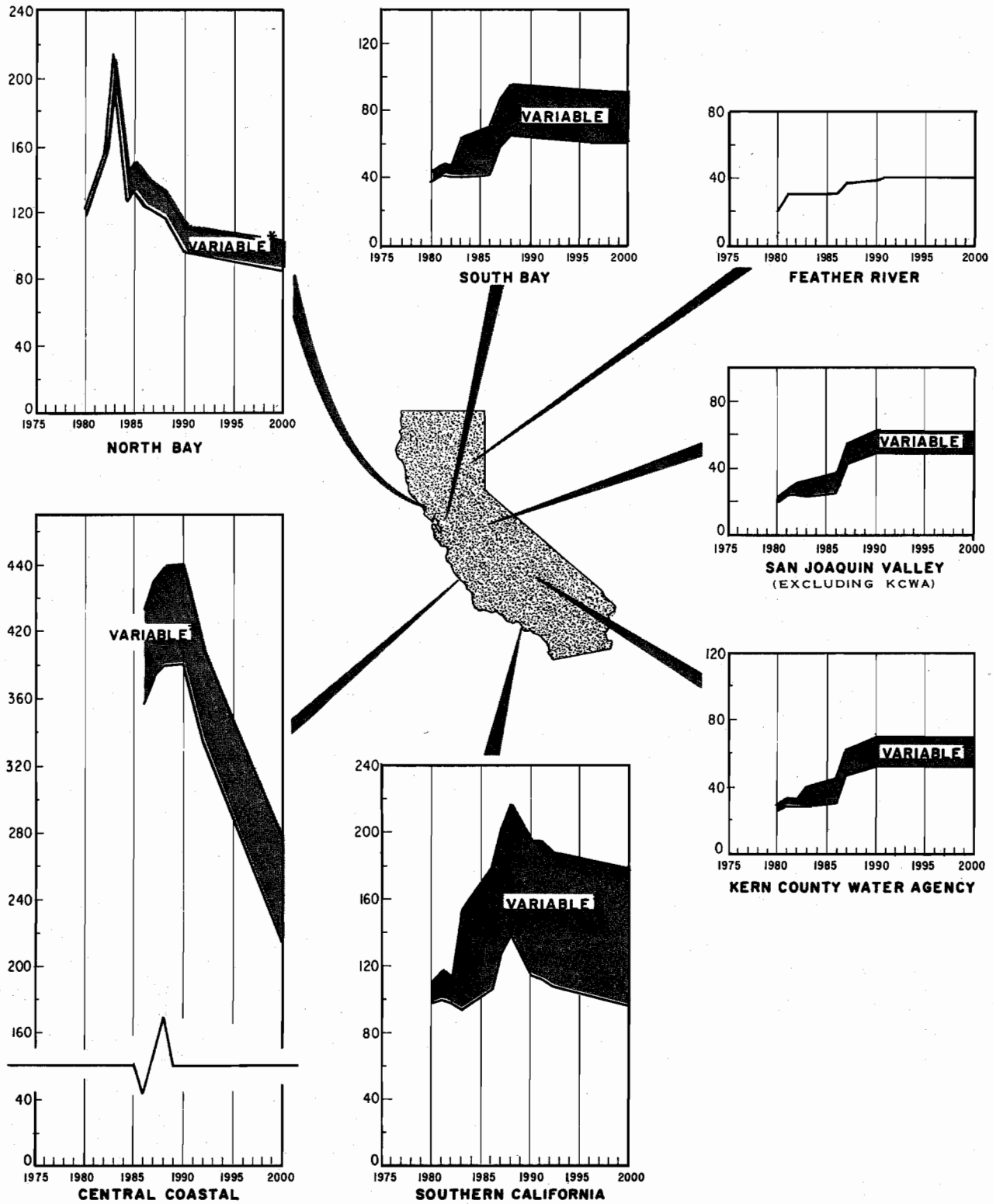
For project planning purposes, the Department has established a goal of 860 000 cubic dekametres (700,000 acre-feet) by the year 2000, of municipal and industrial water conservation and waste water reclamation within the State Water Project service areas. (A reduction of 740,000 cubic dekametres - 600,000 acre-feet - in year 2000 from the water contractors requests shown in Bulletin 132-77, Appendix B. About 123 380 cubic dekametres - 100,000 acre-feet - of new waste water reclamation facilities was reflected in those requests.) If the goals are met, there will be a delay in the time when additional project conservation facilities are needed and reduce the rate of increase in export demands on the Delta.

Assembly Bill 380 provided funding for a domestic water conservation study. The Legislature enacted Assembly Bill 380 and the Governor signed it into law on April 6, 1977. The measure appropriated $600,000 for the pilot conservation program and specified that the Department obtain local participation for at least 10 percent of the cost of the studies. In addition to the money provided by Assembly Bill 380, the Department allocated $100,000 to the project and the California Energy Commission contributed $50,000. The Department administered the pilot conservation program with participation by local agencies in the San Diego Metropolitan Area, Santa Cruz County, Sanger, El Segundo, Oak Park (a section of Agoura in Ventura County), and the service area of the El Dorado Irrigation District in El Dorado County. Total annual water wavings in the six study areas was about 5 181 cubic dekametres (4,200 acre-feet). The water conservation study funded by AB 380

TOTAL UNIT WATER RATES

IN SWP SERVICE AREAS

IN DOLLARS PER ACRE - FOOT



* Unit Variable OMP&R Component of the Transportation Charge.

Figure 1

shows that water conservation is both practical and profitable. Details of the study are contained in the Department's Bulletin 191, dated October 1978.

When waste water would otherwise be discharged to saline water, or when it has been so degraded that it cannot be discharged to fresh water, there is an opportunity for creation of a "new" water supply through waste water reclamation.

This reclamation can occur on one of two levels -- as a locally-developed supply that would not affect SWP contractual commitments for deliveries, or as part of the SWP in which case the reclaimed water could become part of the Project water supplies. The Department is studying the feasibility of building local facilities as part of the State Water Project to help meet long-range water supply demands.

Another possibility is reclamation of brackish agricultural water through desalting by reverse osmosis. The Department is studying the feasibility of building two 31 000 cubic dekametres (25,000 acre-feet) per year desalting plants, one in the San Joaquin Valley and the other in Southern California. The treated water could become part of the SWP supplies.

However, in present plans to meet future water supplies for the SWP the Department has not included water supplies that might result from transporting reclaimed water from one basin to another for uses such as Delta salinity control, power plant cooling, or irrigated agriculture. These possibilities are under continuing study.

Several local water agencies in California have instituted water conservation programs. The Metropolitan Water District of Southern California is conducting an active water conservation campaign in Southern California. The Metropolitan Water District -

- furnished to all member agencies, at cost, billing inserts promoting water conservation.
- has developed a conservation brochure for home gardeners -- "How to Have a Green Garden in a Dry State". Some 50,000 copies have already been distributed through the California Association of Nurserymen and the Building Industry of Southern California. Demand for the booklet is so heavy that Metropolitan is printing an additional 100,000 copies.
- has prepared a conservation comic book "The Guzzler Gang" for distribution through member agencies.
- fills speaking engagements promoting water conservation.

The Los Angeles Department of Water and Power (LADWP) has an active water conservation program featuring:

- public information on water use, water savings potential, and water supply
- agency leadership that practices water conservation
- metering and billing systems that point out to all water users the relationship between water cost and consumption.

The LADWP furnishes free water conservation kits to all residential water users, and information bulletins to industrial customers. Conservation bulletins have been developed for various types of industries and organizations with outstanding water conservation achievements are recognized through an awards program. Los Angeles, in 1977, changed from a

declining block rate structure to a uniform rate structure which treats water as a resource of uniform value without consideration of service volumes.

Interagency Drainage Program

Planning of agricultural drainage facilities for the San Joaquin Valley advanced during 1978 in the State and Federal Interagency Drainage Program (IDP). The IDP was organized to plan an economically and environmentally sound, financially feasible, and politically acceptable solution to drainage and salt management problems that threaten the productivity of much of the San Joaquin Valley.

State and Federal agencies have long been aware of the need for agricultural drainage facilities in the San Joaquin Valley, but their efforts to meet this need have met with frustrations and reversals. The Burns-Porter Act, the authorizing legislation for the SWP, included authorization for the Department of Water Resources to construct facilities for removal of saline drainage water from the San Joaquin Valley. The first effort to implement this provision ended unsuccessfully in 1967, when the Department found it was unable to obtain sufficient assurances of financial support for its proposed Master Drain project. With the Master Drain apparently ruled out, the USBR began construction of the San Luis Drain, designed to serve only the Federal San Luis Service Area. Due to funding limitations and environmental concerns, only 132 kilometres (82 miles) of the planned 303-kilometre (188-mile) San Luis Drain have been constructed. In the IDP, USBR joined with the Department and the SWRCB to plan the next step toward providing drainage for the Valley and to set the direction of future governmental efforts in this field.

The essentials of the IDP's recommended plan emerged in 1978. The recommended plan calls for construction of a State and Federal drainage canal--the Valley Drain--along the length of the San Joaquin Valley trough. The Valley Drain would collect the saline effluent of on-farm subsurface drainage systems for eventual disposal in the tidal water of Suisun Bay in a location where the bay water would not be adversely affected by water from the drain. Beneficial use of drain water before disposal would be encouraged, and one form of beneficial use -- marsh management -- is part of the recommended plan. The IDP proposes that 25 800 hectares (63,300 acres) of new or restored wetland wildlife habitat be included in the valley-wide drainage system, mainly in the form of brackish marshes.

The Valley Drain would serve an estimated 160 000 hectares (400,000 acres) of highly productive agricultural land in the year 2005, and more than 450 000 hectares (1,100,000 acres) in 2085. Without drainage, these lands could turn into alkali lands that would support only the hardiest wild plants. Costs of implementing the recommended plan would be high -- an estimated $1.26 billion over a 100-year period -- but estimated benefits exceed these costs by a ratio of about two to one.

A preliminary report was released in January 1979. Publication of the IDP's final report, including the recommended plan and an environmental impact report on this plan, is scheduled for June 1979.

Future Construction of the Coastal Branch, California Aqueduct

The Coastal Branch, Phase II of the California Aqueduct, was intended to transport project water to San Luis Obispo and Santa Barbara counties. The previously proposed facility, approximately 80 miles in length, would begin at, and include, Devil's Den Pumping Plant and terminate near the City of Santa Maria. The water supply contracts

with these counties, signed in 1963, provided that water deliveries would begin in 1980. However, construction of Phase II could be deferred, or eliminated entirely, depending on the exercise of options available to the counties.

In 1973, the counties requested a two year delay for the initial deliveries until 1982, and indicated they may request further delays. In 1977, the counties requested a further delay until 1986. In a November 7, 1978 advisory election, voters in San Luis Obispo County narrowly supported taking 31 000 cubic dekametres (25,000 acre-feet) of SWP water. The vote was 51.7 percent yes to 48.3 percent no. A bond issue to implement a distribution system in the county would be required later.

On March 6, 1979, voters in Santa Barbara County voted against a $102 million bond issue for a distribution system required for the local delivery of the SWP water. The voters turned down the bond issue by almost a 3 to 1 margin.

The defeat of the Santa Barbara bond issue by the electorate and discussions with county representatives indicates that the area prefers to meet their future water needs through local projects and that they no longer want to be involved with the SWP. However, the County has not formally notified the Department of this position nor have they notified the Department that they would like to be relieved of their repayment obligations. It is possible that the extension of the Coastal Branch may be limited to service in San Luis Obispo County. The Department has begun discussing these issues with the Coastal contractors, along with discussing alternative methods of helping them meet their water supply needs from local sources. The County has indicated a desire for short term transfers of their entitlements to other SWP contractors, until such time that they can more definitely define their future water program.

Guidelines on Funding Local Projects

Environmental, energy, and cost considerations have required the Department to investigate new sources of water for the State Water Resources Development System. In 1978, the Department developed draft guidelines on funding local water supply projects. These projects include dams, reservoirs, reclamation projects, and ground water storage programs, as alternatives or additions to those water supply sources previously considered in planning for future development of the SWP. The guidelines were finalized in February 1979 after comments were received from project water contractors.

The guidelines were prepared to provide criteria to water contractors and the Department in considerations and negotiations concerning construction of local projects as a part of the SWP. The guidelines included requirements that:

- The local project must provide a water supply within the annual 5.21 cubic dekametres (4.23 million acre-feet) Project yield.
- The water supply developed by the project must be new, dependable, and of adequate quantity and quality to serve the intended beneficial uses.
- Costs to construct water conservation facilities of a local project will become a part of the Delta Water Charge.
- Transportation costs are to be considered separately for each project.
- Waste Water Reclamation Projects could be included under SWRCB's Clean Water Grant Program for funding.
- Local projects must be feasible on an engineering and financial basis,

economically justified and environmentally sound.

- SWP water service contractors must be involved.

Ground Water Storage Programs

The Department continued an active study of the possible use of ground water basins for storage of project water to supplement surface water reservoirs in providing future project water supplies. The potential for storing water in ground water basins during wet periods and withdrawing it during dry years has been recognized for many years. Interest was intensified in the early 1970's, with the increasing public opposition to the development of new onstream reservoirs as a means of augmenting water supplies.

In the initial phase of the Department's current ground water basin storage program, a number of ground water basins with potential for SWP water storage were identified for further study. In 1975, a study of the San Fernando Basin in Southern California was started to determine the possibility of implementing a program in the basin. The Department's Bulletin 186, planned for release in August 1979, reports on the study and includes the following information:

- Physical characteristics and capabilities of the basin.

- Potential for use of existing conveyance, spreading and extraction facilities.

- Financial, legal, institutional and environmental impacts involved in the use of the basin.

Reconnaissance-level studies were concluded in 1978 for the White Wolf Basin and Kern River Fan Area in Southern San Joaquin Valley and the Chino, Raymond, Bunker Hill-San Timoteo-Yucaipa, Antelope Valley, Santa Clara River Valley, San Gabriel, Orange County, San Fernando and Las Posas Basins in Southern California. Each of these areas was considered to meet the general criteria for ground water storage programs (See Bulletin 132-78, page 22). Technical Information Records, which described each of these studies, were completed in the early part of 1979. Each basin was investigated independently of all other potential storage facilities and a cost per acre-foot of dry-period yield development for the SWP was determined. The cost figures developed do not reflect the total cost of implementing a comprehensive ground water storage program, but provide a relative cost comparison among the various basins. As a result of the reconnaissance-level studies, Chino, Raymond, Bunker Hill-San Timoteo-Yucaipa, Orange County, and the San Fernando Basins were selected for feasibility studies. The Kern River Fan Area was selected for implementation of a demonstration project. Additional reconnaissance-level studies are now being undertaken in the Livermore and Santa Clara Valleys of the San Francisco Bay area and the Coachella Valley of Southern California.

As the above studies developed, the Department realized that a number of economic, legal and institutional problems needed to be identified. The best way of doing this appeared to be through operation of demonstration projects that would serve as prototypes for actual ground water storage programs.

Heavy storms in 1978 produced record quantities of water in many California watersheds. This water offered the opportunity to initiate demonstration projects and two project water contractors agreed to participate.

The two basins selected were the Mojave and Bunker Hill Ground Water Basins in San Bernardino County, shown in figure *m*. Details of the projects were worked out with the local agencies involved -- the Mojave Water Agency and the San Bernardino Valley Municipal Water District (two of the SWP water supply contractors), San Bernardino County Flood Control District and the City of San Bernardino.

The Mojave Ground Water Basin follows the Mojave River north from the San Bernardino Mountains in the south central portion of the Mojave Desert. The basin is within the service area of the Mojave Water Agency.

Under terms of the agreement covering the demonstration project, water was released from Silverwood Lake to the Mojave River for recharging the Mojave Ground Water Basin. The total amount stored in this basin was 27 800 cubic dekametres (22,500 acre-feet). Storage began on May 9, 1978 and was completed during June 1978. Over the period 1979-82, the Mojave Water Agency will have this water for use instead of receiving delivery of SWP water conserved by surface water facilities.

On July 7, 1978 storage for the second demonstration project began; this project is being conducted by the San Bernardino Valley Municipal Water District. The Bunker Hill Ground Water Basin is in the southwestern portion of San Bernardino County, on the south side of the San Bernardino Mountains. The basin lies within the service area of the San Bernardino Valley Municipal Water District. During the remainder of 1978, 11 405 cubic dekametres (9,246 acre-feet) was stored in this basin. Under this project, a maximum of 61 675 cubic dekametres (50,000 acre-feet) of SWP water will be stored in the Bunker Hill Ground Water Basin. Of this, 27 754 cubic dekametres (22,500 acre-feet) will be SWP surface-delivered water that except for the Mojave Demonstration Project would otherwise be required for deliveries to the Mojave Water Agency during the next four years.

As needed for SWP operations, the San Bernardino Valley Municipal Water District will be directed to pump the stored water instead of taking delivery of an equal amount of surface-delivered water. This pumping is to take place within 15 years of the start of the project.

The demonstration projects are designed to test the practicability of the ground water storage program. The main purposes are:

1. Determining effectiveness of scheduling techniques of storing and recapturing water for the SWP.

2. Test economic assumptions.

3. Confirm cost factors associated with a ground water storage facility.

4. Test the efficiency of contract administration.

5. Evaluate methods of charging and crediting costs and cash flow effects.

6. Identify unforeseen problems.

7. Provide actual experience in operating a ground water storage program in conjunction with the SWP.

The demonstration projects should provide valuable information that will be helpful in developing future aspects of the full scale program.

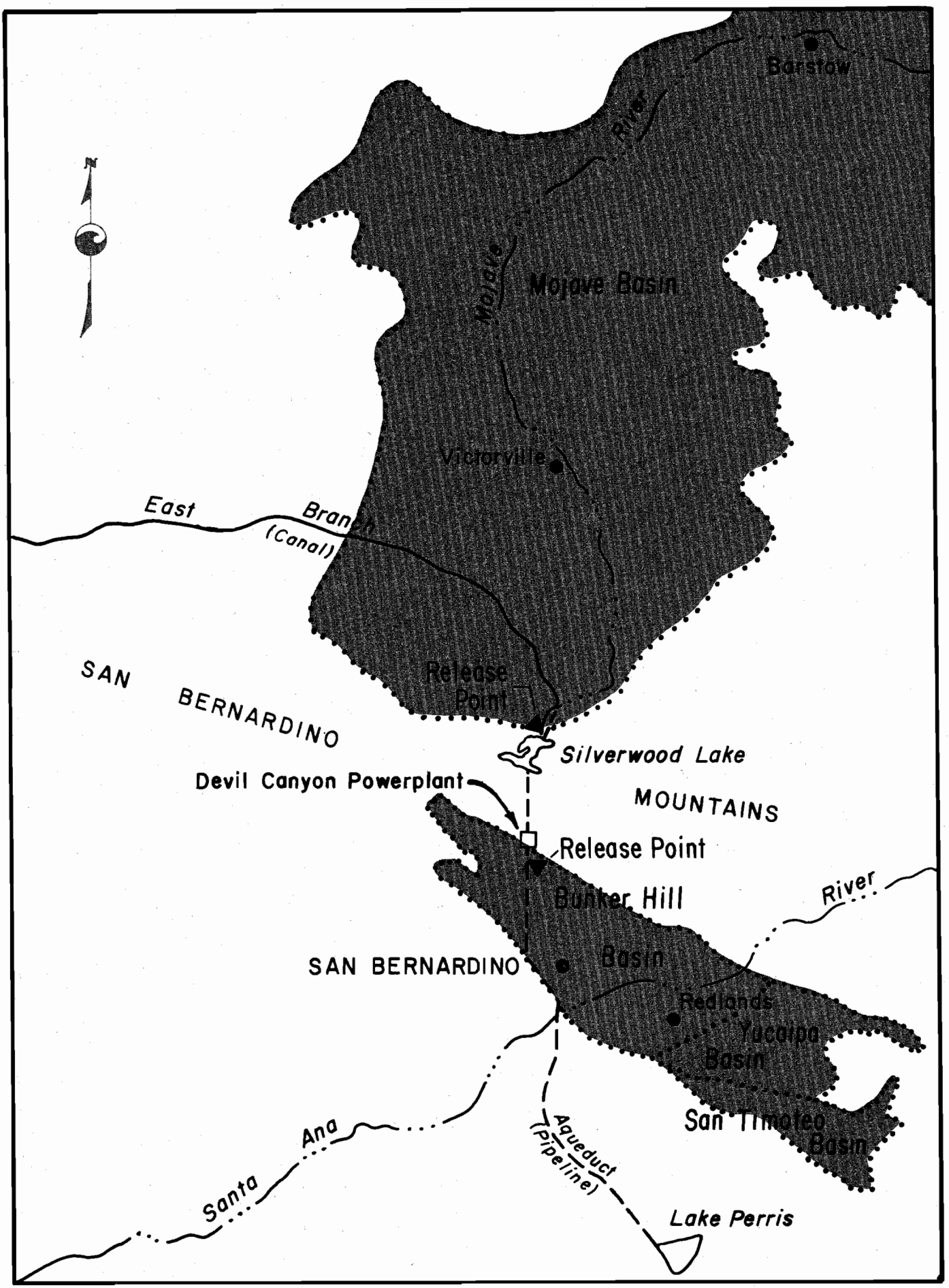


Figure *m* LOCATION OF DEMONSTRATION PROJECTS

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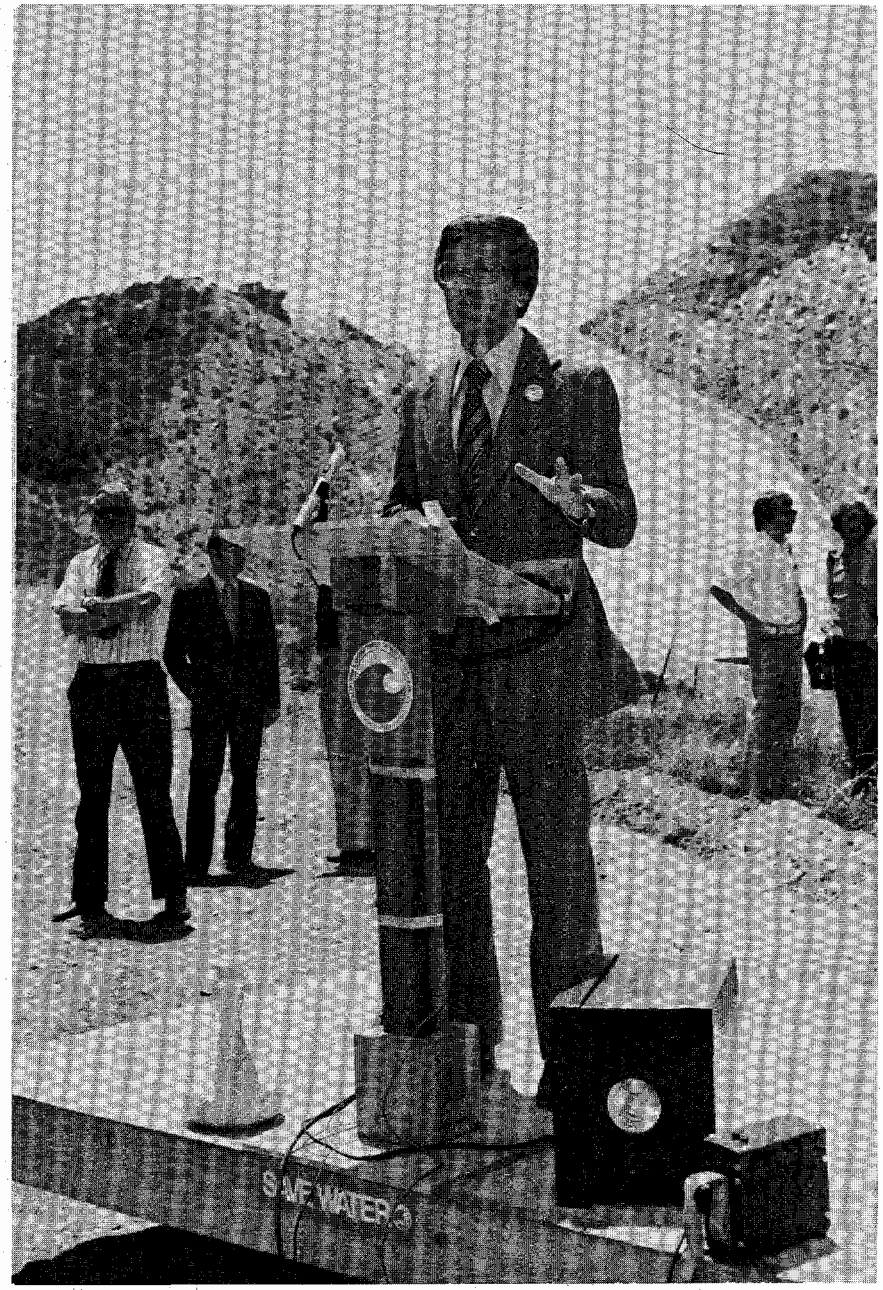
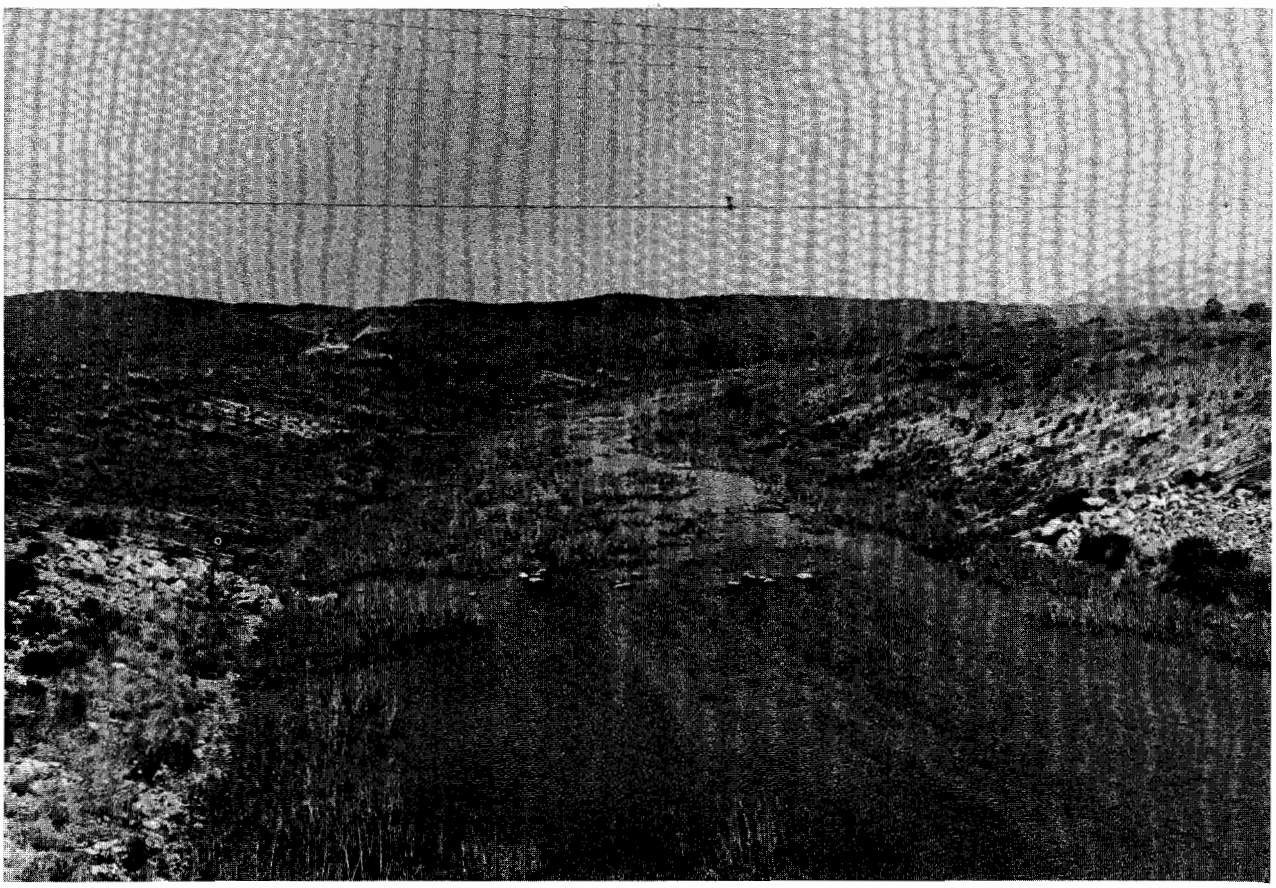
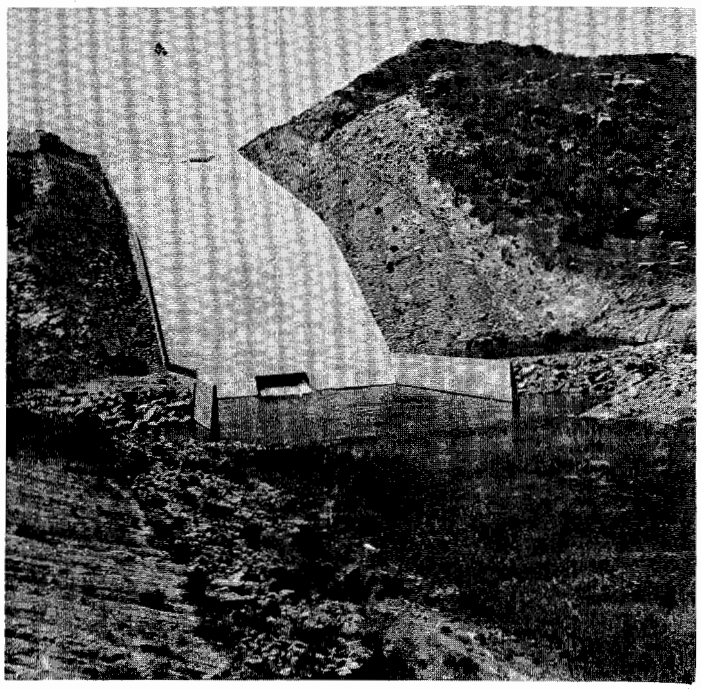


Director Ron Robie at the Ground Water Demonstration Program ceremonies. Water was released from Silverwood Lake, through the Cedar Springs Dam Spillway in the background, into the Mojave River channel for recharge of the Mojave Ground Water Basin.



Project water releases from Silverwood Lake into the West Fork of the Mojave River. Releases were used to recharge the Mojave Ground Water Basin as a part of the Department's Ground Water Demonstration Program.



Safety of Department-owned Dams

In 1975 the Department, as required by Water Code Section 6056, initiated a revised program for review of the safety of Department-owned dams. Under this program, a consulting board is convened to conduct independent safety reviews every five years of each Department-owned dam. The first of these boards was formed in 1975 to review Pyramid and Perris Dams. The board members were Mr. Wendell Johnson, Dr. Jack W. Hilf and Dr. Douglas D. Campbell. The board's first report, published in April 1976, recommended improvement of the spillways of both dams. (See Bulletin 132-78, page 24 for further detail.)

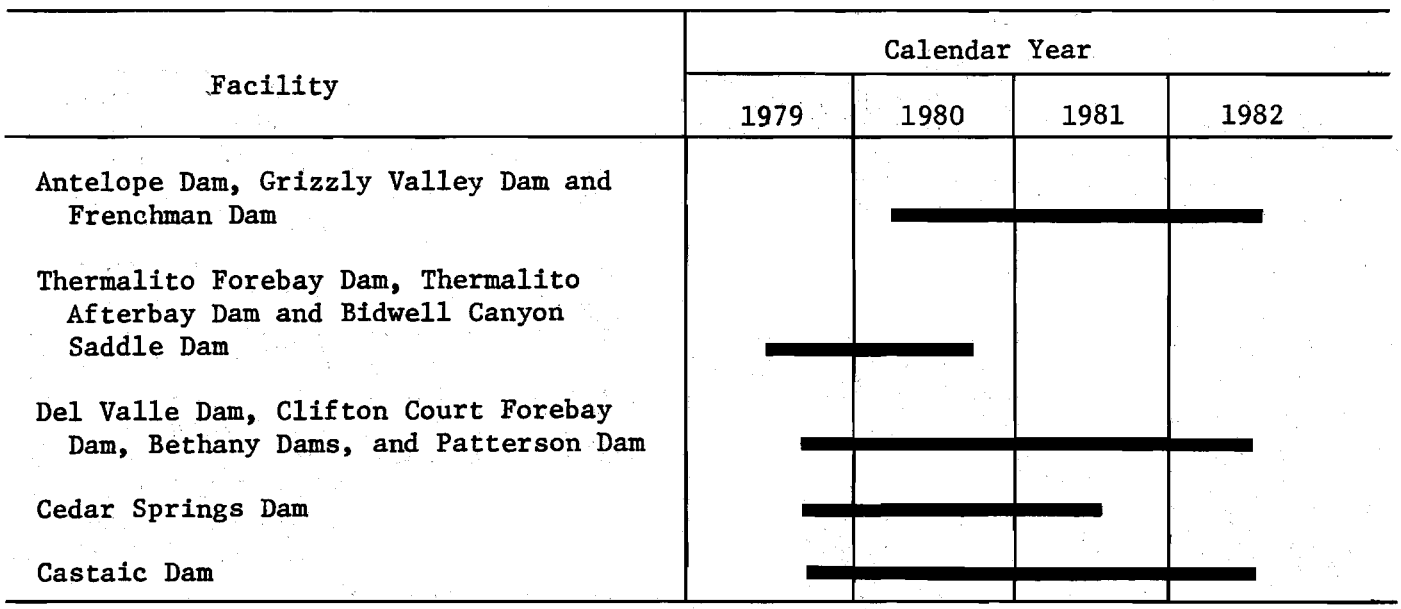
The consulting board for Castaic Dam continued its independent review during 1978. Completion of the board's report is expected in 1979. The board members are Mr. Wendell Johnson, Dr. Douglas D. Campbell, and Mr. Earle J. Klohn.

The consulting board for Cedar Springs Dam held its initial meeting on April 11 and 12, 1978, at Ontario. The board members are Mr. Stanley Wilson and Mr. Schaefer Dixon, Consulting Civil Engineers, and Mr. William I. Gardner, Consulting Geologist.

A board composed of Mr. Karl V. Taylor, Dr. Douglas D. Campbell and Mr. Earl J. Klohn is being formed to initiate a review of the Del Valle, Patterson, Bethany forebay and Clifton Court Dams. The board is tentatively scheduled to meet in February 1980.

The schedule approved by the Director is shown below:

SCHEDULE FOR REVIEW OF DEPARTMENT-OWNED DAMS



This will complete the initial periodic review of the 16 DWR-owned dams.

As first reported in Bulletin 132-77, page 17, a special study has been underway since 1976 to determine the performance of the Oroville facilities during a severe earthquake. This study was prompted by the earthquake in the Oroville area on August 1, 1975.

The Special Consulting Board for the August 1, 1975, Oroville Earthquake convened on September 28 and 29, 1978, to review completed reports and to review progress on uncompleted reports for the investigations of the Oroville facilities.

The Board concurred in the findings of the completed reports that the ground shaking used for the investigations is more severe than any future shaking likely to affect Oroville Dam and the other major structures, and that all these structures will perform satisfactorily if subjected to this shaking and, therefore, do not pose a threat to public safety.

The Department's Bulletin 203-78 "The August 1, 1975 Oroville Earthquake Investigations", which includes the Consulting Board reports, was released early in 1979. Reports on reanalysis of the Thermalito Powerplant Intake Structure, the Termalito Forebay and Afterbay Dams, and the Bidwell Canyon Saddle Dam will be prepared in the near future.

In early 1979, the United States Geologic Survey (USGS) and the USBR were notified that recent USGS studies showed there was possibility of a previously unknown earthquake fault running the length of O'Neill Dam. The alignment of the fault appeared to parallel the main body of the dam.

Excavation for the dam's foundation during construction did not reveal this fault. However, a fault at the left abutment was discovered at that time and was considered in the design of O'Neill Pumping and Generating Plant. The USBR and the Department immediately began studies to determine the trace and age of the newly discovered fault.

Transfer of Water Entitlements

A Task Force was established in 1975 to review the Project water management program and to prepare a report by July 1, 1976. The Task Force determined that the two major management problem areas at that time concerned the adequacy of future project water supplies and the growing disparity between established contract entitlements and projected demands. The Task Force report deals with the latter problem but was not released until after a solution to the first had been developed. (Development to provide the future project with supplies is described in the section of this chapter entitled "Delta Alternative Review".)

Following review of the report by the contractors the final report was approved on October 27, 1978. The approved report was, with the exception of Recommendation 4, the same as that sent out to contractors for review and as described on page 23 of Bulletin 132-78. Recommendation 4 was modified to provide for accelerated transportation payments to maintain Project cash flow when entitlements are reduced on either a long or short term basis. Contractors were notified by a letter dated November 2, 1978 that the recommendations presented in the Task Force's report, as modified, had been approved. Contractors wanting to reduce their Table A amounts, under the conditions specified in Recommendation 4, were asked to submit a revised Table A schedule. Recommendation 4 provided the means of reducing Butte County's Table A amounts in compliance with a long standing county request (see section entitled "Contract Amendments" in Chapter II).

Fish Facility Studies

Peripheral Canal Fish Facility. The Peripheral Canal intake will be located on the Sacramento River, about 29 kilometres (18 miles) south of Sacramento, near the town of Hood. This portion of the river hosts and is on the migratory paths of over 20 species of fish, including nearly all the important anadromous fish in the Central Valley. The Peripheral Canal fish facility will be an important factor in restoring the Delta fishery to the levels existing between 1922 and 1967. The fish facility must pass up to 674 cubic metres (23,800 cubic feet) of water per second, be kept relatively free of debris and aquatic growth, and must operate essentially on a continuous basis.

The fish facility studies are coordinated through the Delta Fish Facilities Technical Coordinating Committee which consists of one representative from each of the four agencies involved in the study. (The Departments of Water Resources and Fish and Game, in cooperation with the United States Bureau of Reclamation and Fish and Wildlife Service.) Also, an independent Delta Fish Facilities Consulting Board reviews and provides recommendations of the work. The Consulting Board members are Milo Bell, engineer; James Harder, engineer; Ernest Salo, biologist; Loren Jensen, biologist; and Don Kelley, biologist.

Fish facility planning, which is essentially a research and development effort, began in the late 1960's. Specific objectives of the fish facility planning studies and testing are to (1) select the type of intake and fish screening system and (2) develop the biological and engineering data needed to plan, design, construct, operate and maintain the fish facility.

In 1978 the Department evaluated the response of young-of-the-year chinook salmon to the Hallwood-Cordua fish screen on the Yuba River near Marysville. The Department also evaluated loss of young-of-the-year chinook salmon within the Clifton Court Forebay and the approach channel to the Fish Protective Facility. Returns to the Fish Protective Facility indicated that 88 percent of the marked fish released near the radial gates are lost within Clifton Court Forebay and the approach channel to the Fish Protective Facility.

In 1978 the Delta Fish Facilities Technical Coordinating Committee decided the outlet channel to the fish return system at the Peripheral Canal Intake should be at least 61 centimetres (24 inches) wide. Previously this study was designed to develop a means of guiding fish into intakes less than 46 centimetres (18 inches) wide. The Coordinating Committee also recommended that construction of the Peripheral Canal fish screens be done in stages, with 25 percent of the screen being constructed initially. (Proposed legislation relating to the Peripheral Canal in SB 346, 1977 and again in SB 200, 1979, is consistent with this decision.) Biological studies, conducted by the Department of Fish and Game, have been completed. These studies included a survey to identify the species, size, location, and occurrence during the year of fish passing the facility site. Biological design criteria are now being developed. If a fixed plate or rotating screen is used, these criteria will be used to determine the fish screen hole size, and allowable velocity of water toward the fish screen.

Existing fish screening systems are being evaluated to assess the potential for using similar designs at the Peripheral Canal intake. Tests were conducted at such facilities as the Glenn Colusa Fish Facility on the upper

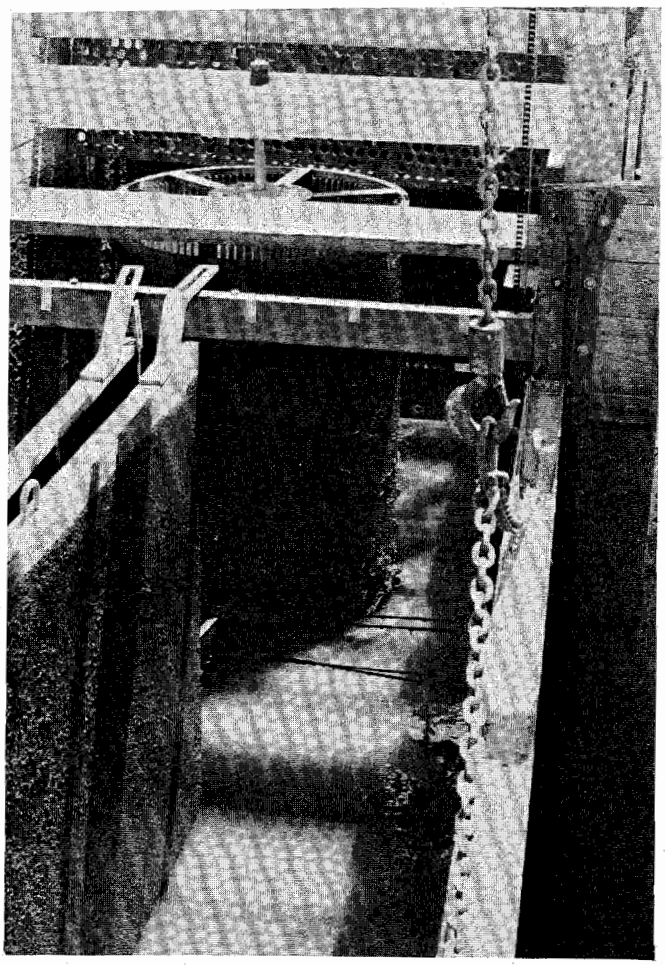
Sacramento River. Other facilities, such as those in Russia, are being evaluated through research of literature.

Fish-screen clogging, cleaning and corrosion studies are underway. Also, the USGS is collecting sediment data in the Sacramento River near Hood, and the University of California at Davis is constructing two physical models of the Peripheral Canal intake and adjacent reach of the Sacramento River. The models will be used to identify flow patterns and areas of sedimentary deposits in the vicinity of the Peripheral Canal intake.

Considerable progress has been made on the fish facility studies. The Department has narrowed the fish screen alternatives to either fixed plates or vertical drums.

Delta Pumping Plant Fish Facility.

The Department plans to enlarge the fish protective facility at the Delta Pumping Plant. Work at the facility will include modifying existing fish bays, completion of remaining fish bays, replacing existing fish screens with smaller mesh screens and changing impellers in the fish facility pumps to minimize mortality of fish passing through the pumps. The facility was named the John E. Skinner Fish Protective Facility in early 1979 in memory of John Skinner, a long-time employee with the Department of Fish and Game.



Screen-clogging test of a 3' diameter welded wedge-wire drum screen at the Department's Fish Screen Test Facility near Hood, California.

Suisun Marsh Initial Facilities

Significant progress was made during 1978 toward protecting and restoring the wetlands of Suisun Marsh as required under SWRCB's D-1485. The Department compiled two reports during the year -- (1) a report on the Initial Facilities for the Marsh to support federal legislation authorizing the participation of the USBR in protection of the Marsh, and (2) a progress report on the overall facilities for the protection of the Marsh.

For some years operations of both the Federal CVP and the SWP have had a detrimental effect on water quality in the Marsh. Increased pumping by the projects can reduce the outflow of fresh water through the marsh during some periods of the year, allowing earlier salt water intrusion from the San Francisco Bay. This salt water intrusion can hinder growth of preferred marsh plants which provide feed for ducks migrating on the Pacific Flyway. The Department believes both the SWP and CVP should share in cost of the facilities needed to improve the situation. Department staff has participated in drafting HR 13250, a bill introduced by Congressman Leggett in 1978 to support USBR's participation in Suisun Marsh protection; however, initial funding of the facilities will be from SWP funds since federal legislation was not approved before the Congress adjourned. The current legislation is being sponsored by Congressman Vic Fazio.

In December 1978, the Department executed a contract with the Suisun Resources Conservation District and the Department of Fish and Game covering the construction and operation of the Suisun Marsh Initial Facilities. These facilities are designed to help the wetlands immediately adjacent to Suisun, Grizzly and Honker Bays. This area of the Marsh is most susceptible to salinity intrusion. The Initial Facilities will include dredging and improvements on Roaring River Slough and Goodyear Slough.

The Roaring River Unit will carry water from Montezuma Slough, near Collinsville, toward the west. This water will be used for management of VanSickle, Wheeler, Dutton, Simmons and Hammond Islands to replace water not diverted from Honker and Grizzly Bays, which is susceptible to intrusion.

Contract signing regarding Suisun Resource Conservation District - 12/18/78 – Contract signing for construction of 4 million dollars in initial facilities for protection of the Suisun Marsh on Roaring River and Goodyear Slough. (Front row), E. C. Fullerton, Director, Fish and Game; Ron Robie, Director, DWR; Dr. William Coon, Suisun Resources Conservation District. (Back row), George Deatherage, DWR; Robert W. James, Deputy Director, DWR; Daniel Chapin, California Waterfowl Association; H. K. "Pete" Chadwick, Department of Fish and Game; and Glenn Rollins, Department of Fish and Game.

The Goodyear Slough Unit will carry water eastward through the Morrow Island Ditch for management on Morrow Island, to replace water not diverted from Grizzly Bay. An outflow channel will be built at the south end of the slough to improve water circulation and eliminate occasional heavy salt concentrations like those in the drought year 1977.

Planning and preliminary design of the Initial Facilities were completed, and final design was initiated, looking towards operation of the Initial Facilities for the fall 1979 duck season, with completion in 1980. Planning and some preliminary design for the overall facilities, in cooperation with the Department of Fish and Game, the U. S. Fish and Wildlife Service and the USBR were also accomplished. The overall facilities are scheduled to be operational in 1984, as required under SWRCB's D-1485.

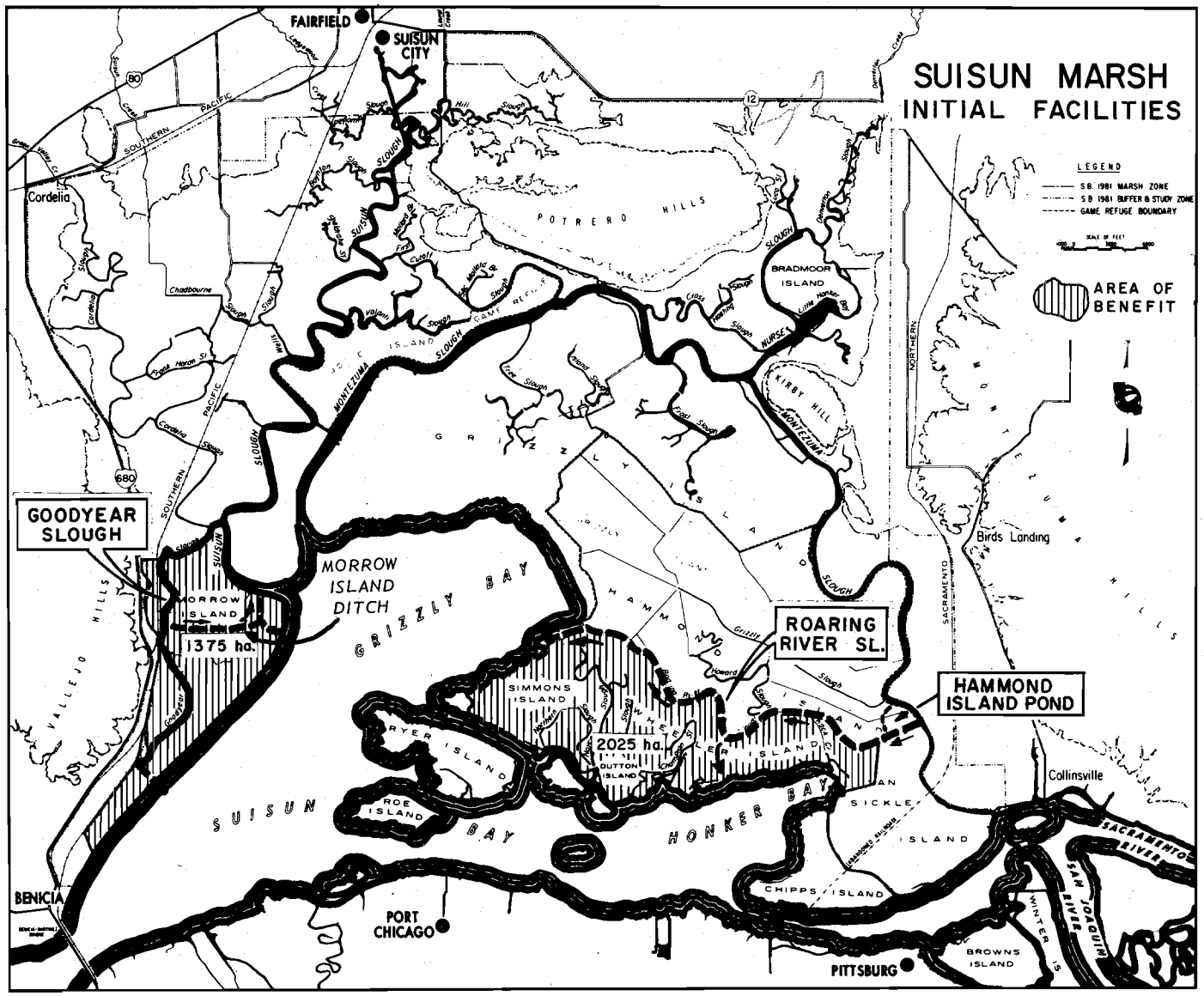


Figure *n*

Extension of the California Aqueduct

The Department completed a report, dated February 1979, on the feasibility of constructing an extension of the California Aqueduct into upper Coachella Valley. The study was at the request of five project contractors (Coachella Valley County Water District, Desert Water Agency, San Gorgonio Pass Water Agency, Mojave Water Agency and San Bernardino Valley Municipal Water District) who funded its cost of $113,500.

Two engineeringly feasible routes have been found for this extension: a "desert route" through the Mojave Desert, which would serve Mojave Water Agency, Coachella Valley County Water District, and Desert Water Agency; and a "pass route" from Devil Canyon Powerplant through the San Gorgonio Pass, which would serve the San Bernardino Valley Municipal Water District, San Gorgonio Pass Water Agency, Coachella Valley County Water District and Desert Water Agency.

The report compares the cost effects of several alternatives using the two routes. It also constitutes an Initial Study in conformance with Section 15080 of the Guidelines for Implementation of the California Environmental Quality Act of 1970. Its findings are that the desert route would have a greater impact upon the environment than would the pass route. The desert route has had very little development. The pass route follows an existing utility corridor which has been heavily disturbed.

Although a number of legal problems would have to be resolved before Central Valley Project revenue bonds could be used to finance the construction, none of the legal problems appears to be insoluble.

In general, the pass route would be less expensive for the project water contractors in the Coachella Valley, but its implementation would require the reallocation of capacity and costs of existing reaches of the California Aqueduct, which would not have to be done if the desert route were followed.

However, before any of the alternatives could be carried out, an Environmental Impact Report would have to be prepared. Mutually agreeable amendments would have to be made to the water supply contracts of all affected water contractors. No decision has yet been made as to whether or not the Department will construct this extension of the California Aqueduct as a part of the SWP.

Contract Negotiations with Delta Interests

The Department, since the early 1960's, has attempted to provide guarantees to the varied Delta interests that the SWP and the CVP would be operated to the Delta's benefit. The Department believes these guarantees must be in the form of contractual commitments between the SWP, the CVP and these varied Delta interests.

There are many water users in the Delta with many varied interests. The largest interest is Delta Agriculture, represented in contract negotiations by the North, Central and South Delta Water Agencies, the East Contra Costa and Byron Bethany Irrigation Districts, and the Delta lowland portion of Contra Costa County which is assumed to be represented in contract negotiations by the Contra Costa County Water Agency. These agencies are interested in maintaining adequate quality water in Delta channels for irrigation. There are two districts in the western Delta and beyond: the Suisun Resources Conservation District (SRCD) and the Contra Costa County Water

District (CCCWD). The SRCD is interested in maintaining the Marsh as a viable brackish water habitat; the CCCWD is interested in assuring adequate quantity and quality of water for the Contra Costa Canal which diverts water via Rock Slough from Old River in the Delta. There are also several municipal and industrial water users in the vicinity of Antioch and Pittsburg diverting water from offshore when quality is adequate, turning to the Contra Costa Canal for a substitute supply when it is not. Some of the area that is within the Delta as defined by the Legislature is not included in any of these organized agencies; a total Delta solution would have to recognize and treat these areas in some way.

A summary of the negotiations with the varied Delta interests in recent years is included in the "Delta Water Entitlement Negotiations" section of Chapter II.

Future Project Financing

Proposition 13.[8/] Passage of Proposition 13 in June 1978 by the voters of California raised uncertainties concerning the ability of SWP water contractors to collect for water service charges through property taxes. These uncertainties were lessened through an opinion by the Attorney General[7/] released in August 1978.

Proposition 13 provides that ad valorem property taxes to pay principal and redemption charges on voter-approved indebtedness may be levied in addition to the one percent general limit imposed by that law. It was the Department's view that the State's Burns-Porter bonds were such voter-approved debt, that the water contract payments were pledged to pay bond service on these bonds, and that taxes levied for the purpose of making SWP contract payments were within the voter-approved indebtedness exception. The Attorney General's opinion agreed with this position. The opinion said, however, that the water agencies must make water supply contract payments from water charges wherever possible. The Department had surveyed its water contractors prior to the opinion and learned that 14 of the 31 relied entirely on property taxes for SWP contract payments and another 8 contractors relied in part on taxes.

The uncertainities concerning the ability of SWP water contractors to collect for water service charges through property taxes became a legal question when the Kern County Water Agency sued the County of Kern Board of Supervisors. (See the Litigation section in Chapter I, Kern County Water Agency v. Board of Supervisors of the County of Kern, et al.)

Review of SWP Financing Program. The Department initiated a review in early 1979 of the Long-Range Financing Program for the SWP. Purpose of the review was outlined to determine the best and least costly method of financing the project in future years. Important considerations shall be given to the effect of Proposition 13 on the financing program and the financing program's effect on SWP contractors.

Review guidelines were defined to consider:

- needs of the SWP through 2035
- that SWP units identified in Bulletin 132-79, including power plants and subsequent replacements for thermal plants, should be assumed the basis for future project construction
- financing with and without federal participation in construction of future water facilities
- potential financial consequences of possible construction delays or accelerations

7/ No. CV 78/90.

8/ Article XIII A of the California Constitution, added by Proposition 13, a tax limitation initiative of the June 6, 1978 Primary Election.

- alternative means of financing regardless of existing contractual or statutory limitations
- the potential impact of reduced contractor revenue if there is an inadequate water supply to meet SWP entitlements in the mid-80's
- whether or not DWR's future financing program will have any detrimental effect on existing outstanding SWP bonds, or other future State bond issues

Financing of Distribution Works

In addition to paying their allocated share of project costs, most contractors must finance the construction of local distribution facilities needed for project water deliveries. It is currently estimated that the 31 long-term contractors will spend a total of $2.44 billion for such facilities. Total expenditures through 1978 are an estimated $1.04 billion.

Under a 1968 enactment, the Legislature provided $8 million to help designated agencies finance works needed to distribute SWP water. Between 1968 and 1976 the Department disbursed seven construction loans accounting for $7.5 million of the total $8 million.

In 1973, the Lost Hills Water District applied for a construction loan of $500,000. The District subsequently requested and was given several extensions of time in which to complete and submit information required by the Department concerning the proposed loans. In November 1976, the District submitted all the required information, and in April, 1977, the loan contract was approved by the DWR Director; however, the District did not request disbursement of the loan until 1978. The loan was disbursed to Lost Hills Water District in July 1978. The total $8 million of loans is now complete and is summarized in the following table.

Applicants (All Member Units of Kern County Water Agency)	Construction Loan Disbursements
Berrenda Mesa Water District	$1,600,000
Cawelo Water District	1,800,000
Lost Hills Water District	500,000
Rosedale-Rio Bravo Water Storage District	550,000
Semitropic Water Storage District:	
Buttonwillow Improvement District	2,450,000
Pond Poso Improvement District	1,100,000
Total	$8,000,000

Wheeling of Central Valley Project Water

Pursuant to contracts executed in 1975 and 1976, the State wheels CVP water to the Kern County Water Agency's Cross Valley Canal for the benefit of nine water agencies. A tabulation in the section of Chapter II herein, entitled "Wheeling of Federal Water", lists the agencies along with data concerning maximum contractual deliveries, 1978 deliveries and 1978 charges. The water wheeled and the power used for wheeling it is supplied by USBR.

The State's charges for the wheeling services are primarily for the use of project facilities.

From the beginning, the State has made it a condition that it would not wheel CVP water during any period when the Bureau was not releasing its share of the Delta outflow required to comply with State and Federal water quality standards. The condition, objected to by USBR, resulted in some wheeling curtailment in 1977 but none in 1978. All requested wheeling during 1978 was accomplished since Delta outflow was at all times in excess of that needed to meet minimum Delta water quality standards.

A Task Force, established by the Congress in 1977 to examine the San Luis unit of the CVP, including the issue of Delta water quality, recommended in December 1977, that:

> "The Department of the Interior should promptly commit itself, as a matter of policy, to exercise such authority as it may have, and to seek from Congress affirmation of, and such additional authority as may be required, to meet water quality standards, and to provide fish and wildlife mitigation and enhancement in the Sacramento-San Joaquin estuary from the CVP."

On January 3, 1979, Secretary of the Interior Cecil D. Andrus announced that the Central Valley Project would be operated to meet Delta water quality standards. This would be done on a voluntary basis pending resolution by Congress or the courts of the legal question of whether or not Federal compliance is mandatory. The Secretary further stated that he would support legislation in the Congress which would give greater flexibility in CVP operations to provide for both water quality and fish and wildlife protection in the Delta. The Secretary, however, reserved the right to re-evaluate his commitment to meet standards in a critically dry year such as 1977.

ACTIONS CONCERNING PROJECT POWER

The Department's continuing activities regarding electrical energy for project pumping cover two distinct areas:

1. The management of current power purchase-sale contracts and development of power cost data as required for the administration of water supply contracts.

2. The acquisition of power sources for the Project after March 31, 1983 when existing contracts for the purchase of firm power supplies terminate.

The activities in the above areas during 1978 are explained in some detail in Chapter II, however acquisition activities are highlighted here for general interest.

Long-Range Energy Program

The objective of the Department's long-range energy program is the acquisition of reliable and economic energy supplies, with minimum disruption to the environment, for continued operation of the SWP beyond March 31, 1983. The approved program includes the following actions:

- Use of recovery generation from aqueduct power recovery plants to meet project needs.

- Retain Hyatt-Thermalito generation for SWP use after March 31, 1983.

- Select and develop additional resources for the balance of energy requirements.

- Purchase supplemental capacity and energy under a modified and extended suppliers contract.

- Exchange or sell SWP capacity and energy in excess of Project requirements.

In accordance with the long-range program, the Department is exploring a wide range of alternative sources of power.

California Aqueduct Recovery Plants

On March 22, 1978, the Federal Energy Regulatory Commission (formerly the Federal Power Commission) granted a license to the power generating facilities of the California Aqueduct. The license was effective February 1, 1972 so as to cover the initial generation at Devil Canyon and Castaic Powerplants. See Bulletins 132-77, page 28, and 132-78, page 33, for actions that led up to the granting of the license. The license also covers proposed future recovery plants -- Pyramid and Cottonwood Powerplants in Southern California and San Luis Obispo Powerplant in the Central Coastal area.

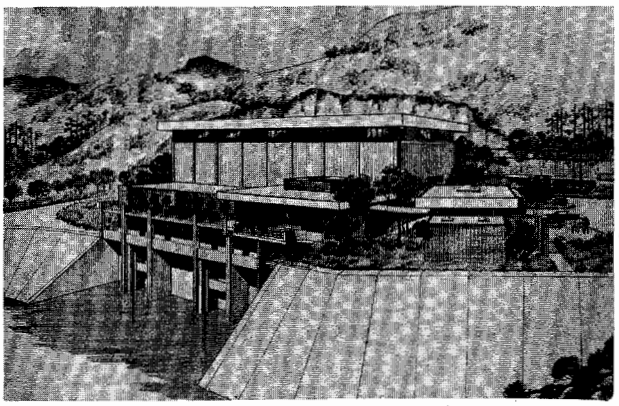
Pyramid Powerplant. Facilities of the Pyramid hydroelectric project are shown on Figure 1.

These facilities will consist of: (1) Quail Lake and Lower Quail Canal; (2) Peace Valley Pipeline (Phase I) with one 3.65-metre (12 foot) diameter pipe; and (3) Pyramid Powerplant (Phase I), with two 37.5 megawatt generators and appurtenant facilities.

Quail Lake and Lower Quail Canal are essentially completed. Construction of the Peace Valley Pipeline started in April, 1978. Construction of Pyramid Powerplant started in November 1978, although fabrication of components for the plant, such as impulse turbines, bridge crane, and penstock, was begun earlier in 1978. The Phase I facilities are expected to be operational in 1982 and will be adequate to convey water deliveries until at least the mid-1990's.

Phase II, consisting of a parallel pipeline and additional generating units at the Powerplant, may be required, depending on MWD's requirement for water deliveries from the West Branch. Estimated costs of the Phase I Pyramid Facilities total about $115.8 million, not considering allowances for future cost escalation.

Cottonwood Powerplant. This power plant will be located near the start of the East Branch of the California Aqueduct as shown in Figure 1. Water now



Architect's rendering of future Pyramid Hydroelectric Powerplant located on the West Branch, California Aqueduct northwest of Los Angeles.

flows through the Cottonwood Energy Dissipator Chutes. The power plant will be constructed adjacent to the Chutes and is assumed to consist of one 3.35-metre (11-foot) diameter penstock and one 15-megawatt generating unit. However, final design has been delayed pending the outcome of a study by East Branch contractors and the Department regarding a future enlargement of the East Branch aqueduct between the bifurcation of the West Branch Aqueduct and Silverwood Lake.

Additional Energy Sources

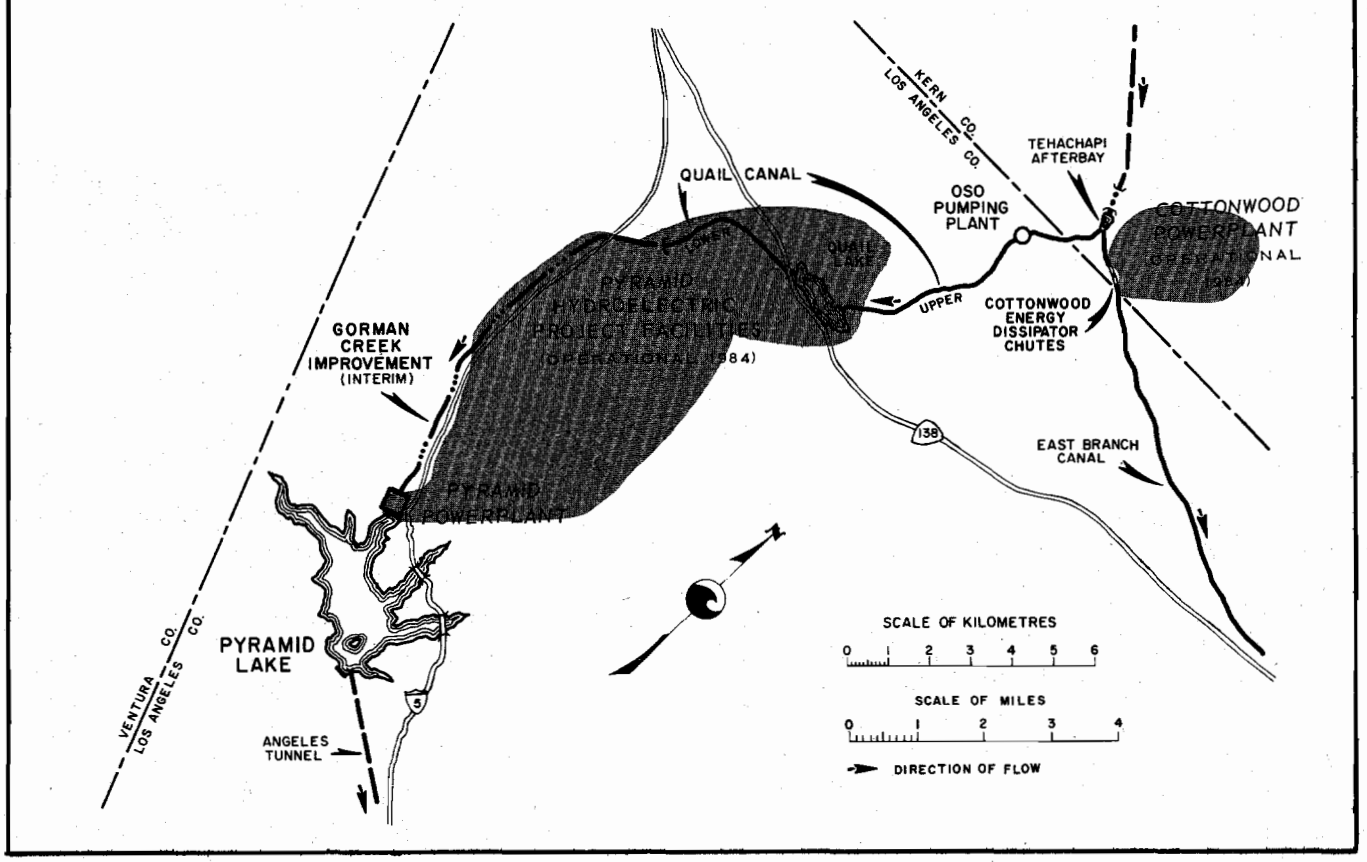
During 1978, the Department pursued additional energy supplies from conventional hydroelectric, geothermal and coal-fired sources. In addition, the Department expanded its research and development activities regarding alternative, unconventional energy sources.

Hydroelectric. Because the more feasible and less environmentally disruptive reservoir sites have already been developed, further expansion of hydroelectric capacity is generally restricted to the addition of power plants to already constructed water facilities. During 1978, the Department entered into agreements regarding the potential purchase of generation from power plants to be added to:

- Pine Flat Dam by the Kings River Conservation District (a planning and feasibility agreement).
- The water distribution system of The Metropolitan Water District of Southern California, by the District (a power purchase contract).

In addition, the Department continued its studies regarding other possible hydroelectric developments which would be constructed either by the Department or by other agencies.

Figure 1: FUTURE SOUTHERN CALIFORNIA RECOVERY PLANTS



Geothermal. During 1978, the Department demonstrated its firm commitment to the development of geothermal resources. The Department acquired additional rights to geothermal steam in the Geysers area of Lake and Sonoma Counties with a successful bid on the Binkley (BLM) leasehold. The Department now has rights which may support a total of four 55-MW units in the areas.

The Department also is working with a developer, the U. S. Forest Service, and the Department of Energy to develop a unique hybrid project. This project would demonstrate the feasibility of producing electricity from wood waste and hot geothermal water in the Honey Lake area of Lassen County.

Looking to the more distant future, the Department entered into agreements with developers for the joint exportation and potential development of geothermal resources in the Imperial Valley. Technological advances will be necessary before electrical energy from these hot water resources are economically competitive with other alternative sources.

Coal-fired. In accordance with National Energy Policy, the Department is also planning the use of coal as a significant source of electrical energy needed by the SWP.

- In the spring of 1978, the Department embarked on a specific program to develop a 1 000 MW coal-fired plant -- about one-third of which would be used by the Project and the remainder offered to potential participating utilities.

- In late 1978 the Department entered into discussions with the Nevada Power Company which has since resulted in an executed participation agreement for the joint development of the 250-MW coal-fired Unit No. 4 of the Company's Reid Gardner Plant near Las Vegas.

- Also in 1978 the Department initiated discussions regarding participation in Pacific Gas and Electric Company's 1 600-MW Fossil 1 and 2 Project -- a coal-fired plant which would be located in Solano County.

Negotiations between the Department and Southern California Edision Company continued during 1978. These negotiations resulted in a contract signed in late 1979 between the two agencies providing additional power and transmission service for the SWP. (See Power Contracts Management and Energy Activities Section in Chapter II.)

This photo shows the rugged terrain in the Francisco Leasehold, site of Bottle Rock Powerplant. The vented steam (lower center), illustrates the readiness and availability of this geothermal type of energy source.

ACTIONS CONCERNING PROJECT RECREATION AND FISH AND WILDLIFE ACTIVITIES

Recreation use at SWP facilities in 1978 totaled about 5.8 million visitor days. This is an increase of about 45 percent from the 4.0 million visitor days in 1977. The increase in recreation use can be attributed to water levels in SWP reservoirs returning to normal after the 1976-77 drought.

Figure 2 indicates the status of recreation developments on the California Aqueduct at the end of 1978.

Fishing Access Site Program

Under legislation enacted in 1968, the Wildlife Conservation Board is responsible for planning and developing a fishing access program on SWP aqueducts (see page 2, Bulletin 132-69). In 1969, the Board and the Department embarked on a program of development at certain sites along the California Aqueduct. Under the program the Department agreed to permit use of some existing roads, furnish and install necessary safety devices prior to public use, and provide necessary access to land on which to develop the fishing access sites. In addition, the Board requires that (1) a fishery be established prior to development of a site, (2) site operation and maintenance be provided by local government, and (3) site facilities (funded by the Board) be adequate but not elaborate.

All 15 fishing access sites on the aqueduct are open and free to the public and have been well received.

Wildlife Preservation

Both federal and state laws require that water project developers take reasonable actions to preserve, or mitigate damage to, wildlife resources affected by their projects. For several years the Department has been developing wildlife mitigation plans for the SWP in Southern California (south of A.D. Edmonston

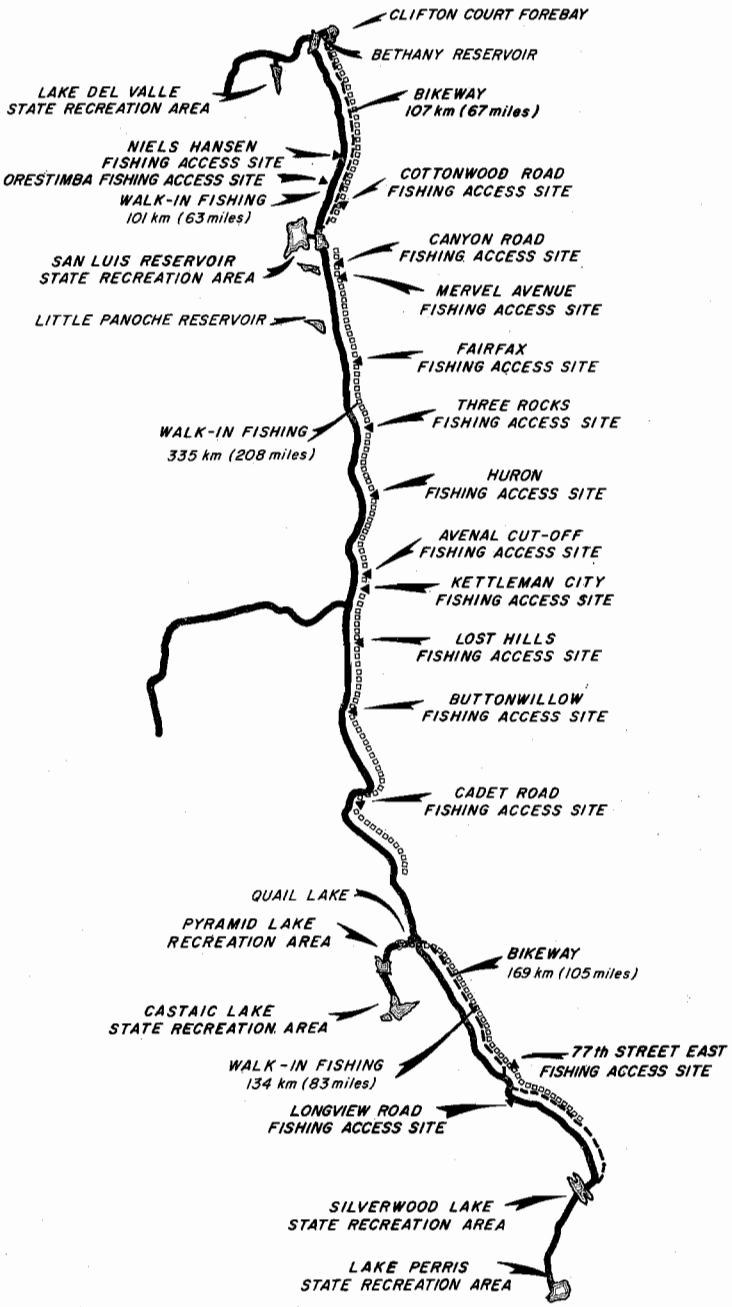


Figure 2: AQUEDUCT RECREATION DEVELOPMENTS

Pumping Plant). The damage these plans will seek to mitigate generally consist of losses resulting from inundation of natural habitat or development of facilities.

In 1977, agreement was reached with the U. S. Forest Service on a plan to mitigate damage to wildlife on federally owned land. The plan calls for the Department to acquire about 607 hectares (1,500 acres) of privately owned lands within the Los Padres, Angeles, and San Bernardino National Forests in Southern California and turn them over to the Forest Service for management. The plan also includes funds for modest development to improve wildlife habitat values, and for 10-year management costs.

The Department and the Department of Fish and Game continued efforts to complete a plan for mitigation of wildlife damage attributable to the construction of SWP facilities in Southern California. A tentative agreement was proposed in 1978 based on a cash settlement to develop, operate, and maintain a wildlife preservation area in the San Jacinto Valley, east of Lake Perris. However, at the request of the water contractors, implementation of the agreement was delayed to permit review of the mitigation problem by independent wildlife consultants. An alternative plan was developed by the consultants early in 1979 on which agreement will be negotiated.

Feather River Enhancement Project

The Feather River Enhancement Project will be located between the north side of the town of Oroville and the Feather River, including a part of the west Highway 70 right of way. The project was authorized and funded from the State's General Fund ($1,200,000) by passage of Assembly Bill 2620 in 1976.

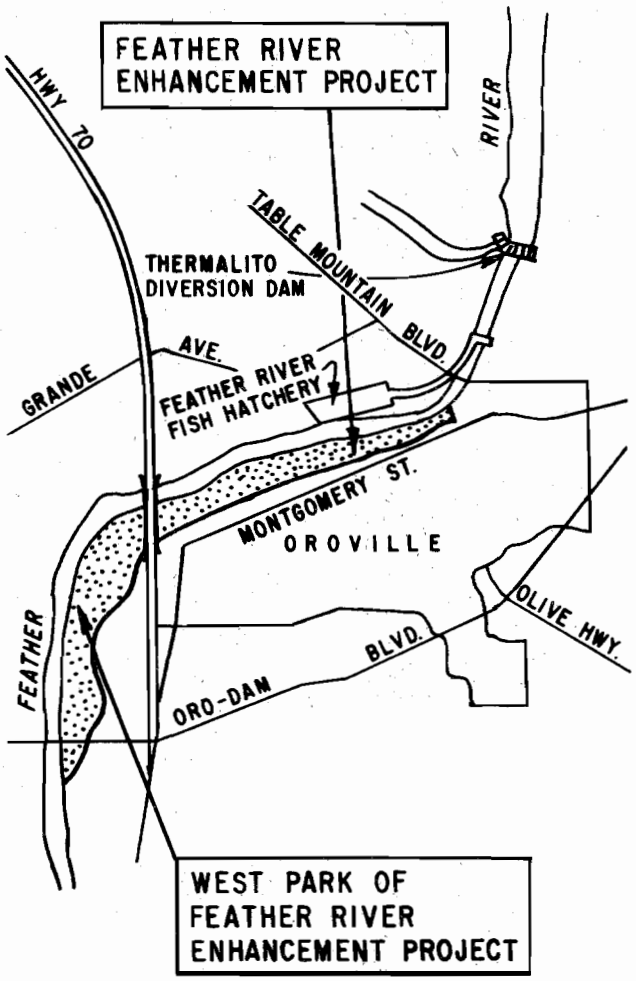


Figure 0

The project will be constructed by the Department for the County of Butte.

The proposed facilities include bike trails along the river, picnic tables, restrooms, parking areas, lifeguard platform and other miscellaneous structures. Construction is expected to start in July 1979 and be complete in January 1980. Costs are estimated to be about $800,000. The remainder of the $1,200,000 will be expended for right-of-way acquisition, preliminary design and State operations costs associated with the construction. Operation and maintenance of the completed facility will be by the Feather River Park and Recreation District.

LITIGATION

On December 8, 1978 the Governor issued an Executive Order requiring the Departments of Transportation, General Services, and Water Resources to provide for arbitration of all disputes arising in State construction contracts for which bids are opened after January 1, 1979. The Governor's arbitration plan is intended to help reduce court congestion, as well as the cost of litigation and the time spent by contractors and the respective State agencies in efforts to settle disputes.

The Department is implementing the Executive Order and has amended its contract specifications for all contracts on which bids will be opened after January 1, 1979. Also, in accordance with the Executive Order, the Department will offer to arbitrate any disputes which may arise under existing construction contracts, unless litigation has already begun. The Department participated in several months of discussion leading to issuance of the Executive Order. This action was based on the passage of SB 2197 (Campbell), Chapter 1374, Statutes of 1978, which overruled the decision in Zurn Engineers vs. State of California. SB 2197 requires that a dispute arising out of a construction contract with a public agency, which contract provides that one party to the contract shall decide all disputes arising under that contract, shall be resolved by submitting the dispute to independent arbitration if mutually agreeable or a court of competent jurisdiction. The new law had no effect on the Zurn case itself.

The following are summaries of significant litigation which involved the SWP in 1978:

Zurn Engineering, Inc., (Pascal and Ludwig) v. State Department of Water Resources, Superior Court, Los Angeles County No. 987331. The contractor for the construction of Grizzly Valley Dam (Lake Davis) contends the Department still owes approximately $1.4 million for work done, because of changes in the work, forced acceleration and added quantities of excavation and fill. Judgment was entered on February 10, 1977 for the plaintiff, awarding him a total of $896,000 plus interest. The Department appealed. The District Court of Appeal overturned findings for the contractor and returned the claims to the Department for further processing pursuant to "due process" requirements. This landmark case holds that a determination such as the Department's in this case is "final and conclusive" unless it is shown to be fraudulent, capricious, arbitrary or so grossly erroneous as to imply bad faith. The contractor notified the Department that it would appeal this decision to the United States Supreme Court. Petition for a Writ of Certiorari from the Supreme Court. The Supreme Court denied this petition also.

The Supreme Court's action forced Zurn to seek administrative remedy for its claim. On December 11, 1978, Zurn Engineers filed its brief for hearing before the Department's engineer.

State Department of Water Resources vs. Moloney, Sacramento County Superior Court No. 239121, involves the purchase of transformers for installation during the construction of the Oroville Powerplant. Three of the transformers failed after a short period of use, and upon examination it was found that they did not meet original contract specifications. All six transformers have now been repaired or rebuilt, and the State is seeking to recover the costs of approximately $3,000,000.

On September 30, 1975, Central Moloney, Inc. filed a cross-complaint against the Department for $255,886 for repairs made on two of the transformers.

Pretrial discovery is still in progress and a trial date in late 1979 is expected.

Berrenda Mesa Water District v. Department of Water Resources, filed September 10, 1976, Sacramento County Superior Court, No. 262976.

The Berrenda Mesa Water District filed suit against the Department of Water Resources and also named as defendants Contra Costa County Water District, Contra Costa County Water Agency, and the North, Central, and South Delta Water Agencies. The Berrenda Mesa Water District is a member agency of Kern County Water Agency (KCWA).

The complaint sought to enjoin releases of water to the Delta above those that allegedly were required for operation of the State Water Project. The complaint alleged that the releases were in violation of:

1. The constitutional prohibition against impairment of the obligation of contract with regard to the contract between the State and KCWA and the contract between KCWA and Berrenda Mesa;

2. The contract with the bondholders;

3. The priorities established by Water Code Section 106, which give irrigation the second highest priority to the use of water;

4. Article 10, Section 2 of the California Constitution requiring the reasonable beneficial use of water; and

5. The stay order of the Sacramento Superior Court staying operation of Decision 1379.

The complaint asked for both a preliminary and permanent injunction and for a declaratory judgment determining the issues that it raised.

The Department filed a demurrer which was heard on December 16, 1976, alleging that (1) the plaintiff lacks standing to enforce the KCWA contract with the Department, and (2) the proceeding is an inappropriate forum in which to complain of alleged enforcement by the Department of D-1379.

On February 8, 1977, the trial court sustained the Department's demurrer on the grounds that (1) plaintiff failed to state a cause of action, (2) plaintiff lacks standing to sue to enforce the KCWA contract with the Department, and (3) plaintiff did not plead that it is a third party beneficiary to any contract.

In February, 1978, the plaintiff voluntarily dismissed this action without prejudice.

Kern County Water Agency v. Board of Supervisors of the County of Kern, et al., filed August 7, 1978, Superior Court, County of Kern, No. 155001.

The petitioner, KCWA seeks to require the County of Kern to levy ad valorem zone of benefit assessments for the petitioner as exceptions to the one percent tax limitation of Proposition 13 as necessary to raise funds to pay petitioner's charges under its state water contract. Petitioner alleges four grounds for the exception: (1) the state water contract is a prior indebtedness approved by Kern County's voters at a special agency election on November 19, 1963; (2) the state water contract is a prior indebtedness approved by the voters at a statewide election on the Burns-Porter Act in November 1960; (3) application of the tax limitation of Proposition 13 to limit the KCWA's ability to tax to pay its state water contract charges is an impairment of the contracts between the State and the Burns-Porter bondholders in violation of the U. S. Constitution; and (4) the zone of benefit assessments are in the nature of special assessments for acquisition of water directly benefiting the lands assessed and therefore are not a tax within the ambit of Proposition 13.

The Department filed its complaint in intervention on August 24, 1978 and was granted leave to intervene. The Attorney General has limited his arguments on behalf of the Department to the voter approved indebtedness--Burns-Porter Act election issue in (2) above. Judgment in favor of petitioner KCWA was entered on November 20, 1978. The County filed a Notice of Appeal to the Court of Appeals, Second Appellate District on December 20, 1978. Briefs were filed with the Court of Appeals by the Environmental Defense Fund on behalf of the County and by MWD with 16 other State Water Project contractors on behalf of KCWA.

On September 13, 1979, the Court of Appeal issued an opinion favorable to the Department. The Court held that the 1960 Burns-Porter Act election, together with the Kern County Water Agency special election, constitute prior voter approval of the contract obligation to repay the Burns-Porter bond indebtedness necessary for this indebtedness to fall within the exceptions from the one percent tax limitation of Proposition 13 (California Constitution, Article XIIIA, Section 1(b)).

Kern County Water Agency v. State of California, filed November 23, 1978, Sacramento County Superior Court, No. 277104, $8.3 million.

The KCWA filed suit against the Department, claiming damages for the Department's alleged failure to deliver all of its ordered entitlement (Table 4) water during 1977. KCWA claims that the Department of Water Resources unlawfully operated the SWP to meet salinity objectives of the water quality control plan for the Delta adopted by the State Water Resources Control Board. The Department claims that it, by law, must meet Delta water quality requirements established by the Board. This suit is similar to Tulare Lake Basin Water Storage District v. State of California and Salyer Land Co. v. Department of Water Resources.

KCWA alleges about $7.3 million in damages for the increased cost of exchange water that KCWA obtained from The Metropolitan Water District of Southern California. An additional one million dollars is claimed as damages due to failure by KCWA to obtain about 20,000 acre-feet of its 1977 annual entitlement from the State or any other source.

In December 1978, upon agreement by the parties, KCWA included the substance of the claim in its complaint in intervention in Tulare Lake Water Storage District v. State of California and dismissed this action without prejudice.

Tulare Lake Basin Water Storage District v. State of California, et al., filed October 19, 1976, Sacramento County Superior Court No. 263582.

The Tulare Lake Basin Water Storage District and Dudley Ridge Water District, both State Water Project water supply contractors, filed suit against the Department alleging essentially the same causes of action as did the Berrenda Mesa Water District in its suit against the Department, discussed previously.

The complaint asked for a preliminary and permanent injunction, declaratory relief and damages. The amount of damages is not set forth in the complaint.

The Department's demurrer was heard on February 28, 1977. It alleged that this is not the proper forum in which to challenge the Department's release of water into the Delta.

On October 5, 1977, the trial court sustained the demurrer with leave to amend. The judge found that the court has no jurisdiction to take any action concerning the alleged violation of the stay of Decision 1379, since the matter of Decision 1379 is pending before a federal court.

The plaintiff filed an amended complaint. The Department filed a demurrer which was heard on June 13, 1978. Kern County Water Agency intervened and, upon agreement by the parties in December 1978, included the substance of its claim in KCWA v. State of California in this complaint in intervention.

Salyer Land Company, et al., v. Department of Water Resources, Sacramento County Superior Court No. 267102, filed May 9, 1977.

The Salyer Land Company alleges that the Department wrongfully violated the stay order against Decision 1379, wrongfully diverted water allegedly belonging to the claimant into the Sacramento-San Joaquin Delta, and wrongfully refrained from delivering that water to the Tulare Lake Basin Water Storage District, pursuant to the agreement between the Department and the District.

The claimant, Salyer Land Company, which is located in the Tulare Lake Basin Water Storage District, is asserting the claim in its own behalf and in behalf of all other similarly situated landowners. The claimant is alleging damages in the amount of $3.7 million, which includes damages to crops and soil due to the consequent use of ground water with a high sodium content, cost of energy for pumping, and cost of drilling additional wells.

On July 28, 1977, the Department filed a demurrer which claimed that the plaintiff failed to state a cause of action. The grounds for the demurrer were (1) that the plaintiff lacks standing to enforce the contract between the Department and the Tulare Lake Basin Water Storage District; (2) that the plaintiff lacks standing to seek damages resulting from a violation of an injunction issued in another action; (3) that any violation of an injunction entered in another action may be raised only in that action; (4) that a cause of action for damages cannot be stated until the court in the other action determines that an injunction has been violated; and (5) that the injunction in any case would not bind the Department or any of the defendants.

On January 9, 1978, the demurrer to the first cause of action (contractual) was sustained with leave to amend. The

Court allowed that the purpose of the contract was to fulfill an obligation owed by the Tulare Lake Basin Water Storage District to the plaintiff (to supply water). The Court sustained the demurrer to the second cause of action (violation of the injunction) without leave to amend, because it lacks jurisdiction to enforce an injunction since the action is in Federal District Court.

On January 23, 1978, the plaintiff filed a second amended complaint, alleging that Tulare Lake Basin Water Storage District owed an obligation to the plaintiff to supply water.

The demurrer was heard on May 5, 1978. On June 16, 1978, the trial court rejected the Department's demurrer and the Department filed its answer to the complaint on August 21, 1978.

Sierra Club v. Morton, U. S. Court of Appeals for the Ninth Circuit (District Court decision is found at 400 F. Supp. 610 (N.D. Cal 1975)).

This suit seeks to enjoin federal and state defendants, including the Director of the Department of Water Resources from constructing or continuing construction or operation of the Delta Pumping Plant, the Peripheral Canal, and certain existing or proposed Federal CVP facilities because of an alleged failure to meet environmental requirements. The principal statutes involved are the National Environmental Policy Act of 1969, the California Environmental Quality Act of 1970, and the Rivers and Harbors Act of 1899.

On July 28, 1975, Judge Charles B. Renfrew issued a Memorandum of Opinion which stated that the Peripheral Canal would, and that the Delta and Tracy Pumping Plants did, affect the "navigable capacity" of navigable water in the Delta. He, therefore, ordered the state and federal defendants to obtain permits for these facilities from the U. S. Corps of Engineers (USCE). The USCE must consider Environmental Impact Statements (EIS) before issuing any permits for these facilities and may, through its permit authority, impose restrictions on the operation of the facilities. No injunction was issued.

Although the State and all other defendants have filed appeals, the Department has also begun compliance by filing for permits to divert water through the Delta Pumping Plant. The USCE, with the assistance of the Department, has begun preparation of an EIS for the existing facilities. Once the EIS is completed, it will be supplemented to cover installing four additional pumps. However, these permit applications would be dropped if the trial court decision is reversed.

Appellate briefs were filed in the Ninth Circuit Court of Appeals on June 21, 1976; the Sierra Club's brief was filed September 19, 1976; and the State's and intervenor's reply briefs were filed on November 19, 1976. Oral arguments were heard on May 9, 1978 by the Ninth Circuit Court of Appeals, but the Court has not yet rendered its decision.

California v. United States (formerly USA v. State of California, United States District Court (Sacramento) CIV S-3014, filed October 1973) United States Supreme Court.

This suit arises from conditions imposed by the State Water Resources Control Board, in Decision 1422, on the USBR's water rights for the New Melones Dam project. USBR sought a declaratory judgement that the State Board does not have the authority to place operational limitations on the project. The dispute centers on whether Section 8 of the Federal Reclamation Act of 1902 gave the State authority to place conditions on federal reclamation projects.

The Department is concerned because the decision could set a precedent that

would leave the Department without the USBR's contribution to maintaining water quality in the Sacramento-San Joaquin Delta.

Several other cases involving the issue of the Board's jurisdiction over the Federal CVP are being held in abeyance in the U. S. District Court in Sacramento pending the outcome of this case. They are:

a. Kern County Water Agency v. SWRCB and Central Valley East Side Project Association v. SWRCB (to set aside the Delta Water Rights Decision 1379);

b. San Joaquin County Flood Control and Water Conservation District v. SWRCB (to set aside the Lower American River Water Rights Decision 1400).

c. People ex rel. SWRCB v. Morton (the action by the State to compel CVP compliance with SWRCB water rights permits).

On October 9, 1975, Judge MacBride held that the United States is not required to comply with the terms and conditions in Decision 1422. The Judge ruled that the United States can appropriate unappropriated water necessary for use in any federal reclamation project in California and need apply to the State Water Resources Control Board for a determination of the availablity of unappropriated water as a matter of courtesy only. The Judge further held that the State must grant such applications if unappropriated waters are available and that Section 8 of the Reclamation Act of 1902 does not allow State agencies to impose terms or conditions on such applications.

The State Board then appealed the decision to the Ninth Circuit Court of Appeals, and the Department, along with 15 other western states, filed friend of the court briefs in support of the Board.

On April 1, 1977, the Ninth Circuit affirmed the District Court decision in all but one respect. The only change the Ninth Circuit made was to hold that federal applications to states for unappropriated water are required, not merely a matter of comity. On rehearing, the Ninth Circuit held that even for state appropriative filings on water which were later assigned to the Bureau, the Board could not impose any terms or conditions.

On August 19, 1977, the State requested U. S. Supreme Court review of the case. In December 1977, the Supreme Court agreed to hear our appeal. Oral argument was heard on March 28, 1978.

On July 3, 1978, the Supreme Court decided in favor of California. It held that the Bureau must comply with conditions in its water rights permits that are not inconsistent with congressional directives.

The case was remanded for a determination of whether the U. S. was estopped from attacking the Board's decision on the merits and, if so, whether any conditions in the New Melones permits are inconsistent with congressional directives. The case has been transferred to Judge Renfrew in San Francisco. On March 1, 1979 he heard argument on the State's motion for summary judgment based on res judicata and estoppel.

The following litigations are petitions seeking to invalidate the EIR on which Decision 1485 and the revised water quality control plan for the Delta and Suisun Marsh are based. A petition for coordination was filed by the Attorney General, and Judge Perluss was assigned. The Department was allowed to intervene.

A second petition for coordination with eight cases challenging Decision 1485 was filed by the Attorney General and assigned to Judge Perluss. The petitioners in the Delta have filed oppositions to the coordination.

a. The Metropolitan Water District of Southern California, Kern County Water Agency and Tulare Lake Basin Water Storage District v. State Water Resources Control Board filed October 6, 1978, Superior Court, City of Sacramento, No. 276390.

b. Contra Costa County Water District, City of Antioch, City of Pittsburgh, City of Martinez, Oakley County Water District, City of Concord, City of Clayton and City of Pleasant Hill, v. State Water Resources Control Board, filed October 6, 1978, Superior Court, County of Contra Costa No. 191277.

c. South Delta Water Agency, San Joaquin County Flood Control and Water Conservation District, Albert Muller and Alexander Hildebrand v. State Water Resouces Control Board, filed October 11, 1978, Superior Court, City and County of San Francisco, No. 743341.

d. San Joaquin County Flood Control and Water Conservation District Central Delta Water Agency, Delta Farms Reclamation District No. 2030, Reclamation District No. 563 and Conrad Silva v. State Water Resources Control Board, filed October 11, 1978, Superior Court, City and County of San Francisco, No. 743342.

e. Central Valley East Side Project Assoc., Friant Water Users Assoc., County of Tulare, Westlands Water District, Central Valley Project Water Association and San Luis and Delta-Mendota Water Users Assoc. v. State Water Resources Control Board of the State of California, filed October 11, 1978, Superior Court, City of Sacramento, No. 276337.

f. Contra Costa County Water Agency v. State Water Resources Control Board, filed October 13, 1978, Superior Court, City and County of San Francisco, No. 743385.

g. United States v. SWRCB, filed November 13, 1978, Sacramento Superior Court, No. 277544.

Rio Blanco Ranch v. State of California, ex rel., Department of Water Resources, filed March 27, 1978, San Joaquin County Superior Court No. 137221. Due to the extremely wet winter of 1977-78, borrow pits from Highway I-5 construction located on DWR right of way filled with water. The plaintiff contends that this raised the water table, on his adjoining land, to his injury. The complaint was forwarded to the Attorney General's office with the request to defend the Department. The case is still in discovery. A cross-complaint has been filed against Rio Blanco Ranch.

Seepage Suits, Sacramento and Feather Rivers. During 1975 and early 1976, several suits were filed against the State and the United States in both the state and federal courts by more than 25 landowners adjacent to the Sacramento and Feather River for damages alleged to have been caused by erosion and seepage in March and April of 1974, allegedly resulting from the coordinated operation of the federal and state water projects. The plaintiffs allege damages in excess of $30,000,000.

One such case, included in the Sacramento River Seepage Cases mentioned above is H. L. Sanborn, et al, v. United States CIV 5-76-154 , a complaint in inverse condemnation, negligence and trepass for approximately $20,000,000 based on alleged erosion and seepage damages, was filed in Federal District Court on

March 22, 1976 by a group of landowners along the Sacramento River. Defendants are the United States (U.S.), USBR, USCE, and the State of California. Similar complaints against the State and the United States have also been filed in the Superior Courts of the counties where the affected land is situated.

The claims arise from damages allegedly caused by high flows in the Sacramento River in March and April 1974, which plaintiffs contend caused erosion and seepage and raised the ground water table. The 1973-74 winter was extremely wet, and flooding occurred along the Sacramento River due to intense storms in January and at the end of March. The levels were partially controlled by reducing releases from Shasta Dam and diversions from the Trinity project.

The complaint alleges that the Federal and State Governments, as joint venturers in the CVP, kept the river levels high for an extended period, causing excess seepage that damaged their orchards and crops.

On September 19, 1977, United States District Court Judge McBride ruled on the pending motions of the United States as follows:

(1) The plaintiffs' claims against the State are dismissed because there is no independent ground for federal jurisdiction.

(2) The plaintiffs' inverse condemnation claims against the United States are dismissed because they all exceed $10,000; thus, the District Court has no jurisdiction. Such claims must be filed with the United States Court of Claims.

(3) The plaintiff's tort claims against the United States are dismissed as to any damages caused by operation of the CVP for any of its purposes, because of the flood control immunity provided by federal statute (United States Code, Volume 33, Section 702(c)).

The only basis plaintiffs have left to seek recovery against the United States is if they can show that they suffered damage that resulted from activity of the United States unrelated to operation of the CVP.

This ruling may prompt plaintiffs to more actively pursue the Superior Court actions that were filed against the State.

The State was served in Superior Court on October 21, 1977, and has filed its answer and discovery is underway.

Brannan-Andrus Levee break cases. Sacramento Superior Court, having various numbers.

On June 21, 1972, a levee along the north bank of the San Joaquin River failed. Large portions of Brannan and Andrus Islands including the town of Isleton, were flooded. The levee is owned and maintained by the Brannan-Andrus Levee Maintenance District. The break occurred at a point where the District was excavating along the landward toe of the levee and using the material to raise and regrade the top of the levee.

The plaintiffs are property owners damaged by the flood. They contend that the State is liable for their damages because various local and state agencies, including the Department, were responsible for the integrity of the levee system in the Delta and hence the State should reimburse them for their losses. Plaintiffs' theories of recovery include negligence, inverse condemnation, nuisance, and maintenance of a dangerous condition.

Plaintiffs' motion for a determination that the State was legally responsible

for their damages was denied by the trial court on March 29, 1976. Their petition to the Court of Appeal for an order compelling the trial court to rule in their favor was rejected on November 18, 1976.

In a verdict rendered on August 23, 1977, the jury determined:

1. Sacramento County is not liable for inverse condemnation. (Although the work being done included widening of the county road, the Judge did not let the question of tort liability against the county go to the jury.)

2. The Brannan-Andrus Levee Maintenance District is liable in tort and for inverse condemnation.

3. The State is not liable in tort or for inverse condemnation, but is liable because the Reclamation Board breached its mandatory duty to review the plans for the levee maintenance work.

Only the liability issues were determined in this part of the trial. Another jury will determine the amount of damages which each defendant must pay.

Judgment on the liability issues was entered in June 1978. The Attorney General is appealing the judgment on behalf of the Reclamation Board and is drafting opening briefs. Plaintiffs are also appealing the portion of the judgment absolving Sacramento County of liability.

In the second phase of the trial, which covers damages, the parties argued motions on the wording of the judgment and plaintiffs' demand for costs including expert witness and attorneys' fees. At the present time several damage claims have been joined and are being litigated.

PROJECT CONSTRUCTION IN 1978

Construction on the West Branch of the California Aqueduct, and modifications to existing project facilities, comprised the construction program on the SWP during 1978. Construction divisions are indicated in Figure 3.

Plans and Specifications

In 1978, the Department completed plans and specifications for 48 SWP related construction and procurement contracts, 43 of which were awarded by the year's end. Included in this total were six contracts for removal of drought-related emergency facilities.

Design activities increased in 1978. The Department's design efforts of the Pyramid Hydroelectric Project facilities on the West Branch were evident in the award of contracts for the powerhouse initial contract, penstock, bridge crane, turbine shutoff valves and the turbines.

Preparation of plans and specifications is continuing for the powerhouse completion contract and various equipment contracts to be awarded in late 1979 and early 1980.

The Department has begun preliminary design for the initial powerhouse contract and the turbine contract for Cottonwood Powerplant in the Mojave Division. Scheduled final design has been delayed due to a study by the East Branch contractors and the Department to evaluate increasing the capacity of the East Branch.

Plans and specifications for the three additional pumps for the A.D. Edmonston Pumping Plant were completed. The contract was advertised, with an award date scheduled for July 1979.

Design was initiated on the Suisun Marsh Facilities and Bottle Rock Powerplant. Suisun Marsh Facilities construction

started in May, 1979. Construction on the Bottle Rock Powerplant is presently scheduled to start in early 1980. Studies on the Delta Facilities Intake Program and some cost estimates of additional conservation facility alternatives were prepared for the Future Water Supply Program. Seismic performance studies of Oroville project facilities were partially completed. Design staff also continued to support the consulting board activities on the safety of State-owned dams.

Land Acquisition

The current land acquisition program includes land and right of way required for the existing SWP facilities together with that required for:

1. the enlarged program for the West Branch including seismic protection, provision of a buffer against intrusion from the Off Road Vehicle Park, and establishment of a 3-mile strip of riparian development,

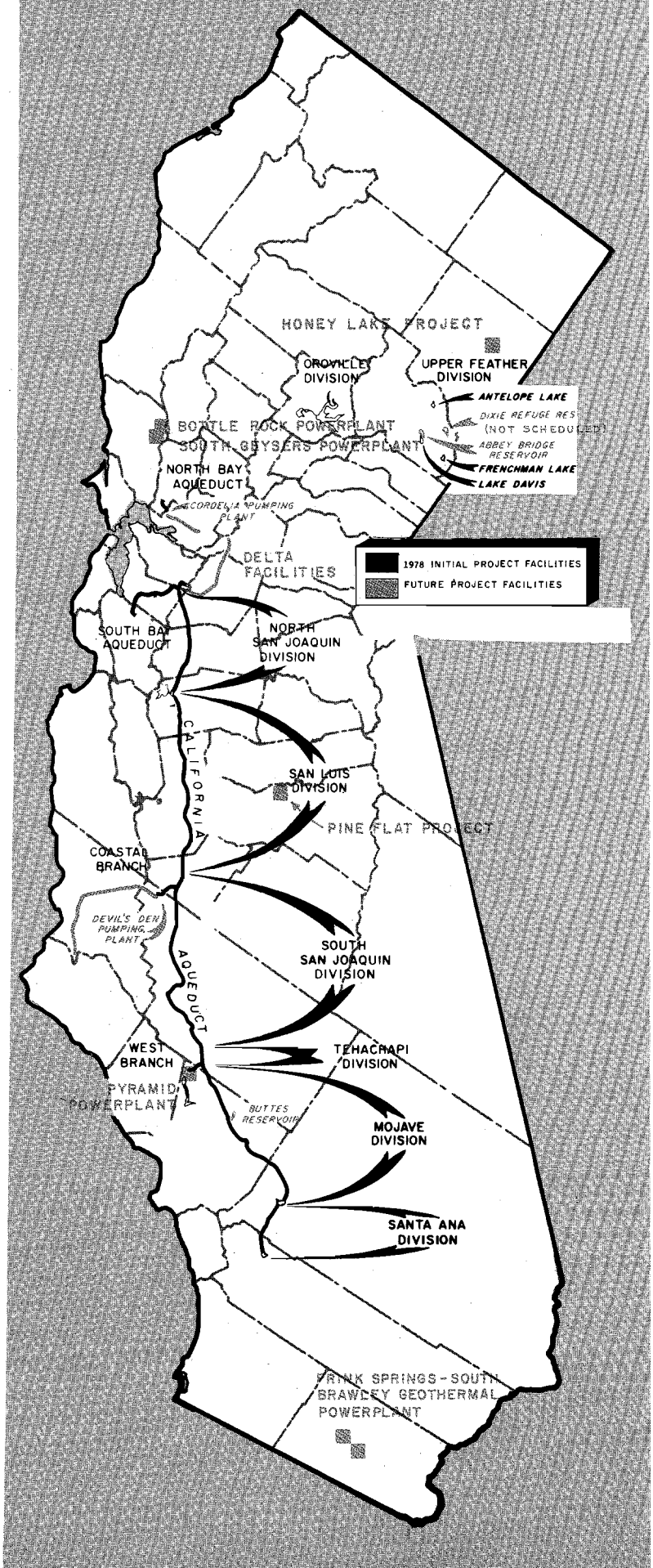
2. portions of Phase II of the North Bay Aqueduct (to minimize paying for excessive escalation of land prices when construction starts),

3. recreation developments associated with project facilities (and partially financed through the Land and Water Conservation Fund in most cases),

4. mitigation lands in Southern California required by terms of the agreement reached between the Department and the United States Forest Service,

5. Suisun Marsh lands to accommodate the construction of facilities to reduce salt water intrusion and provide for fresher water in critical areas,

Figure 3: PROJECT FACILITIES AND CONSTRUCTION DIVISIONS



6. Feather River Enhancement Project, which provides additional recreation on the Feather River at Oroville.

In addition, entry permits were obtained to allow geologic exploration for possible conservation facilities being evaluated in the Future Water Supply program.

During 1978, approximately $1,187,000 was spent for land acquisition in excess of credits for sales of surplus property and returns of condemnation deposits. This brings the total net expenditure through 1978 to $112.1 million, which is approximately 80 percent of the $140.4 million estimated total cost of the current program.

A total of 590.5 hectares (1,456.93 acres) were acquired comprising 21 parcels. Eight parcels of excess land, 1.7 hectares (4.2 acres), were sold, bringing the total of such excess lands sold through 1978 to 822 parcels, 2 042 hectares (5,046 acres).

In relocations, 5 relocation agreements at a cost of $93,634 were approved and 14 land exchange agreements covering 29 installations were processed.

One inverse condemnation suit for about $750,000 was in progress. A parcel of land originally required for the Peace Valley Aquatic Recreation Area was not purchased at that time, six years ago, because funds for the project were deleted by the Legislature. This abandonment gave rise to the inverse condemnation action. Another inverse action was settled in the Craig Recreation Area vicinity at Oroville. The Department negotiated and purchased property from the owners to satisfy their claim.

The number of land parcels required under the current land acquisition program is shown in the tabulation below for each facility or construction division of the Project together with the total of parcels acquired through 1978.

Facility or Construction Division	Parcels Acquired in 1978	Total Parcels Acquired	Total Parcels Required
Feather River Facilities:			
Upper Feather Division	0	22	29
Oroville Division	6	955	972
Delta Facilities	0	32	159
Emergency Drought Facilities	1	2	6
Suisun Marsh Facilities	0	0	14
North Bay Aqueduct	0	34	82
South Bay Aqueduct	0	203	206
California Aqueduct:			
North San Joaquin Division	1	209	216
San Luis Division	0	22	22
South San Joaquin Division	0	572	578
Tehachapi Division	0	1	1
Mojave Division	2	1,633	1,648
Santa Ana Division	2	681	698
West Branch	9	297	338
Coastal Branch (Phase I)	0	48	48
Coastal Aqueduct	0	0	200
Total	21	4,711	5,217

Construction Progress

At the beginning of 1978, fifteen construction contracts were underway. Forty-one additional contracts were started during the year with twenty-six contracts carried over into 1979. Construction activities in 1978 continued on the West Branch of the California Aqueduct. Completion of and modifications to existing project facilities comprised the remaining construction effort.

General

A contract to furnish and install a fire detection and suppression system in the Project Operations Control Center was completed during the year.

Feather River Facilities

Among the contracts completed at Oroville in 1978 were:

- Completion of Oroville Division operation and maintenance facilities
- Oroville Dam spillway chute repair
- Conduit and cable installation for Oroville Dam seismic instrumentation
- Oroville Dam left abutment access road repair

The contract for Miners Ranch Canal replacement tunnel is still in progress.

In January 1979, a contract was awarded for rewinding stators for the Edward Hyatt Powerplant motor/generator Units Nos. 2, 4 and 6. The replacement of these windings will extend into 1980.

South Bay

At South Bay Pumping Plant, contracts to install crane rails and an 18-tonne (20-ton) gantry crane were completed during 1978.

California Aqueduct

General. Nearly all the drought-related emergency facilities were removed by separate contract during 1978. California Aqueduct Facilities Modifications Contracts Nos. 5 and 6 involving additions, modifications and repair work at various pumping plants and other facilities in the San Joaquin and Southern Field Divisions were completed during the year.

Two contracts for Delta water quality monitoring stations in progress at the year's end were:

- Mallard Island Delta Water Quality Monitoring Station
- Antioch, Mossdale, and Rough and Ready Delta Water Quality Monitoring Stations.

North San Joaquin Division - A contract to replace the impellers in Units Nos. 1 and 2 at the Delta Pumping Plant was awarded in Fall 1977 and is expected to be completed in May, 1979.

San Luis Division - This Division is complete and operational. Three contracts in progress at the year's end were:

- Furnishing wearing rings for San Luis Pumping/generating Plant (completed March, 1979)
- Dos Amigos Pumping Plant trashrack assembly
- Sedimentation basin debris removal

South San Joaquin Division - All facilities are operational. A contract for emergency repairs at Salt Creek overcrossing was completed during the year.

Mojave Division - Contracts for removal of mud flow in the California Aqueduct near Largo Vista Road bridge and for

emergency repair of Pump Unit No. 6 at Pearblossom Pumping Plant were completed in 1978.

Santa Ana Division - Contracts for Perris Dam spillway modifications and for concrete deck seal, wall caulking and flashing at Devil Canyon Powerplant were completed during the year.

West Branch - Four contracts completed on the West Branch of the California Aqueduct in 1978 were:

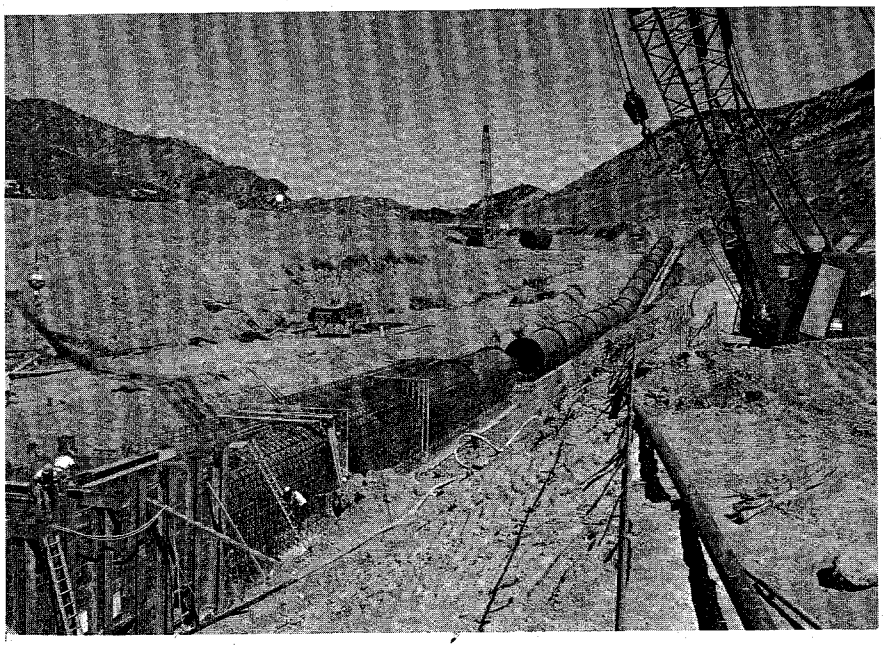
- Oso Plant maintenance shop
- Machining of existing stem flange bolts at Castaic low intake gate
- Two contracts for emergency storm damage repairs at Quail Canal.

Contracts in progress at year's end were:

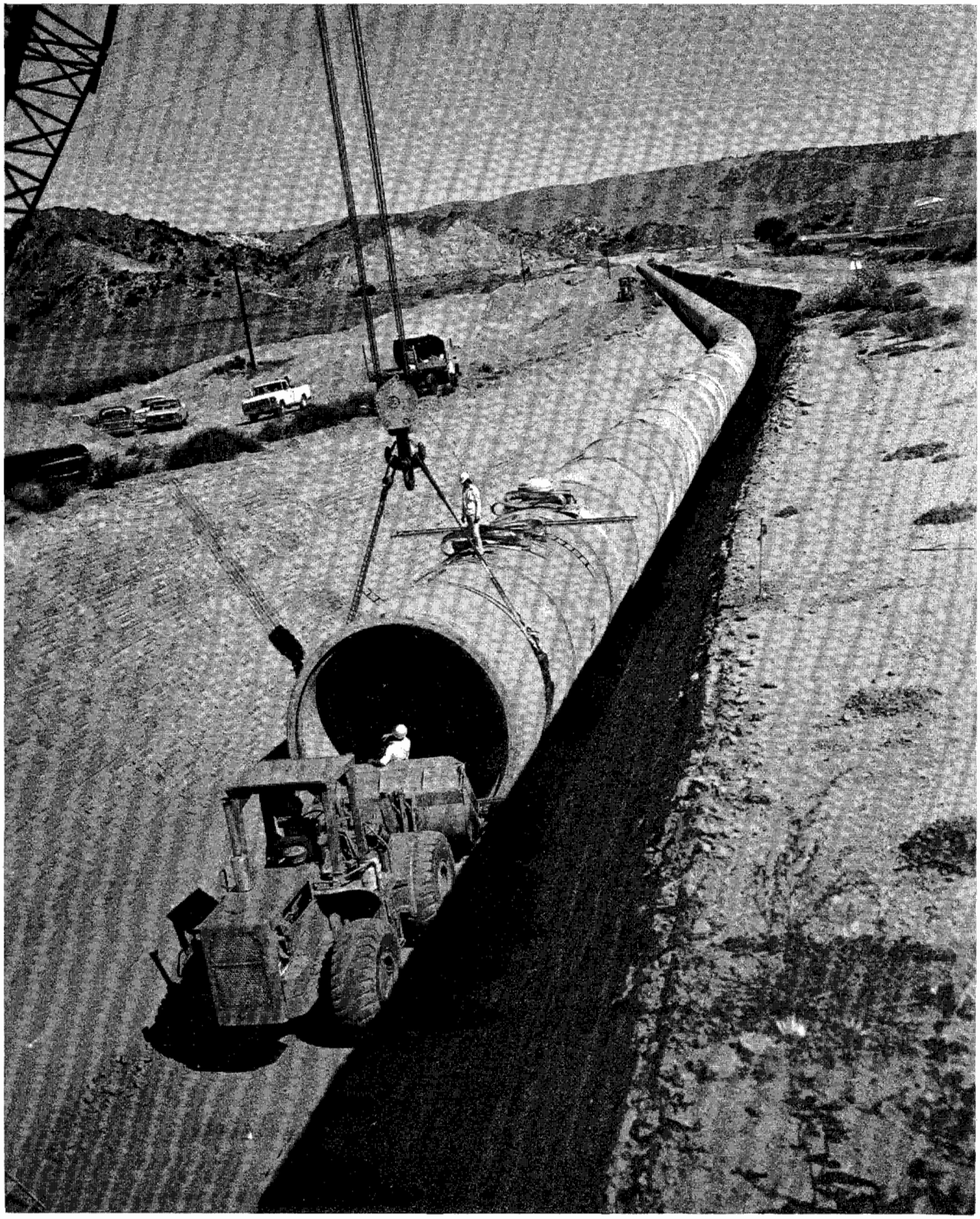
- Quail Lake enlargement and outlet structure
- Peace Valley Pipeline
- Pyramid Dam spillway modification
- Five Pyramid Powerplant contracts for:

  Site development and structure
  Vertical impulse turbines
  Bridge crane
  Penstock
  Shutoff plug valves

- Emergency repairs, Oso Intake Canal
- Oso Canal interceptor drain and Quail Lake outlet dewatering system
- Miscellaneous modifications at Castaic and Pyramid Dams
- Gate stem flange bolts at Angeles Tunnel intake works



Construction of Pyramid Powerplant Penstock began in September 1978.



Construction of the Peace Valley Pipeline began in 1978. The pipeline, a part of the Pyramid Hydroelectric Project Facilities, will transport water from Quail Canal to the Pyramid Powerplant penstock.

CHAPTER II

PROJECT MANAGEMENT AND OPERATIONS

PROJECT MANAGEMENT

This is a summary report on management of the Project's water and power utility during 1978, covering arrangements for (1) securing water rights and power for pumping and (2) marketing available water supplies and project power generation.

WATER RIGHTS MANAGEMENT

Delta Water Quality Monitoring and Reporting

Decision 1485 of the SWRCB was issued in August 1978. This new Delta Decision was the result of hearings that started on November 15, 1976, on (1) the SWP and CVP water rights permits and (2) Delta water quality standards. This Decision would control under certain conditions the level of exports and releases from upstream storage reservoirs to maintain Delta water quality. It also required the Delta water quality monitoring program which was essentially the program that the Department had recommended during the hearings to properly monitor the Delta's water quality. The program was substantially reduced in scope compared to the previous D-1379 requirements. As a part of the decision, the SWRCB has reserved jurisdiction to revise or formulate additional terms and conditions in the water rights permits issued to the Department and USBR.

Water quality information and data on Delta water conditions are stored in the Department's Water Data Information System. These data can be obtained from the Department by any state or federal agency. The data for 1978 was published and transmitted to the SWRCB. Copies of the 1975, 1976, and 1977 data reports are available. The Department is cooperating with the SWRCB in an analysis of existing state and federal data systems to adopt an electronic data processing system that will be common to all state agencies.

In 1978 the Department sampled an average of 32 parameters at each of 28 sites throughout the Delta estuary on a biweekly basis. On alternate weeks, continuous water quality profiles of the main channels of the estuary were recorded using the automated instrumentation aboard the Department's water quality work boat, M. V. San Carlos. This provided a broad range look at water quality conditions throughout the Delta.

Feather River Entitlement Negotiations

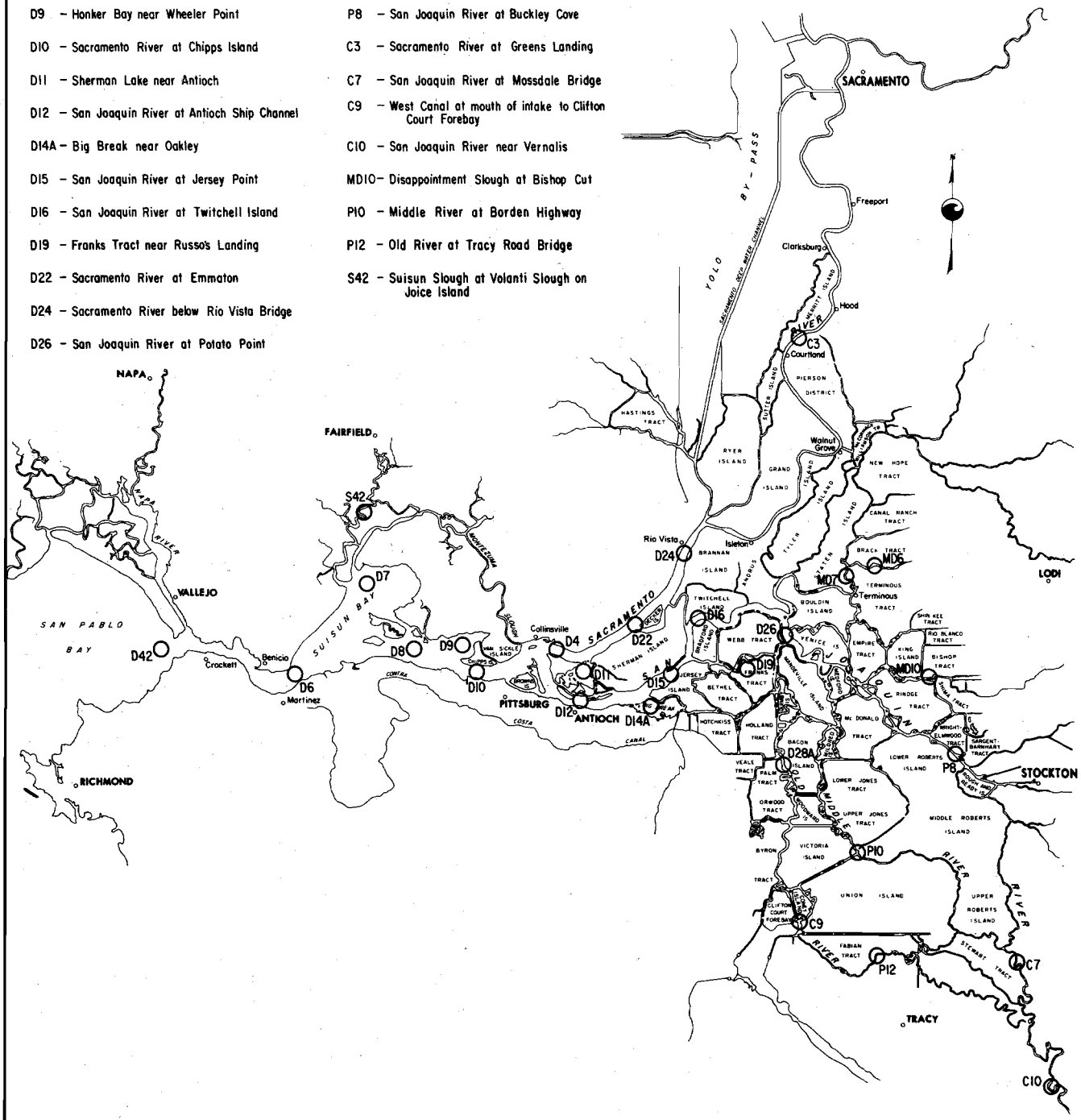
Negotiation of entitlement agreements with all major appropriators or with riparian water users will be undertaken as required; there were none in 1978.

Delta Water Entitlement Negotiations

Suisun Resources Conservation District (SRCD). The Department has negotiated an agreement with the SRCD and the Department of Fish and Game that sets forth the responsibility and commitments of each agency with regard to the Suisun Marsh Initial Facilities, which will be constructed in 1979. (See "Suisun Marsh Initial Facilities" section in Chapter I.) These facilities are designed to help those areas of the Marsh most affected at this time by salinity intrusion. The Department intends in the future to complete contracts to cover facilities to protect the entire Marsh. Such facilities are required under Order No. 7 of SWRCB Board D-1485.

STA. NO.	STATION NAME
D4	– Sacramento River above Point Sacramento
D6	– Suisun Bay off Bulls Head Point near Martinez
D7	– Grizzly Bay at Dolphin near Suisun Slough
D8	– Suisun Bay off Middle Point near Nichols
D9	– Honker Bay near Wheeler Point
D10	– Sacramento River at Chipps Island
D11	– Sherman Lake near Antioch
D12	– San Joaquin River at Antioch Ship Channel
D14A	– Big Break near Oakley
D15	– San Joaquin River at Jersey Point
D16	– San Joaquin River at Twitchell Island
D19	– Franks Tract near Russo's Landing
D22	– Sacramento River at Emmaton
D24	– Sacramento River below Rio Vista Bridge
D26	– San Joaquin River at Potato Point

STA. NO.	STATION NAME
D42	– San Pablo Bay near Rodeo
D28A	– Old River opposite Rancho Del Rio
MD6	– Sycamore Slough near mouth
MD7	– South Fork Mokelumne River below Sycamore Slough
P8	– San Joaquin River at Buckley Cove
C3	– Sacramento River at Greens Landing
C7	– San Joaquin River at Mossdale Bridge
C9	– West Canal at mouth of intake to Clifton Court Forebay
C10	– San Joaquin River near Vernalis
MD10	– Disappointment Slough at Bishop Cut
P10	– Middle River at Borden Highway
P12	– Old River at Tracy Road Bridge
S42	– Suisun Slough at Volanti Slough on Joice Island



STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
CENTRAL DISTRICT

SACRAMENTO-SAN JOAQUIN DELTA WATER QUALITY SURVEILLANCE PROGRAM

1979 MONITORING SITES

MILES 5 0 5 10

KILOMETRES 8 0 8 16

Western Delta Municipal Water Users. Periodic discussions with the municipal and industrial interests, in the vicinity of Antioch and Pittsburg, have resulted in two contracts for replacement of municipal water supplies. (See page 20, Bulletin 132-67.) The first, signed in April 21, 1967, with the Contra Costa County Water District for its municipal water diversion at Mallard Slough near the City of Pittsburg and the second, signed April 11, 1968, covering use by the City of Antioch. Each contract provides that the SWP compensate each entity for the additional costs it incurs due to the purchase of a substitute water supply from the Contra Costa Canal to replace offshore supplies lost due to SWP operation. Both agencies had below-average water supplies during the 1978 water year as defined in the contract. During the year the District accumulated a deficit of 4 days and the City a deficit of 47 days. Including the credits accumulated in previous years, the District and the City at the end of 1978 have total credits of 21 and 181 days, respectively. These credits for above-average offshore water supplies are available to offset below-average days in the future years.

The Department has initiated discussions with the CCCWD looking toward a contract that will provide a timetable and specify the responsibilities of participating agencies for relocation of the Contra Costa Canal intake. The Canal takes water from Old River via Rock Slough to meet the needs of CCCWD. This location is susceptible to degradation from ocean salinity and from local drainage of very poor quality water. This vulnerablity was clearly demonstrated in 1976 and 1977. The Department, during the drought, spent considerable money and effort building facilities to improve the quality of water to meet the criteria placed upon the SWP by the SWRCB. The Department believes relocating the intake to SWP facilities in the vicinity of Clifton Court Forebay will facilitate meeting the criteria and will provide better quality water for the Canal's customers. It can also enable the SWP to assure a better quality of substitute supplies for industry via the Canal.

The East Bay Municipal Utility District (EBMUD) and the East Contra Costa Irrigation District (ECCID) are also involved in these dicussions since the relocation would cross the Mokelumne Aqueduct of EBMUD and the intake channel for ECCID's main supply. Relocation may affect current joint studies between CCCWD and EBMUD, regarding the possible integration of their water supply and distribution systems.

Western Delta Industrial Water Users. The Department has not had success with industry in the vicinity of Antioch and Pittsburg. Several industries utilize offshore water for both process and cooling purposes. Each year, when the offshore quality degrades beyond the industries' quality requirements for process water, they switch to the Contra Costa Canal for a substitute supply. The industries have not agreed to participate in a contract similar to that signed by the municipal interests for several reasons. They believe the SWP should provide compensation for the entire loss of offshore water regardless of who is responsible; and that the SWP guarantee the quantity and quality of the water from the Contra Costa Canal when it is used as a substitute supply.

Some industries also want compensation for degradation of cooling water supplies. Cooling water is generally taken from the offshore supply all year regardless of quality. Although the Department knows future average offshore water quality will decline, the Department is unable to conclusively determine the loss, if any, to be expected from such average degradation. If a loss becomes determinable in the future, the Department would participate in discussions to provide just compensation.

During 1978, a concerted effort was made to reach agreement with both paper companies operating in the vicinity of Antioch--Crown Zellerbach Corporation and Louisiana Pacific-Fiberboard Corporation. Agreement was reached on many elements but the companies wanted some assurance of all-year quality in the Contra Costa Canal. During the drought of 1977, the companies incurred significant extra costs due to the high chloride and TDS content of the water even though the Department's efforts at protecting the Canal quality were successful enough to keep the Canal as a water supply source. Based on the same experience, the Department cannot provide the requested assurance given the present location of the Canal intake. Further negotiations are being held in abeyance until the Contra Costa Canal intake relocation situation is resolved.

Agricultural Water Users. The Department has proposed contracts with the agricultural agencies that would require the SWP to meet water quality standards necessary for reasonable beneficial uses throughout the respective agency's area, with relaxation of such standards during the dry and critical years when water supplies are limited. The agencies would make annual payments for such project services that are in excess of any Project mitigation obligations.

Beginning in 1974, six agencies representing agricultural water interests in the Delta succeeded to the overall interest of the Delta Water Agency, which ceased to exist December 31, 1973. These are the North Delta, Central Delta, South Delta, and Contra Costa County Water Agencies, and the East Contra Costa and Byron-Bethany Irrigation Districts (see Figure 4). Negotiations continued during 1978 with three of these agencies.

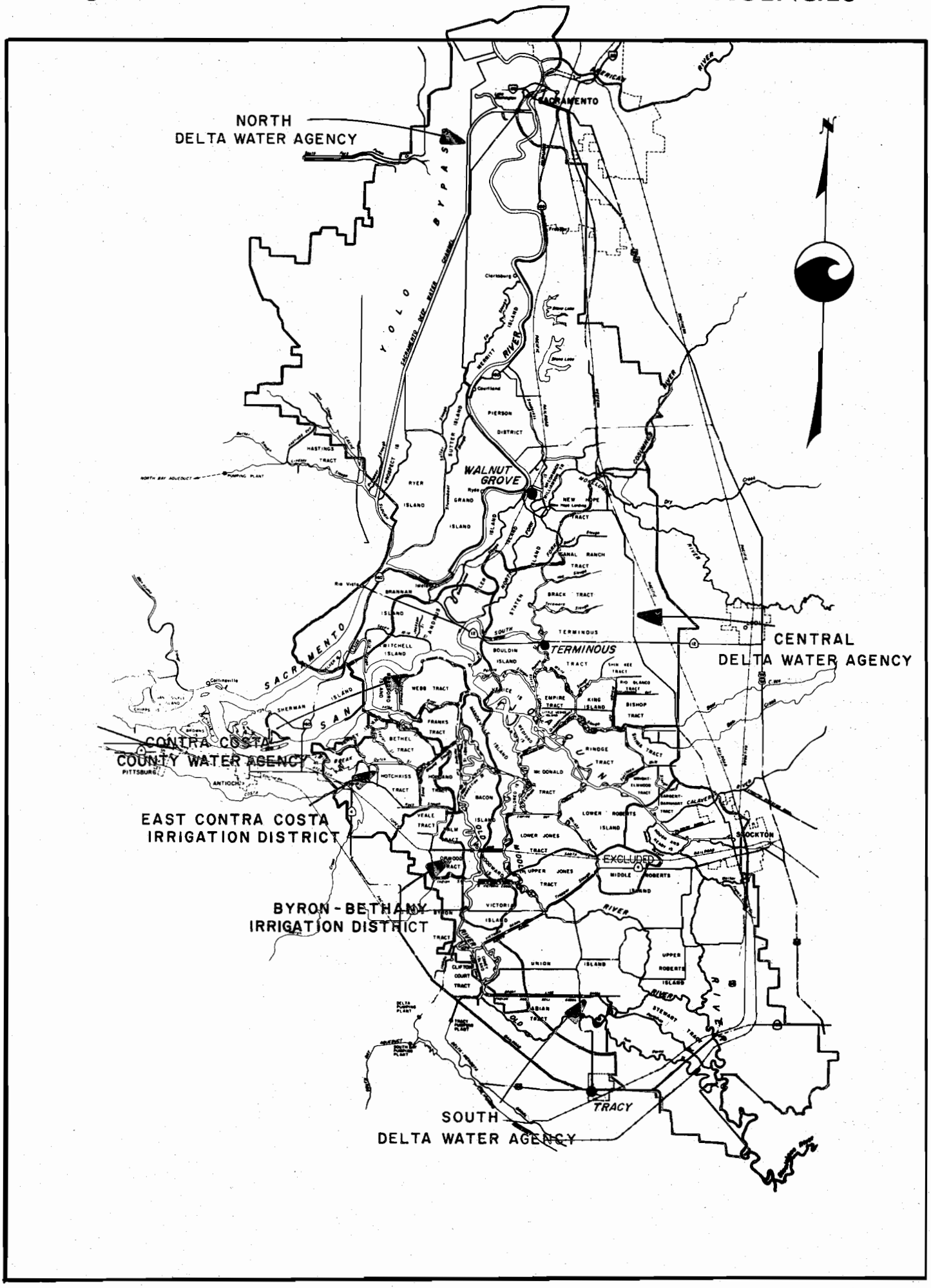
- *North Delta Water Agency (NDWA)* - Negotiations with the NDWA progressed in 1978 to an essentially complete contract early in the year. However, during a review period requested by the USBR to determine its position on participating in the contract, the SWRCB issued D-1485, which contained a set of criteria different from those contained in the proposed contract. The NDWA believes that SWRCB's Decision 1485 defines the Delta's "rights". NDWA's and the Department's staffs met during the remainder of the year to devise a contract that would reflect such "rights". The USBR withdrew from further negotiation with the NDWA in part, preferring to wait for a resolution of the pending litigation regarding the SWRCB's D-1485.

In May 1979 the NDWA submitted a revised draft contract in which the criteria had been adjusted to match the standards given in D-1485, adding on late summer, fall and winter standards not included in D-1485, and including compensation for only the added-on standards. Also included are specifications relating to possible future relaxation of the western Delta quality criteria with substitute supplies furnished by overland facilities as allowed by the Legislature (Water Code Section 12203).

- *South Delta Water Agency (SDWA)*. Four contract proposals have been developed in recent years in negotiations with the SDWA: The Agency proposals of July 1975 and February-August 1977; a DWR-USBR proposal of January 1977.

During 1978, the Department reviewed the latest SDWA contract proposal and submitted a counterproposal in September. The Department's proposals have specified levels of performance commensurate with project capabilities as facilities develop. One such facility would be the Peripheral Canal, which would bring high quality water to the south Delta, where it could be routed through south Delta channels for quality control. The Agency has rejected the Peripheral Canal approach and requested full operation of New Melones Reservoir and immediate construction of tidal-operated circulation facilities in the south Delta.

Figure 4: SACRAMENTO-SAN JOAQUIN DELTA AGENCIES



The permissible level of operation of New Melones Reservoir is being considered by the SWRCB. The circulation facilities, if available today, could eliminate the pockets of poor quality water by dilution, thus degrading the quality in the current nonproblem areas. However, no quality guarantee as requested by the SDWA could be provided, since without an isolated cross-Delta transfer facility, there is no capability to assure the quality of supply at all times, which SDWA has requested.

One of the largest stumbling blocks in negotiations with SDWA is determining what mitigation is due. At the Agency's request, the Department of Interior, through the USBR, has instituted a series of technical meetings designed to answer that question. These meetings are: (1) to secure agreement on the impact of the CVP on the flow of the San Joaquin River, and the impact of both the CVP and the SWP export pumping on the water level and flow regimen in the south Delta channels; (2) to determine how these impacts might affect the south Delta water supply; and (3) to provide a base for evaluation of proposed actions to mitigate such impact. These meetings are scheduled to continue into 1979 with a report due in August or September. At SWDA's request further negotiations are being held in abeyance until completion of this report.

- *Central Delta Water Agency (CDWA)* - Several meetings were held with representatives of the CDWA during 1978 to: (1) review the results of the CDWA's corn salt-tolerance study; (2) review the results of the Department's subirrigation water movement study; and (3) discuss the CDWA's suggested water quality criteria. No significant progress towards an agreement was accomplished.

- *Contra Costa County Water Agency and Byron-Bethany Irrigation District* - No negotiations have been initiated with either entity. It has been decided to hold any action with these entities until some progress is achieved with the other Delta interests.

- *East Contra Costa Irrigation District (ECCID)* - Negotiations with ECCID continued in abeyance at the request of it's staff, pending more progress with one of the "big three agencies" to assure contracts with common terms, if at all possible. These negotiations also depend to some extent on the alignment selected for the relocation of the Contra Costa Canal Intake. If a low level alignment is selected, the ECCID is expected to ask for space in the new canal.

WATER CONTRACTS MANAGEMENT

The year 1978 was an unusual year from a water service standpoint and resulted in several unprecedented water project problems and activities. Above-normal precipitation throughout the State yielded abundant local supplies, thereby reducing the need for SWP water. All requested deliveries of SWP water were made, and SWP's depleted reservoirs were replenished.

Figure 5, herein, presents data concerning each of the 31 agencies which have executed long-term water service contracts with the State. Column 2 of Figure 5 shows the total cumulative water deliveries to each contractor through the end of 1978. These totals include all types of project water plus any local or USBR water delivered to project contractors. Deliveries of both

project and nonproject water have also been made to agencies other than long-term contractors. Such deliveries made in 1978 are included in Table 3 herein, along with 1978 deliveries to long-term contractors. As discussed under the Transfer of Water Entitlements section in Chapter I, the Department has developed a policy for giving agencies that contracted for more water than they can now use, some relief from the financial burden resulting from this imbalance. Column (4) of Figure 5 lists the total cumulative payments by each contractor pursuant to the terms of the long-term water supply contracts, through 1978. As will be noted, eight contractors have not yet taken any water from the project but still have had to pay the State large amounts of money under their water supply contracts. As shown in Table B-4, six of these have entitlement schedules calling for no delivery during 1978 while two, Palmdale Water District and Castaic Lake Water Agency, have entitlement schedules calling for delivery of entitlement water in 1972 and each year thereafter. Several other contractors have also taken far less water than their contracted amounts. Overall, however, the 31 long-term contractors have received more water from project facilities than the cumulative total of their annual entitlements through 1978 due to non-SWP water deliveries and deliveries of SWP surplus water.

Data in Columns 5, 6 and 7 of Figure 5 show that the SWP service area includes a substantial part of the State's area, assessed valuation, and population. The maximum annual quantity of entitlement water each contractor has contracted to receive is shown in column 3, of Figure 5. Annual entitlements are shown in Table B-4. Table B-4 shows that for most contractors, annual entitlements are initially low, increasing each year to the maximum annual entitlement in 1990 or thereafter. Table B-5B shows actual past annual entitlement water deliveries as well as the future annual entitlement amounts each contractor expects to take.

A comparison of Tables B-4 and B-5B values show many differences, which result primarily from the fact that several contractors are not increasing project water demands as rapidly as estimated at the time their contracts were signed in the early sixties. Another difference results from the fact that five contractors in 1978 took delivery of entitlement water to which they had acquired a credit under Article 12(d) of the Water Supply Contract as a result of the 1977 drought. (See Table 2.) Such water is treated as a part of the contractor's annual entitlement, insofar as scheduling and calculation of the variable OMP&R component of the Transportation Charge are concerned. Therefore, Table B-5B values include both entitlement and Article 12(d) water.

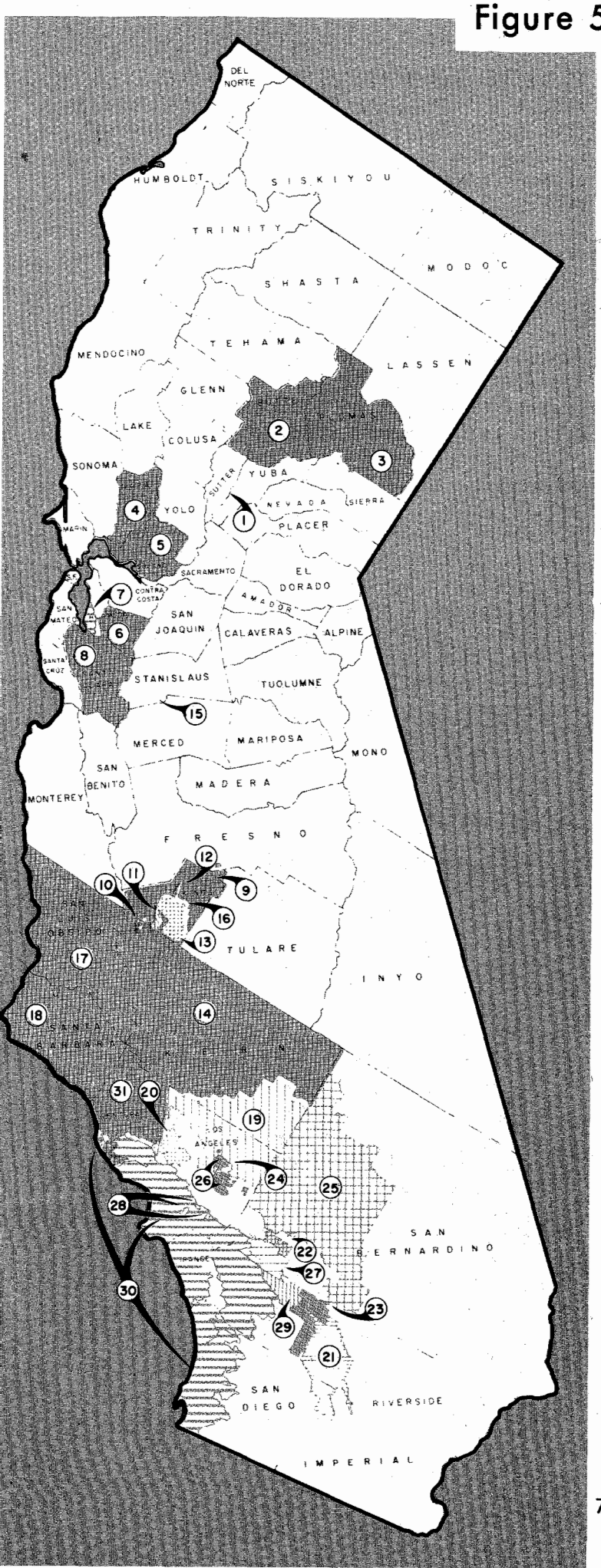
Table 1 gives further information concerning actual and projected annual water deliveries from projected facilities. It includes deliveries of project and nonproject water to long-term contractors, as well as water for initial fill, makeup of losses and recreation.

Water Deliveries in 1978

Project service during 1978 involved water deliveries to 32 agencies. Of these, 23 were long-term contractors and 9 were noncontractors. Monthly deliveries to each of the 32 are shown in Table 3 herein and include:

- 1 549 743 cubic dekametres (1,256,379 acre-feet) of 1978 entitlement water to 19 long-term contractors.
- 173 102 cubic dekametres (140,334 acre-feet) of "makeup" water which became available, pursuant to Article 12(d) of the long-term contract, as a result of the 1977 drought.
- 69 059 cubic dekametres (55,986 acre-feet) of 1977 entitlement water which under agreements with seven contractors was carried over to 1978.

Figure 5: LONG-TERM WATER SUPPLY



Location No.	Contracting Agency	Total Cumulative Deliveries through Dec. 31, 1978 (acre-feet)(a	Maximum Annual Entitlement (acre-feet)(a
	(1)	(2)	(3)
	UPPER FEATHER AREA		
1	City of Yuba City	0	9,600
2	County of Butte	2,623	27,500
3	Plumas County Flood Control and Water Conservation District	3,334	2,700
	Subtotal	5,957	39,800
	NORTH BAY AREA		
4	Napa County Flood Control and Water Conservation District	50,571	25,000
5	Solano County Flood Control and Water Conservation District	0	42,000
	Subtotal	50,571	67,000
	SOUTH BAY AREA		
6	Alameda County Flood Control and Water Conservation Dist., Zone 7	164,884	46,000
7	Alameda County Water District	254,705	42,000
8	Santa Clara Valley Water District	1,062,342	100,000
	Subtotal	1,481,931	188,000
	SAN JOAQUIN VALLEY AREA		
9	County of Kings	15,900	4,000
10	Devil's Den Water District	141,731	12,700
11	Dudley Ridge Water District	514,872	57,700
12	Empire West Side Irrigation District	43,828	3,000
13	Hacienda Water District	60,195	8,500
14	Kern County Water Agency	5,287,738	1,153,400
15	Oak Flat Water District	60,944	5,700
16	Tulare Lake Basin Water Storage District	1,031,557	110,000
	Subtotal	7,156,765	1,355,000
	CENTRAL COASTAL AREA		
17	San Luis Obispo County Flood Control and Water Conservation District	0	25,000
18	Santa Barbara County Flood Control and Water Conservation District	0	57,700
	Subtotal	0	82,700
	SOUTHERN CALIFORNIA AREA		
19	Antelope Valley-East Kern Water Agency	114,673	138,400
20	Castaic Lake Water Agency	0	41,500
21	Coachella Valley County Water District	36,884	23,100
22	Crestline-Lake Arrowhead Water Agency	5,625	5,800
23	Desert Water Agency	57,300	38,100
24	Littlerock Creek Irrigation District	2,959	2,300
25	Mojave Water Agency	733	50,800
26	Palmdale Water District	0	17,300
27	San Bernardino Valley Municipal Water District	105,332	102,600
28	San Gabriel Valley Municipal Water District	28,900	28,800
29	San Gorgonio Pass Water Agency	0	17,300
30	The Metropolitan Water District of Southern California	2,404,894	2,011,500
31	Ventura County Flood Control District	0	20,000
	Subtotal	2,757,300	2,497,500
	TOTAL STATE WATER PROJECT	11,452,524	4,230,000
	NET TOTALS, STATE WATER PROJECT SERVICE AREA		
	TOTAL, STATE OF CALIFORNIA		
	PERCENT, STATE WATER PROJECT OF TOTAL		

a) Metric conversion is acre-feet times 1.2335 equals cubic dekametres.
b) Metric conversion is acres times 0.040469 equals hectares.
c) Total for Plumas County Flood Control and Water Conservation District, including Last Chance Creek Water District.
d) Total for County of Kings, including Dudley Ridge Water District, Empire West Side Irrigation District, Hacienda Water District, most of Tulare Lake Basin Water Storage District, and about 40% of Devil's Den Water District.

CONTRACTING AGENCIES

Total Payments through Dec. 31, 1978 (dollars)	Gross Area as of July 1, 1978 (acres)(b	Assessed Valuation 1978-1979 (dollars)	Estimated Population (July 1, 1978)	Location No.
(4)	(5)	(6)	(7)	
0	3,290	84,668,000	16,700	1
231,000	1,070,720	586,783,863	130,000	2
200,000	1,644,000(c	151,747,177(c	15,200(c	3
431,000	2,718,010	823,199,040	161,900	
2,597,000	512,000	478,511,307	94,000	4
212,000	528,400	796,375,129	208,300	5
2,809,000	1,040,400	1,274,886,436	302,300	
8,288,000	272,000	493,261,000	107,000	6
10,299,000	60,500	934,208,800	190,000	7
38,982,000	849,000	6,059,000,000	1,228,000	8
57,569,000	1,181,500	7,486,469,800	1,525,000	
288,000	893,000(d	268,286,700(d	70,900(d	9
2,977,000	8,500	1,258,700	50	10
6,262,000	29,900	3,539,600	50	11
523,000	7,500	744,600	50	12
708,000	15,300	244,800	50	13
100,745,000	5,057,200(e	2,917,002,500(e	366,900(e	14
542,000	4,000	275,000	50	15
11,773,000	193,000	14,750,000	50	16
123,818,000	6,208,400	3,206,101,900	438,100	
1,935,000	2,131,300	897,175,918	140,000	17
4,553,000	1,756,900	1,551,813,301	292,500	18
6,488,000	3,888,200	2,448,989,219	432,500	
26,336,000	1,524,900	621,876,045	96,800	19
10,590,000	125,000	347,293,679	66,500	20
6,628,000	637,500	498,159,153	84,900	21
1,877,000	55,100	97,994,390	10,500	22
10,824,000	208,900	386,553,161	43,700	23
489,000	43,300	8,937,891	1,600	24
12,384,000	3,160,400	504,321,555	80,000	25
3,253,000	73,800	77,155,902	24,900	26
38,806,000	209,400	993,262,289	315,000	27
10,236,000	16,300	533,172,123	146,200	28
5,608,000	140,600	96,489,961	31,700	29
630,560,000	3,267,488	53,572,000,943	11,144,100	30
4,467,000	1,179,500(f	2,381,079,748(f	482,100(f	31
762,058,000	10,642,188	60,118,296,840	12,528,000	
953,173,000	25,678,698(g	75,357,943,235(g	15,387,800(g	
	24,530,598(h	73,655,090,000(h	15,067,050(h	
	100,314,000	114,052,000,000	22,294,000	
	24.5	64.6	67.6	

e) Total Kern County Water Agency, including about 60% of Devil's Den Water District, and about 50% of Antelope Valley-East Kern Water Agency.

f) Total for Ventura County Flood Control District, including portion of Antelope Valley-East Kern Water Agency, The Metropolitan Water District of Southern California, and Castaic Lake Water Agency.

g) Includes duplicate values. Some areas which are within two or more agencies are included in each agency's total.

h) Excludes duplicate values where agencies have overlapping boundaries.

TABLE 1: ANNUAL

(in acre-

Calendar Year	Annual Entitlements Under Long-term Water Supply Contracts						
	Feather River Area	North Bay Area	South Bay Area	San Joaquin Valley Area	Central Coastal Area	Southern California Area	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1962	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0
1967	0	0	11,538	0	0	0	11,538
1968	550	0	109,900	81,050	0	0	191,500
1969	620	0	98,700	168,075	0	0	267,395
1970	700	0	114,200	207,700	0	0	322,600
1971	890	0	116,200	258,500	0	0	375,590
1972	970	0	118,300	420,766	0	201,723	741,759
1973	1,100	0	120,400	392,352	0	472,400	986,252
1974	1,230	0	122,400	470,350	0	588,220	1,182,200
1975	1,610	0	124,500	556,509	0	704,250	1,386,869
1976	1,990	0	126,500	555,117	0	824,780	1,508,387
1977	2,420	0	128,600	594,100	0	942,201	1,667,321
1978	1,850	0	130,700	647,262	0	1,060,722	1,840,534
Subtotal, 1962-1978	13,930	0	1,321,938	4,351,781	0	4,794,296	10,481,945
1979	2,130	0	132,700	707,700	0	1,177,873	2,020,403
1980	2,310	19,250	134,800	765,000	2,200	1,304,914	2,228,474
1981	6,840	21,750	137,000	828,500	3,300	1,425,865	2,423,255
1982	7,470	24,400	139,200	889,200	6,600	1,546,806	2,613,676
1983	8,150	27,050	141,400	955,500	9,900	1,668,557	2,810,557
1984	8,830	29,600	143,600	1,017,900	14,900	1,790,398	3,005,228
1985	9,510	32,750	145,800	1,079,100	24,800	1,912,549	3,204,509
7 years, 1979-1985	45,240	154,800	974,500	6,242,900	61,700	10,826,962	18,306,102
10 years, 1986-1995	252,920	587,500	1,650,200	13,032,300	688,000	23,869,646	40,080,566
10 years, 1996-2005	386,460	670,000	1,878,000	13,550,000	827,000	24,975,000	42,286,460
10 years, 2006-2015	393,170	670,000	1,880,000	13,550,000	827,000	24,975,000	42,295,170
10 years, 2016-2025	398,000	670,000	1,880,000	13,550,000	827,000	24,975,000	42,300,000
10 years, 2026-2035	398,000	670,000	1,880,000	13,550,000	827,000	24,975,000	42,300,000

a) Metric conversion is acre-feet times 1.2335 equals cubic dekametres.
b) Includes 1,256,379 acre-feet of 1978 entitlement water; 55,986 acre-feet of carryover from 1977; and 140,334 acre-feet of deferred deliveries pursuant to contract articles 12(d) and 14(b).
c) Includes 1,832,358 acre-feet 1979 entitlement water and 194,397 acre-feet of deferred deliveries pursuant to Article 12(d) of contracts.
d) Values for the years 1970 through 1975 include deliveries to short-term contractors (Mustang Water District, 1970-71; Tracy Golf and Country Club, 1974; Green Valley Water District 1974-75).
e) Includes Emergency Relief Water, Repayment Water, Kern River Intertie Water, Exchange Water, Regulated Delivery of Local Supply, and Conveyance of Federal CVP Water.

WATER REQUIREMENTS

feet)[a]

Estimated Annual Water Demands								
Deliveries to Contracting Agencies								
Entitlement Water	Surplus Water[d]	Other Water [e]	Total	Initial Fill	Operational Losses and Storage Changes	Recreation Water	Total	Calendar Year
(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
0	0	18,289	18,289	9	272	0	18,570	1962
0	0	22,456	22,456	71	185	0	22,712	1963
0	0	32,507	32,507	171	152	0	32,830	1964
0	0	44,105	44,105	93	729	0	44,927	1965
0	0	67,928	67,928	0	1,746	0	69,674	1966
11,538	0	53,605	65,143	8,328	4,212	0	77,683	1967
171,709	121,534	14,777	308,020	498,926	117,906	0	924,852	1968
193,020	72,397	18,829	284,246	510,614	72,196	0	867,056	1969
233,993	133,024	38,080	405,097	23,947	2,435	0	431,479	1970
357,340	296,019	44,119	697,478	7,853	5,812	8	711,151	1971
611,801	423,964	66,638	1,102,403	100,274	53,062	6,489	1,262,228	1972
694,388	296,416	42,511	1,033,315	204,638	53,798	1,155	1,292,906	1973
874,077	417,676	46,224	1,337,977	237,554	10,657	2,118	1,588,306	1974
1,223,990	622,902	63,793	1,910,685	103,352	-94,606	3,377	1,922,808	1975
1,373,002	580,110	115,217	2,068,329	61,122	-681,025	1,745	1,450,171	1976
574,155	0	389,065	963,220	0	-131,151	1,111	833,180	1977
1,452,699 [b]	16,914	121,225	1,590,838	64,443	717,370	1,177	2,373,828	1978
7,771,712	2,980,956	1,199,368	11,952,036	1,821,395	133,750	17,180	13,924,361	17 years, 1962-1978
2,026,755 [c]	734,731	195,500	2,956,986	12,302	112,654	6,320	3,088,262	1979
2,026,174	863,429	200,000	3,089,603	0	30,939	5,220	3,125,762	1980
2,164,013	803,910	200,000	3,167,923	0	259,326	10,480	3,437,729	1981
2,300,401	606,000	200,000	3,106,401	0	108,312	12,930	3,227,643	1982
2,408,652	428,000	190,000	3,026,652	0	-31,328	15,290	3,010,614	1983
2,495,503	314,000	180,000	2,989,503	0	160,973	15,640	3,166,116	1984
2,548,840	0	170,000	2,718,840	0	112,414	20,680	2,851,934	1985
15,970,338	3,750,070	1,335,500	21,055,908	12,302	753,290	86,560	21,908,060	7 years, 1979-1985
33,579,625	-	-	33,579,625	0	1,116,633	236,300	34,932,558	10 years, 1986-1995
38,801,285	-	-	38,801,285	0	862,260	244,300	39,907,845	10 years, 1996-2005
41,198,970	-	-	41,198,970	0	1,025,515	244,300	42,468,785	10 years, 2006-2015
42,011,400	-	-	42,011,400	0	1,024,915	244,300	43,280,615	10 years, 2016-2025
42,067,400	-	-	42,067,400	0	1,076,000	244,300	43,387,700	10 years, 2026-2035

- 20 863 cubic dekametres (16,914 acre-feet) of surplus water to three long-term contractors and one noncontractor.

- 1 200 cubic dekametres (973 acre-feet) of Metropolitan Exchange water to the San Francisco Water Department.

- 740 cubic dekametres (600 acre-feet) of emergency relief water to the Green Valley Water District.

- 3 718 cubic dekametres (3,014 acre-feet) of Repayment water to two noncontractors and one long-term contractor.

- 52,542 cubic dekametres (42,596 acre-feet) of excess Kern River flow which was diverted into the California Aqueduct through the Kern River Intertie and delivered to MWD in lieu of Colorado River water.

- 80 985 cubic dekametres (65,655 acre-feet) of local water to four noncontractors and three long-term contractors.

- 10 345 cubic dekametres (8, 387 acre-feet) of CVP water to Kern County Water Agency's Cross Valley Canal, pursuant to contracts with the United States and nine water agencies.

Entitlement Water Deliveries. In early September, 1977, contractors submitted monthly water delivery requests for years 1978 through 1984. Twenty-three contractors requested delivery of 2 255 608 cubic dekametres (1,828,624 acre-feet) of entitlement water in 1978. The initially approved monthly delivery schedules for 1978, issued in the third week of December called for delivery of 801 775 cubic dekametres (650,000 acre-feet) of entitlement water during the year. This was equivalent to the total amount of project water determined to be available on the basis of the new decision tool, referred to as the Rule Curve, which had just been developed. The Rule Curve is used by the Department to determine the total amount of project water that, based on current conditions and a conservative projection of water supply for the remainder of the water year, will be available for delivery during the year. (See pages 15 and 16 of Bulletin 132-78). The extremely low storage in Project reservoirs as of December 1, 1977 and the relatively low precipitation of October and November accounted for the low 1978 water supply projection. Updated water supply estimates, in accordance with Rule Curve criteria, were made during the early part of each of the following three months. Contractors were kept informed of these updated estimates, and revised monthly water delivery schedules were issued as the projected supply increased. On February 17, 1978 the Department announced that as a result of the significant December 1977 and January 1978 precipitation all requested entitlement deliveries could be made during 1978.

Total 1978 deliveries of entitlement water were, as shown in Table 2, 1 549 743 cubic dekametres (1,256,379 acre-feet). This total is significantly less than the requested total and the amount scheduled for delivery immediately following the February 17, 1978 announcement. Because of continuing above-normal precipitation after the end of January, 18 of the 23 contractors which had requested entitlement water deliveries took 705 864 cubic dekametres (572,245 acre-feet) less than the initially requested total amount.

Makeup Water Deliveries. As a result of the reduction to requested entitlement deliveries necessitated by the 1977 drought, 21 long-term contractors had accumulated future delivery rights to 563 871 cubic dekametres (457,131 acre-feet) of 1977 entitlement water pursuant to Article 12(d) of the long-term water supply contracts. In addition, one of these had rights to the future delivery of 5 905 cubic dekametres (4,787 acre-feet) of previously undelivered entitlement water, pursuant to Ariticle 14(b) of the long-term water supply contracts, and a second had an Article 12(d) right

to the future delivery of 32 872 cubic dekametres (26,649 acre-feet) as a result of a 1976 non-delivery. As of January 1, 1978, 21 contractors had future delivery rights to 602 647 cubic dekametres (488,567 acre-feet) of entitlement water which 5 905 cubic dekametres (4,787 acre-feet) had been acquired under Article 14(b) and the balance under Article 12(d).

During 1978, eight contractors received 173 102 cubic dekametres (140,334 acre-feet) of Article 12(d) water. Contractors were notified by Water Service Contractors Council Memo No. 1240, dated June 28, 1978, that Article 12(d) deliveries will be treated as a part of contractor's annual entitlement deliveries insofar as peaking, extra service and the variable OMP&R component of the Transportation Charge are concerned. At the beginning of 1979, sixteen contractors had future delivery rights totaling 438 180 cubic dekametres (355,233 acre-feet) pursuant to contract Articles 12(d) and 14(b). Individual contractor amounts making up this total are shown in column (9) of Table 2.

Carryover Water. Several contractors requested that they be permitted to delay taking a portion of the entitlement water allocated to them for delivery in 1977 until 1978. The purpose of such a carryover was to achieve a more efficient use of the remaining 1977 entitlement water supply and the limited 1978 supply which would have been available if the drought had continued. Contractors were notified by Water Service Contractors Council Memo No. 1163 that carryover of 1977 entitlement water would be allowed under executed letter agreements. In each case, the agreements specified that the contractor would pay its share of any costs that might have to be applied to the variable OMP&R component of the Transportation Charge in order to maintain those charges, in both 1977 and 1978, at levels no greater than those that would have occurred in the absence of the carryover program. The following tabulation shows for each of the ten contractors that signed carryover agreement letters, the maximum carryover allowed by the agreement, the actual carryover, and the carryover charge applicable to 1977 variable OMP&R costs only:

Contractor	Allowable Carryover (in Acre-feet)	Actual Carryover (in Acre-feet)	Carryover Charge Credited to 1977 Variable OMP&R Transportation Costs
Alameda County FC&WCD, Zone 7	3,500	3,387	$ 0
Alameda County WD	1,500	1,140	0
Antelope Valley-East Kern WA	11,000	11,000	24,853
Castaic Lake WA	4,500	0	0
Dudley Ridge WD	2,000	1,007	144
Empire West Side ID	750	454	66
Kern County WA	34,000	30,583	13,422
Littlerock Creek ID	212	0	408
The Metropolitan WD of So. CA	90,000	0	0
Tulare Lake Basin WSD	8,500	8,415	1,204
Total	155,962	55,986	$40,097

The above tabulation shows that six contractors incurred carryover adjustment charges of $40,097, assessed for the purpose of maintaining 1977 variable OMP&R charges at the "no carryover" level. The effect that the "carryover" had on 1978 variable OMP&R charges will be determined in 1979. As shown in Table 2, 69 059 cubic dekametres (55,986 acre-feet) of 1977 entitlement water were delivered in 1978 to seven contractors under the executed carryover agreements for water carried over

TABLE 2: SUMMARY OF 1978 ENTITLEMENT AND SURPLUS WATER SERVICE TO LONG-TERM CONTRACTORS

(acre-feet)[a]

Long-Term Contractor	Entitlement Water Deliveries				Surplus Water	Total Deliveries	Future Entitlement Delivery Credit as of 1/1/79			Future Entitlement Reduction Credit-Article 7 or 45
	1978 Entitlement	Article 12(d)	Carryover From 1977	Total			Article 7 or 45	Articles 12(d) and 14(b)	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)=(5)+(6)	(8)	(9)	(10)	(11)
UPPER FEATHER RIVER										
Butte County	579	0	0	579	0	579	-	0	0	-
Plumas County	278	0	0	278	0	278	-	0	0	-
SOUTH BAY AREA										
Alameda County FC&WCD, Zone 7	7,597	0	3,387	10,984	0	10,984	53,741	2,438	56,179	0
Alameda County WD	4,723	0	1,140	5,863	0	5,863	96,609	2,220	98,829	0
Santa Clara Valley WD	88,000	7,727	0	95,727	0	95,727	0	3,991	3,991	0
SAN JOAQUIN VALLEY AREA										
County of Kings	1,900	170	0	2,070	0	2,070	0	0	0	0
Devil's Den WD	11,362	0	0	11,362	0	11,362	-	7,620	7,620	-
Dudley Ridge WD	32,500	18,240	1,007	51,747	7,586	59,333	-	0	0	-
Empire West Side ID	0	0	454	454	0	454	0	1,800	1,800	0
Hacienda WD	0	2,520[b]	0	2,520	0	2,520	4,600	0	4,600	0
Kern County WA	527,300	109,464	30,583	667,347	8,623[c]	675,970	-	162,146	162,146	-
Oak Flat WD	3,835	71	0	3,906	6[c]	3,912	0	2,149	2,149	2,466
Tulare Lake Basin WSD	1,118	0	8,415	9,533	0	9,533	57,582	32,880	90,462	74,852
SOUTHERN CALIFORNIA AREA										
Antelope Valley-East Kern WA	33,137	0	11,000	44,137	0	44,137	-	31,372	31,372	-
Castaic Lake WA	0	0	0	0	0	0	-	500	500	-
Coachella Valley County WD	9,242	842	0	10,084	0	10,084	-	0	0	-
Crestline-Lake Arrowhead WA	1,209	0	0	1,209	0	1,209	-	151	151	-
Desert WA	14,000	1,300	0	15,300	0	15,300	-	0	0	-
Littlerock Creek ID	208	0	0	208	0	208	-	438	438	-
Mojave WA	0	0	0	0	0	584[d]	-	20	20	-
Palmdale WD	0	0	0	0	0	0	-	0	0	-
San Bernardino Valley MWD	4,055	0	0	4,055	0	4,055	-	4,269	4,269	-
San Gabriel Valley MWD	7,771	0	0	7,771	0	7,771	-	1,000	1,000	-
The Metropolitan WD of SC	507,565	0	0	507,565	0	550,161[e]	-	102,239	102,239	-
TOTAL	1,256,379	140,334	55,986	1,452,699	16,215	1,512,094	212,532	355,233	567,765[f]	77,318

a) Metric conversion is acre-feet times 1.2335 equals cubic dekametres.
b) Delivery classified as 12(d) water even though no surplus water taken in order to facilitate the approved future dissolution of the Hacienda water supply contract by transfer of its water and repayment obligations to Tulare Lake Basin Water Storage District.
c) Surplus water available only in March and April for ground water recharge.
d) Repayment water released into Mojave River from Silverwood Lake in payment for construction water obtained several years ago from a well within agency boundaries.
e) Includes 42,596 acre-feet of Project water which was diverted into the California Aqueduct through the Kern River Intertie and taken by Metropolitan in lieu of Colorado River water in order to utilize excess Kern River flows.
f) Includes 151,406 acre-feet accumulated prior to 1977; 316,797 acre-feet acquired in 1977; and 99,562 acre-feet acquired in 1978.

into 1978 which was not delivered that year. Contractors have no further rights under the carryover agreements to water carried over into 1978 which was not delivered that year.

Surplus Water Deliveries. September 1977 requested SWP water deliveries for 1978 included approximately 1 118 784 cubic dekametres (907,000 acre-feet) of surplus water to nine long-term contractors. Due to the necessity of building up Project reservoir storage, which had been severely depleted after two years of drought, it seemed unlikely in early 1978 that surplus water could be scheduled and delivered during the year. However, at an April 19, 1978 meeting with contractors in Fresno, the Department was able to announce that a dramatic improvement in SWP water supply resulting from four months of above-normal precipitation would enable the scheduling of surplus water for delivery during the balance of the year. Contractors were requested to submit updated schedules if they wished to receive surplus water. Because of above-average water supplies and the fact that contractors had substantial quantities of Article 12(d) makeup water which had to be used before surplus water could be delivered, only Dudley Ridge Water District executed a surplus water contract and received surplus water after April 1978.

Contractors were notified in late February that during March and probably in April water would be available in the Delta in excess of the amount that could be pumped for storage and that was needed to both make scheduled deliveries and satisfy Delta outflow water quality requirements. Contractors were told that such temporarily available water (extra surplus water) would be delivered for either direct or indirect ground water recharge. An exception to this use stipulation was made to allow Dudley Ridge Water District to utilize extra surplus water to restore the depleted soil moisture in the root zone of trees within the District. Continued rainfall made the application of water for that purpose unnecessary, however. Three contractors requested delivery of extra surplus water and two contractors received deliveries as follows:

Contractor	Acre-feet Requested	Acre-feet Delivered
Dudley Ridge WD	4,500	0
Kern County WA	50,000	8,623
Oak Flat WD	500	6

Extra surplus water is being treated as regular surplus water for billing purposes.

Green Valley Water District, a noncontractor, requested 1978 surplus water deliveries, and a surplus water contract between the State and District was subsequently signed. Under the contract, 862 cubic dekametres (699 acre-feet) of surplus water were delivered as shown in Table 3. The District paid $23,100 for this service.

Section (d) of amended Article 21 of the long-term water supply contracts specifies that the State would order the estimated power required to pump a specified quantity of surplus water for a contractor if the contractor would guarantee repaying the resulting costs. As shown in Table B-31, five contractors had incurred repayment obligations under this provision for 1978 surplus water service. Since only a small amount of surplus water was delivered during the year, little of the ordered power could

TABLE 3: WATER

(in acre

Line No.	Contracting Agency and Type of Service	Month					
		Jan.	Feb.	Mar.	Apr.	May	June
	FEATHER RIVER SERVICE AREA						
	County of Butte:						
1.	Entitlement Water	5	44	374	77	18	0
	Last Chance Creek Water District:						
2.	Regulated Delivery of Local Supply	0	0	0	210	3,060	3,650
	Plumas County Flood Control & Water Cons. District:						
3.	Entitlement Water	4	0	0	0	19	76
	Thermalito Irrigation District:						
4.	Regulated Delivery of Local Supply	0	0	1	0	81	193
5.	AREA TOTAL	9	44	375	287	3,178	3,919
	NORTH BAY SERVICE AREA						
	Napa County Flood Control & Water Cons. District:						
6.	Regulated Delivery of Local Supply	347	293	367	324	738	551
	SOUTH BAY SERVICE AREA						
	Alameda County Flood Control & Water Cons. Dist., Zone 7:						
7.	Entitlement Water	0	0	0	42	13	26
8.	Carryover Water	0	0	53	17	128	269
9.	Regulated Delivery of Local Supply	583	626	672	846	1,352	1,564
10.	Agency Total	583	626	725	905	1,493	1,859
	Alameda County Water District:						
11.	Entitlement Water	0	0	0	0	596	716
12.	Carryover Water	0	0	0	0	0	178
13.	Regulated Delivery of Local Supply	913	485	638	1,094	641	610
14.	Agency Total	913	485	638	1,094	1,237	1,504
	San Francisco Water Department:						
15.	Exchange Water	973	0	0	0	0	0
	Santa Clara Valley Water District:						
16.	Entitlement Water	4,100	3,640	4,677	5,420	8,205	10,063
17.	Article 12(d) Make-up Water	0	284	1,261	0	466	0
18.	Agency Total	4,100	3,924	5,938	5,420	8,671	10,063
19.	AREA TOTAL	6,569	5,035	7,301	7,419	11,401	13,426
	SAN JOAQUIN VALLEY SERVICE AREA						
	Belridge Oil Company:						
20.	Repayment Water	0	0	0	349	319	267
	County of Kings:						
21.	Entitlement Water	165	0	0	0	0	248
22.	Article 12(d) Make-up Water	0	0	0	0	0	25
23.	Agency Total	165	0	0	0	0	273
	Devil's Den Water District:						
24.	Entitlement Water	0	0	0	258	19	1,560
	Dudley Ridge Water District:						
25.	Entitlement Water	0	0	792	978	4,012	5,850
26.	Surplus Water	0	0	0	0	0	3,571
27.	Carryover Water	0	0	0	0	0	0
28.	Article 12(d) Make-up Water	0	0	0	0	1,663	3,464
29.	Agency Total	0	0	792	978	5,675	12,885
	Empire West Side Irrigation District:						
30.	Entitlement Water	0	0	0	0	0	0
31.	Carryover Water	0	0	0	110	158	37
32.	Agency Total	0	0	0	110	158	37
	Green Valley Water District:						
33.	Surplus Water	0	0	0	0	0	0
34.	Emergency Relief Water	0	0	0	0	0	293
35.	Agency Total	0	0	0	0	0	293
	Hacienda Water District:						
36.	Entitlement Water	0	0	0	0	0	0
37.	Article 12(d) Make-up Water	0	0	0	0	0	840
38.	Agency Total	0	0	0	0	0	840
	J. G. Boswell Company:						
39.	Repayment Water	0	0	0	0	0	160

a) Metric conversion is acre-feet times 1.2335 equals cubic dekametres.

DELIVERIES IN 1978

feet)[a]

Month							1978 Contract Entitlement	1978 Entitlement Not Delivered	Net Cumulative Entitlement Not Delivered Thru		Line No.
July	Aug.	Sept.	Oct.	Nov.	Dec.	Total			1977	1978	
2	20	0	13	11	15	579	1,200	621	5,506	6,127	1.
2,099	1,857	520	116	0	0	11,512	—	—	—	—	2.
80	47	12	23	15	2	278	650	372	1,474	1,846	3.
218	217	181	157	41	32	1,121	—	—	—	—	4.
2,399	2,141	713	309	67	49	13,490	1,850	993	6,980	7,973	5.
386	590	604	655	645	534	6,034	—	—	—	—	6.
0	1,702	255	2,122	1,737	1,700	7,597	19,600	12,003	52,495	61,111	7.
331	647	1,877	0	0	65	3,387	—	—	—	—	8.
2,034	0	0	69	51	0	7,797	—	—	—	—	9.
2,365	2,349	2,132	2,191	1,788	1,765	18,781	—	—	—	—	10.
746	763	260	396	504	742	4,723	23,100	18,377	100,858	118,095	11.
676	0	286	0	0	0	1,140	—	—	—	—	12.
2,239	2,075	405	0	0	0	9,100	—	—	—	—	13.
3,661	2,838	951	396	504	742	14,963	—	—	—	—	14.
0	0	0	0	0	0	973	—	—	—	—	15.
10,313	10,270	10,003	10,388	6,963	3,958	88,000	88,000	0	50,494	42,767	16.
0	0	0	0	1,374	4,342	7,727	—	—	—	—	17.
10,313	10,270	10,003	10,388	8,337	8,300	95,727	—	—	—	—	18.
16,339	15,457	13,086	12,975	10,629	10,807	130,444	130,700	30,380	203,847	221,973	19.
308	299	296	112	0	0	1,950	—	—	—	—	20.
248	248	248	248	0	495	1,900	1,900	0	170	0	21.
24	24	24	24	0	49	170	—	—	—	—	22.
272	272	272	272	0	544	2,070	—	—	—	—	23.
2,248	2,423	1,054	1,026	1,343	1,431	11,362	11,362	0	7,625	7,625	24.
5,850	5,850	1,016	1,449	4,798	1,905	32,500	32,500	0	19,247	0	25.
4,015	0	0	0	0	0	7,586	—	—	—	—	26.
0	1,007	0	0	0	0	1,007	—	—	—	—	27.
5,342	5,685	649	0	0	1,437	18,240	—	—	—	—	28.
15,207	12,542	1,665	1,449	4,798	3,342	59,333	—	—	—	—	29.
0	0	0	0	0	0	0	0	0	2,262	1,808	30.
0	0	2	2	0	145	454	—	—	—	—	31.
0	0	2	2	0	145	454	—	—	—	—	32.
100	372	61	166	0	0	699	—	—	—	—	33.
307	0	0	0	0	0	600	—	—	—	—	34.
407	372	61	166	0	0	1,299	—	—	—	—	35.
0	0	0	0	0	0	0	4,600	4,600	2,520	4,600	36.
840	840	0	0	0	0	2,520	—	—	—	—	37.
840	840	0	0	0	0	2,520	—	—	—	—	38.
160	160	0	0	0	0	480	—	—	—	—	39.

TABLE 3: WATER

(in acre-

Line No.	Contracting Agency and Type of Service	Month					
		Jan.	Feb.	Mar.	Apr.	May	June
	Kern County Water Agency:						
40.	Entitlement Water	0	59	311	3,770	60,836	82,724
41.	Surplus Water	0	0	2,757	5,866	0	0
42.	Article 12(d) Make-up Water	0	0	0	0	0	28,725
43.	Carryover Water	2,024	4,568	3,450	8,817	4,906	68
44.	Agency Total	2,024	4,627	6,518	18,453	65,742	111,517
	Oak Flat Water District:						
45.	Entitlement Water	0	0	0	0	794	794
46.	Surplus Water	0	0	0	6	0	0
47.	Article 12(d) Make-up Water	0	0	0	0	0	0
48.	Agency Total	0	0	0	6	794	794
	Tulare Lake Basin Water Storage District:						
49.	Entitlement Water	0	0	0	0	0	1,025
50.	Carryover Water	584	0	0	0	14	0
51.	Agency Total	584	0	0	0	14	1,025
	United States Bureau of Reclamation:						
52.	Conveyance of Federal CVP Water	1,727	751	0	0	0	0
	Wheeler Ridge Water Storage District:						
53.	Regulated Delivery of Local Supply	91	0	0	0	0	0
54.	AREA TOTAL	4,591	5,378	7,310	20,154	72,721	129,651
	SOUTHERN CALIFORNIA SERVICE AREA						
	Antelope Valley-East Kern Water Agency:						
55.	Entitlement Water	39	73	211	1,332	5,450	3,714
56.	Carryover Water	0	0	0	0	0	3,973
57.	Agency Total	39	73	211	1,332	5,450	7,687
58.	Castaic Lake Water Agency	0	0	0	0	0	0
	Coachella Valley County Water District:						
59.	Entitlement Water	289	521	1,500	770	770	770
60.	Article 12(d) Make-up Water	0	0	0	0	105	105
61.	Agency Total	289	521	1,500	770	875	875
	Crestline-Lake Arrowhead Water Agency:						
62.	Entitlement Water	84	78	87	59	78	119
	Desert Water Agency:						
63.	Entitlement Water	437	789	2,272	1,166	1,166	1,166
64.	Article 12(d) Make-up Water	0	0	0	0	162	162
65.	Agency Total	437	789	2,272	1,166	1,328	1,328
	Littlerock Creek Irrigation District:						
66.	Entitlement Water	0	0	0	0	0	3
	Mojave Water Agency:						
67.	Entitlement Water	0	0	0	0	0	0
68.	Repayment Water	0	0	0	0	0	584
69.	Agency Total	0	0	0	0	0	584
70.	Palmdale Water District	0	0	0	0	0	0
	San Bernardino Valley Municipal Water District:						
71.	Entitlement Water	968	851	9	0	100	291
	San Gabriel Valley Municipal Water District:						
72.	Entitlement Water	573	520	0	0	0	0
	The Metropolitan Water Dist. of Southern California:						
73.	Entitlement Water	2,858	6,713	11,726	21,783	30,446	65,071
74.	Kern River Intertie Water	0	0	0	0	42,596	0
75.	Agency Total	2,858	6,713	11,726	21,783	73,042	65,071
	United Water Conservation District:						
76.	Regulated Delivery of Local Supply	0	0	0	0	4,660	14,307
77.	AREA TOTAL	5,248	9,545	15,805	25,110	85,533	90,265
	ALL AGENCIES						
78.	Entitlement Water	9,522	13,288	21,959	35,655	112,522	174,216
79.	Surplus Water	0	0	2,757	5,872	0	3,571
80.	Article 12(d) Make-up Water	0	284	1,261	0	2,396	33,321
81.	Carryover Water	2,608	4,568	3,503	8,944	5,206	4,525
82.	Emergency Relief Water	0	0	0	0	0	293
83.	Repayment Water	0	0	0	349	319	1,011
84.	Kern River Intertie Water	0	0	0	0	42,596	0
85.	Exchange Water	973	0	0	0	0	0
86.	Subtotal	13,103	18,140	29,480	50,820	163,039	216,937
87.	Regulated Delivery of Local Supply	1,934	1,404	1,678	2,474	10,532	20,875
88.	Conveyance of Federal CVP Water	1,727	751	0	0	0	0
89.	TOTAL WATER	16,764	20,295	31,158	53,294	173,571	237,812

a) Metric convereion is acre-feet times 1.2335 equals cubic dekametres.
b) 65 acre-feet was delivered in December 1977.

DELIVERIES IN 1978

feet)[a]

Month							1978 Contract Entitlement	1978 Entitlement Not Delivered	Net Cumulative Entitlement Not Delivered Thru		Line No.
July	Aug.	Sept.	Oct.	Nov.	Dec.	Total			1977	1978	
119,851	141,212	44,541	26,772	23,033	24,191	527,300	534,300	7,000	295,193	162,146	40.
0	0	0	0	0	0	8,623					41.
28,392	28,908	0	0	0	23,439	109,464					42.
1,068	4,948	327	265	117	25	30,583					43.
149,311	175,068	44,868	27,037	23,150	47,655	675,970					44.
1,051	874	169	97	56	0	3,835[b]	3,900	0	2,220	2,149	45.
0	0	0	0	0	0	6					46.
71	0	0	0	0	0	71					47.
1,122	874	169	97	56	0	3,912					48.
93	0	0	0	0	0	1,118	58,700	57,582	41,295	90,462	49.
2,530	4,281	840	135	20	11	8,415					50.
2,623	4,281	840	135	20	11	9,533					51.
1,257	4,652	0	0	0	0	8,387					52.
0	0	0	0	0	0	91					53.
173,755	201,783	49,227	30,296	29,367	53,128	777,361	647,262	69,182	370,532	268,790	54.
7,199	6,919	4,437	2,948	376	489	33,137	57,000	23,863	155,616	168,479	55.
1,900	1,870	1,628	1,334	272	23	11,000					56.
9,099	8,789	6,065	4,282	648	462	44,137					57.
0	0	0	0	0	0	0	13,400	13,400	39,036	52,436	58.
770	770	770	770	770	772	9,242	9,242	0	13,621	12,779	59.
105	105	105	105	105	107	842					60.
875	875	875	875	875	879	10,084					61.
135	145	98	113	84	129	1,209	2,320	1,111	3,360	4,471	62.
1,166	1,166	1,166	1,166	1,166	1,174	14,000	14,000	0	21,000	19,700	63.
162	162	162	162	162	166	1,300					64.
1,328	1,328	1,328	1,328	1,328	1,340	15,300					65.
93	3	7	81	21	0	208	920	712	670	1,382	66.
0	0	0	0	0	0	0	22,500	22,500	85,451	107,951	67.
0	0	0	0	0	0	584					68.
0	0	0	0	0	0	584					69.
0	0	0	0	0	0	0	9,340	9,340	29,520	38,860	70.
0	0	1,836	0	0	0	4,055	60,000	55,945	147,400	203,345	71.
0	200	1,480	1,491	2,029	1,478	7,771	15,700	7,929	44,693	52,622	72.
73,624	65,479	69,079	73,051	47,608	40,127	507,565	856,300	348,735	676,239	1,024,974	73.
0	0	0	0	0	0	42,596					74.
73,624	65,479	69,079	73,051	47,608	40,127	550,161					75.
7,085	1,544	1,229	1,175	0	0	30,000					76.
92,239	78,363	81,997	82,396	52,593	44,415	663,509	1,060,722	483,535	1,216,606	1,686,999	77.
223,469	238,091	136,431	122,154	90,514	78,558	1,256,379	1,840,534	584,090	1,797,965	2,185,735	78.
4,115	372	61	166	0	0	16,914					79.
34,936	35,724	940	291	1,641	29,540	140,334					80.
6,505	12,753	4,960	1,736	409	269	55,986					81.
307	0	0	0	0	0	600					82.
468	459	296	112	0	0	3,014					83.
0	0	0	0	0	0	42,596					84.
0	0	0	0	0	0	973					85.
269,800	287,399	142,688	124,459	92,564	108,367	1,516,796					86.
14,061	6,283	2,939	2,172	737	566	65,655					87.
1,257	4,652	0	0	0	0	8,387					88.
285,118	298,334	145,627	126,631	93,301	108,933	1,590,838	1,840,534	584,090	1,797,965	2,185,735	89.

be used for its originally intended purpose. As a result, a policy was developed concerning use of this power. It would be used, in order of priority, for (1) surplus water service; (2) for delivery of Article 12(d) and 14(b) makeup water and (3) for any other type of water that might be delivered in lieu of surplus water, such as water delivered under the wet weather provision. If all the power was not used for the above purposes, it would be used for entitlement water service to the extent that power scheduled for that service was considered deficient. Although a final accounting had not been made at the time this was written, it is apparent that this policy resulted in much of the committed power being used to pump Article 12(d) makeup water which was delivered during 1978.

Repayment Water. The State entered into two contracts in 1964 to acquire a water supply for preconsolidation purposes. Each of the contracts provided that the State would deliver project water to the contractors in future years as partial payment for the preconsolidation water. The contracts have since been acquired by the J. G. Boswell Company and the Belridge Oil Company. During 1978, 592 cubic dekametres (480 acre-feet) were delivered to the J. G. Boswell Company, leaving an end-of-year balance of 104 718 cubic dekametres (84,895 acre-feet) to be delivered prior to 1985. Deliveries to the Belridge Oil Company totaled 2 405 cubic dekametres (1,950 acre-feet) leaving a balance of 71 515 cubic dekametres (57,977 acre-feet) to be delivered before 1985.

The State and the Mojave Water Agency entered into an agreement in 1967 to make available a water supply to the State for use in construction of the San Bernardino Tunnel, and so that the State might provide Crestline-Lake Arrowhead Water Agency an interim water supply if tunnel construction caused a depletion in the agency's ground water supply. Water obtained by the State under the agreement was pumped by the State from a well that tapped a ground water basin underlying a portion of the Agency's area. The agreement provided that the State would repay Mojave for the ground water by delivering an equal amount of SWP water to the agency by means of releases from Lake Silverwood. The total amount of water owed the agency under the agreement at the beginning of 1978 was 720 cubic dekametres (584 acre-feet). This amount was released to the agency from Silverwood in June 1978.

Local Water Deliveries. SWP facilities are used to make deliveries of nonproject water to both contractors and noncontractors. These deliveries are shown as local water deliveries in Table 3. The agencies shown as having received local water, excepting the Wheeler Ridge Maricopa Water Storage District, have also received such deliveries in prior years and will again in the future. The Wheeler Ridge delivery was made under a 3-month extension of an agreement made during the 1977 drought for the purpose of distributing locally pumped ground water.

1977 Exchange Water. All 1977 exchange agreements with the exception of those with the City of San Francisco and the Marin Municipal Water District terminated at the end of 1977. The latter two continued through February 15, 1978. San Francisco took 1 200 cubic dekametres (973 acre-feet) of exchange water in 1978, all during January, while Marin took none.

Emergency Relief Water. As noted in Bulletin 132-78 (see pages 62 and 63) 110 841 cubic dekametres (89,859 acre-feet) of Metropolitan Exchange water and 6 559 cubic dekametres (5,317 acre-feet) of purchased water remained undelivered after all deliveries under the contracts had ended. The total of 117 400 cubic dekametres (95,176 acre-feet) was held in SWP reservoirs and was available for an extension of the 1977 emergency drought relief program in the event the drought continued through 1978. When it became apparent that no drought relief

measures would be required in 1978, the water was sold. The following three entities purchased the water for $36.50 per cubic dekametre ($45 per acre-foot) plus the variable OMP&R transportation cost to be incurred in its delivery:

Entity	Acre-feet Purchased
Kern County Water Agency	94,526
Green Valley Water District	600
Tracy Golf and Country Club	50
Total	95,176

The emergency relief water sale price of $36.50 per cubic dekametre was considered to be a favorable one from a SWP standpoint considering there was no longer a water shortage. However, this price was about $21 per cubic dekametre less than the costs incurred by the State in acquiring the water. The State thus incurred an unrecovered cost of about $2,480,000 for the 1977 exchange and purchase water acquired for the emergency drought relief program. This cost has been declared nonreimbursable.

Green Valley took delivery of its purchased amount during 1978 in accordance with its agreement with the State. Tracy Golf and Country Club's agreement also called for delivery in 1978, but, since the Club was unable to complete construction of the turnout structure, the agreement was extended to allow delivery in 1979. Kern purchased Emergency Relief water on behalf of the Lost Hills Water District for delivery during the years 1978 through 1983. Beginning in 1979, at least 23 436 cubic dekametres (19,000 acre-feet) a year must be scheduled as long as the total undelivered water equals or exceeds that amount. The agency elected to take none of the water during 1978.

1978 Exchange Water. Bulletin 132-78 (see pages 16 and 17) noted that in late 1977 an exchange agreement had been signed, under which MWD would release 246 700 cubic dekametres (200,000 acre-feet) of its project water for delivery to other contractors in 1978, and, in exchange, would pump an additional 246 700 cubic dekametres (200,000 acre-feet) of its Colorado River supply. Pursuant to this agreement, 37 005 cubic dekametres (30,000 acre-feet) of Colorado River exchange water were pumped in January, before it became apparent that an emergency drought relief program would not be required in 1978. Under three-party agreements, 6 168 cubic dekametres (5,000 acre-feet) of this water were later sold to the Dudley Ridge Water District, and 30 838 cubic dekametres (25,000 acre-feet) to Kern County Water Agency. The agreements provide that the State will deliver the 37 005 cubic dekametres (30,000 acre-feet) of exchange water, which was held in project reservoirs at the end of 1978, to MWD in 1979. MWD will take the water and store it in local ground water basins. When the water is scheduled for delivery to Kern and Dudley Ridge, the State will deliver project water to them, and MWD will use a like amount of the stored exchange water in lieu of delivered water. Kern and Dudley Ridge must take delivery of the water prior to March 31, 1983 and pay all State incurred costs in connection therewith.

Ground Water Demonstration Program. The Mojave Water Agency and the San Bernardino Valley Municipal Water District agreed to participate in demonstration projects, involving the storage of project water in local ground water basins.

Pursuant to an agreement between Mojave and the Department, 29 214 cubic dekametres (23,684 acre-feet) of project

water were released into the West Fork of the Mojave River through the outlet works of Cedar Springs Dam. A total of 27 754 cubic dekametres (22,500 acre-feet) of released water is considered to have reached and to be available for future extraction from those ground water basins within the agency, which are replenished from Mojave River flows. Pursuant to the agreement, the State purchased Mojave's full 1978 entitlement, and the agency received full credit for its 1978 Delta Water Charge. The Agency is to recapture all the demonstration water by December 31, 1982 in lieu of delivery of project water in quantities equal to the recaptured amounts. Payment will be made on the recaptured water as though the water has been delivered from the Delta. Costs associated with the 1978 storage of the water will be treated as SWP conservation costs, and payments made by Mojave for recaptured water will be credited to SWP conservation costs.

The ground water demonstration program agreement between the State and San Bernardino provides for the storage of up to 61 675 cubic dekametres (50,000 acre-feet) of project water in ground water basins within the District. Up to 12 335 cubic dekametres (10,000 acre-feet), can be stored annually from 1979 to 1985. The State will credit the District each year an amount equal to the product of the then current Delta Water Rate and the quantity of project water stored, to the extent that deliveries of entitlement water to the District, plus the stored amount, do not exceed the District's annual entitlement for the year. The State will credit San Bernardino for costs incurred: (1) in using San Bernardino's facilities for transporting and spreading demonstration water and related services and (2) in using capital improvements of any additional distribution or spreading facilities to the extent they are necessary, if approved by the State prior to the time costs are incurred. The State will reduce San Bernardino's credit by one-half of the ground water pumping costs not incurred as a result of indirect storage. All stored water is to be recaptured by the District within 15 years. The District will pay the State for recaptured water as if the water was delivered from the California Aqueduct in that year. The State will credit San Bernardino for costs incurred (1) in using local extraction facilities, (2) in using capital improvements of any additional pumping or distribution facilities required to recapture the demonstration water, if approved by the State prior to the time costs are incurred, and (3) in lifting the recaptured water to an operating hydraulic gradient equivalent to that San Bernardino would have had in the absence of this program, but not to exceed the hydraulic gradient at the San Bernardino delivery point. An operations agreement between the District and the State which specifies recapture criteria has been executed. As in the Mojave program, all costs associated with the storage of this water are treated as conservation costs, and all revenues associated with its recovery are treated as conservation cost credits. Storage of Project water in the District's ground water basins during 1978 totaled 11 405 cubic dekametres (9,246 acre-feet).

Wheeling of Federal Water. The State has entered into contracts with the United States and nine agencies calling for the wheeling of CVP water to Kern County Water Agency's Cross Valley Canal for the agencies. Under another contract between the State and the United States, the USBR provides the water and power for the wheeling. Subject to the availability of water, up to 155 214 cubic dekametres (125,832 acre-feet) of water per year is wheeled. Only 10 345 cubic dekametres (8,387 acre-feet) were wheeled during 1978 because of low local demand. The following tabulation shows the agencies contracting for wheeling service, the maximum annual amount of wheeling contracted for, the amount wheeled in 1978, and the charge to each for the 1978 wheeling service:

Agency	Maximum Annual Contractual Amount (cubic Dekametres)	Maximum Annual Contractual Amount (Acre-Feet)	Wheeled During 1978 (cubic Dekametres)	Wheeled During 1978 (Acre-Feet)	Charge for 1978 Wheeling (dollars)
County of Fresno	3 701	3,000	367	298	1,672
County of Tulare	3 701	3,000	1 918	1,555	8,723
Ducor Irrigation District	1 480	1,200	50	41	230
Hills Valley Irrigation District	2 647	2,146	263	213	1,195
Kern-Tulare WD	49 340	40,000	0	0	0
Lower Tule River Irrigation District	38 364	31,102	3 813	3,091	17,340
Pixley Irrigation District	38 364	31,102	3 813	3,091	17,341
Rag Gulch WD	16 406	13,300	0	0	0
Tri Valley WD	1 211	982	121	98	549
Total	155 214	125,832	10,345	8,387	47,050

Wet Weather Related Activities.

Above-normal precipitation during late 1977 and in 1978 resulted in heavy spring snowpacks in the Sierra Nevada and the potential for spring flooding in the San Joaquin Valley with substantial losses to agriculture. Through operation of the SWP under special agreements, losses from flooding in the State service areas of the San Joaquin Valley and in Southern California were considerably lessened.

Kern River Intertie. The Kern River Intertie was completed in November 1976 for the purpose of making gravity diversions of Kern River flood flows into the California Aqueduct. The State is reimbursed for all expenses incurred in operating the intertie structure. Diverted water was to be used to meet Project delivery and storage demands south of the intertie. In 1978 the intertie was used for the first time, with a total of 219 478 cubic dekametres (177,931 acre-feet) diverted into the California Aqueduct during April, May and June. Included in this total were 11 240 cubic dekametres (9,112 acre-feet) of Kaweah River flood water, which was introduced into the Kern River Channel via the Friant-Kern Canal following approval by the USBR, the State, and the Kern River Watermaster.

In April 1978 when diversions commenced, there was little remaining storage space in Southern California reservoirs in which to place the water, and SWP water delivery demands to the South were low because of the abundance of local supplies.

Pumpback Agreement. Under an agreement between the State and Delta Lands Reclamation District No. 770, a portion of the Kern River flood flow water entering the California Aqueduct through the Kern River Intertie was used to make project deliveries from aqueduct turnouts north of the intertie. The District, at no cost to the State, installed pumps at check structures No. 25 and 23 and paid all costs associated with their operation, including power costs, and removal costs. During May 1978 these pumps delivered a total of 22 162 cubic dekametres (17,967 acre-feet) of Kern River water to Project water users north of the intertie. Although this amount was less than the anticipated pumping because

Kern River flows were of a lesser magnitude than had been projected, it did allow the beneficial use of Kern River flood flows, which would otherwise have flooded agricultural lands.

Additional Water. MWD agreed to a request by Delta Lands Reclamation District No. 770 that it take additional Project water, in lieu of an equivalent amount of scheduled Colorado River water, for purposes of increasing the use of Kern River flood flows. Two agreements were executed in order to implement this arrangement. Under the first, between MWD and the State, Metropolitan agreed to take up to 154 188 cubic dekametres (125,000 acre-feet) of Kern River flood flow water in place of an equivalent amount of Colorado River water, and to pay the State $4.67 per acre-foot for all Kern River water delivered. The $4.67 amount was the unit power cost incurred by MWD for the importation of Colorado River water. Although the water delivered under this agreement became Project water after entering the California Aqueduct by way of the Kern River Intertie, the agreement specifically provided that this additional water was not entitlement water. The second agreement, between the State and Delta Lands Reclamation District No. 770, provided that the District would pay the estimated power cost on each acre-foot of water delivered under the MWD agreement minus the $4.67 per acre-foot MWD payment, plus a $0.50 per acre-foot service charge. The power charge was made subject to end of year redetermination based on actual 1978 conditions.

Deliveries under these agreements totaled 52 542 cubic dekametres (42,596 acre-feet). Deliveries, all of which occurred during May 1978, were terminated when it was determined that flooding was no longer probable.

Storage of Local Inflow in Castaic and Pyramid Lakes. The Department obtained a temporary right to store local inflow in Castaic and Pyramid Lakes in 1978. A total of 168 037 cubic dekametres (136,228 acre-feet) of water was subsequently stored in the two lakes for future project uses. This water was stored during periods of high runoff, when releases at rates comparable to inflow rates would have resulted in (1) ocean recharge and (2) some damage due to high flows between the lakes and the ocean.

United Water Conservation District of Ventura County requested the State to provide temporary storage of some of the inflow water for later use. A letter agreement between United and the Department provided for the temporary storage of 25 904 cubic dekametres (21,000 acre-feet) of inflow water in Castaic Lake and 11 102 cubic dekametres (9,000 acre-feet) in Pyramid Lake. The District was assessed an administrative charge of $0.50 per acre-foot for the water stored, except for 3 700 cubic dekametres (3,000 acre-feet) released from Pyramid Lake for maintaining flows as requested by the Department of Fish and Game.

Excess Peaking. Above average precipitation during the early part of 1978 resulted in Project water deliveries being considerably less than the amounts scheduled for that period. The Department was requested to reschedule much of this undelivered entitlement and Article 12(d) water for delivery later in the year. In eight cases this shift resulted in monthly deliveries of entitlement plus Article 12(d) makeup water in amounts exceeding the monthly peaking limitations specified in Article 12(b) of the long-term contracts. The eight contractors were asked to sign agreements that would require them to pay a charge that would apply against power costs, in order to adjust downward the variable rates paid by other contractors to the amount that would prevail if peaking was within contractual limitations. Five contractors signed the agreements, and the schedules of the remaining three were adjusted to eliminate excess peaking. Any charges to be assessed under the five agreements will be determined in 1979.

Action Related to Wet Weather Provisions. Eight of the long-term water supply contracts contain the so-called "wet weather" provisions. These provisions were included in order to provide a means of taking delivery of entitlement water in amounts either greater or lesser than Table A amounts when the local water supply was respectively less than or greater than normal. It was intended that over the years the total amount of Project water taken would be equivalent to the sum of the Table A amounts through those years and that total contractor payments would also be about the same as those which would have been received if there had been no deviation to Table A amounts. Table 2 shows the future delivery credits and the rights to future Table A reductions, which have been accumulated under these provisions as of January 1, 1979.

Five of the eight contractors having the "wet weather" provisions were unable to take full 1978 entitlements due to above-normal local water supplies. The five and the quantities of entitlement water not used are shown in the following tabulations:

1978 Entitlement Water Not Taken

Contractor	Cubic Dekametres	Acre-feet
Alameda Co. FC&WCD, Zone 7	14 806	12,003
Alameda Co. WD.	22 668	18,377
Empire West Side ID	3 701	3,000
Hacienda WD	5 674	4,600
Tulare Lake Basin WSD	71 027	57,582
TOTAL	117 876	95,562

Alameda County FC&WCD, Zone 7, Alameda County Water District, Hacienda Water District, and Tulare Lake Basin Water Storage District each acquired a credit to the future delivery of the water not taken in 1978. This water has a future delivery priority ahead of agricultural surplus water and repayment water. Tulare preferred to increase its future delivery rights rather than offset previous credits for increased deliveries and was allowed to do so after a determination was made that a decrease was not mandatory under the "wet weather" provisions.

Although Empire West Side Irrigation District's contract contains the "wet weather" provisions, they are not applicable because the District is at its maximum annual entitlement. Therefore, under present contract provisions the District could not take delivery of the 3,000 acre-feet of entitlement water it did not take in 1978.

Devil's Den Water District annual entitlements are also at the maximum annual entitlement level. The District requested the Department to amend its long-term contract to include the "wet weather" provision, because it was unable to use 1 650 cubic dekametres (1,338 acre-feet) of its entitlement water in 1978. Since the provisions could not be used (because the District is at its maximum annual entitlement), the requested amendment was not executed. As explained in the section on contract amendments in this chapter, the two Districts were given wet-weather relief under a newly approved policy.

Project Water Delivery Plans

In early September 1978, SWP contractors submitted their estimated monthly project water delivery requirements for the six-year period of 1979 through 1984. Estimates included entitlement, makeup (Article 12(d), Article 14(b) water), and surplus water.

Entitlement Water. The following tabulation shows the estimated entitlement plus makeup water needs submitted in 1978 and, for comparison purposes, similar estimates submitted in each of the five previous years.

Year Estimate Submitted	Year and Delivery in Acre-feet a/ b/					
	1979	1980	1981	1982	1983	1984
1978 c/	2,026,755	2,026,174	2,164,013	2,300,401	2,408,652	2,495,503
1977	2,108,541	2,170,409	2,374,135	2,574,831	2,371,140	2,482,275
1976	1,919,070	2,026,880	2,168,335	2,273,925	2,376,990	
1975	1,813,362	1,931,067	2,027,770	2,131,960		
1974	1,925,483	2,022,548	2,112,251			
1973 c/	1,864,075					

a/ *Metric conversion is acre-feet times 1.2335 equals cubic dekametres.*
b/ *Includes anticipated delivery of Article 12(d) water and project entitlement water recaptured from ground water storage pursuant to demonstration project agreement.*
c/ *Six-year requests received, whereas in intervening years seven-year requests were received.*

The tabulation shows that, although estimates of future use vary somewhat, overall use of entitlement water is expected to be substantially lower than the total entitlement water contracted. The estimates of 1979 usage made in 1977 and 1978 exceed the contractual amount only because these estimates include large quantities of Article 12(d) water, which agricultural contractors will use in place of surplus water.

The rule curve, mentioned previously in this chapter, developed for determining the quantity of SWP water that could be approved for delivery in 1978 was updated for 1979 determinations. Schedules were therefore not issued on December 1, 1978 for 1979 as called for in Article 12(a) of the long-term surplus water contracts. Based on water supply conditions on December 1, 1978, the Department, through use of the rule curve, was able to announce on December 12 that all requested entitlement and makeup water deliveries could be met in 1979, even if the year was as dry as 1977. Approved monthly water delivery schedules were issued soon after that announcement. The schedules call for 1979 deliveries of 2 261 632 cubic dekametres (1,833,508 acre-feet) of entitlement water and 268 085 cubic dekametres (217,337 acre-feet) of emergency relief, Article 12(d) and Article 14(b) water.

Surplus Water. Surplus water, including preconsolidation repayment water, was not scheduled for delivery on the initial 1979 water delivery schedules. Contractors were told that such water could not be approved for delivery until the rule curve criteria indicated a 1979 water supply sufficient to make such deliveries. Use of the criteria based on actual December 1, 1978 conditions showed there would be no additional water for surplus water service in 1979, if 1979 should be a critically dry year. Since it was unlikely that the year would be that dry, the major concern of potential surplus water users at that time was how much surplus water could eventually be made available in 1979 and how soon could it be scheduled for delivery.

Wheeling of Federal Water. Pursuant to contracts under which the State conveys water, a request was received in December 1978 for the delivery of 153 734 cubic dekametres (124,632 acre-feet) of such water to eight of the nine

agencies which had contracted for this service. USBR was not sure how much CVP water could be made available in 1979 for the eight agencies, and could guarantee only the quantity requested for delivery in January 1979. Initial schedules issued by the Department approved only January deliveries and tentatively approved, from a State delivery capability standpoint, deliveries requested in each of the remaining months of the year. Revised schedules were later issued approving delivery of the full requested amount following a determination by the Bureau that the water and power for pumping that water would be available.

Contract Amendments

Each of the thirty-one long-term contracts has been amended. These amendments now total 286. Figure 6 shows for each contract the amendments to that contract by number and general subject. In addition to the numbered amendments shown in Table 6 some Table A amounts in a few contracts have been revised by unnumbered amendments or notices of Table A revisions. Such notices are used when a Table A change is dictated by actions and agreements other than an executed contract amendment, such as a provision in the amended Article 21 if surplus water received exceeds that year's annual entitlement.

Several amendments to the long-term water supply contracts sent to contractors for signature prior to 1977 have never been signed. These include:

- Amendment to the City of Yuba City contract concerning calculation of the Project interest rate and the Delta Water Charge. All other contracts have been amended to include the change in interest rates provided in this proposed amendment.

- An amendment to the contract with Solano County Flood Control and Water Conservation District concerning calculation of the Delta Water Charge. All other contracts except the Yuba City contract have been amended to include this provision.

- An amendment to contracts with the City of Yuba City and Solano County Flood Control and Water Conservation District which deletes the surcharge, surcharge credit, and power credit provisions. All other contracts reflect the amendment.

- An amendment to realign and clarify the surplus water provision; the amendment has been signed by 23 contractors, but has not been signed by the City of Yuba City, County of Butte, Mojave Water Agency, Napa County Flood Control and Water Conservation District, San Bernardino Valley Municipal Water District, San Gabriel Valley Municipal Water District, San Gorgonio Pass Water Agency, and The Metropolitan Water District of Southern California.

Butte County has been unable to market a large portion of the Project water it contracted for in 1963. As a result, the County has for several years been attempting to have its annual entitlements reduced. Following approval of the modified report of the Task Force on Water Deliveries (Transfer of Entitlements section in Chapter I), an amendment providing for reductions in Butte County's Table A amounts was developed by the end of 1978. The approved report recommends that requested decreases in entitlement amounts be approved providing that the contractor agrees to make accelerated payments in an amount up to the Delta Water Rate on each acre-foot of reduction and that this payment be credited against the contractor's allocated transportation costs. It further recommended that contractors, such as Butte, which do not have transportation charges, be allowed to decrease entitlements without the accelerated payment requirement. Not all the details and language concerning the accelerated payment had been worked out at this writing, therefore, amendments to the contracts

Figure 6: WATER SUPPLY CONTRACT AMENDMENTS AS OF DECEMBER 31, 1978

Contracting Agency	Minimum Project Yield Increased	Delta Water Charge, "Eel" Costs Delayed			Project Interest Rate Modified	Surcharge and Surcharge Credit Provisions						"Wet Weather" Provisions Added	"A & R" Surplus Water Provisions		Turnout Construction by Agency	Peaking Service		Annual Entitlements Revised	Excess Capacity Purchased	Article 28 Revised	Special Conditions	Subdivision (f) of Article 1 Revised (Project Repayment Period)
		1970	1971	1972 till construction		Added	Revised	Moratorium Declared: Thru 1969	Moratorium Declared: 1970	Moratorium Declared: 1971	Deleted		Added	Revised		Increased	Decreased					
FEATHER RIVER AREA																						
City of Yuba City	1	2P	2P	2P	2P		1							1				1		NA		
County of Butte	1	3	3	3	3		1	2		4	5			1				6(1		NA		6
Plumas County Flood Control and Water Conservation District	1	3	5	6	3		1	2	4	7	8			10						9		
NORTH BAY AREA																						
Napa County Flood Control and Water Conservation District	1	3	4	5	3		1				6			1							1,2	
Solano County Flood Control and Water Conservation District	1	2	3P	3P	2		1							1,5		1						
SOUTH BAY AREA																						
Alameda County Flood Control and Water Conservation District, Zone 7	2	6	8	9	6	2		5	7	10	11	1		2,12	3			1,4			1	
Alameda County Water District	1	4	5	7	4	1		3		8	9	S	1	11	2					10	1,6	
Santa Clara Valley Water District	2	6	8	10	6	2		5	7	11	12	1		1,2,14	3			1,4		13	1,9	
SAN JOAQUIN VALLEY AREA																						
County of Kings		2	3	4	2			1		5	6	S	S	8						7		
Devil's Den Water District	1	5	7	8	5			4	6	9	10			1,12				1,3		11	2	
Dudley Ridge Water District	1	6	8	9	6			5	7	10	11			1,13				1,2 3,4		12		
Empire West Side Irrigation District	1	4	6	7	4			3	5	8	9	S		1,11				2		10		
Hacienda Water District	1	4	6	7	4			3	5	8	9	S		1,11				2		10	7	
Kern County Water Agency	1	4	6	8	4			3	5	9	10			1,12				1,2		11	7	
Oak Flat Water District		3	5	6	3			2	4	7	9	S	S	11	1			8		10		
Tulare Lake Basin Water Storage District	2	5	6	7	5			4		8	10	S		2,13				1,3,9 12		11		
CENTRAL COASTAL AREA																						
San Luis Obispo County Flood Control and Water Conservation District	2	3	4	5	3	1	2				6		1	2,8						7		
Santa Barbara County Flood Control and Water Conservation District	2	3	4	5	3	1	2				6		1	2,7				2				
SOUTHERN CALIFORNIA AREA																						
Antelope Valley-East Kern Water Agency	1	5	6	7	5	1					8		1	10		3	2	1	4	9	2,3 4	
Castaic Lake Water Agency	2	4	5	6	4	1	2				7		1	2,10		2		2,3 9		8		
Coachella Valley County Water District	2	3	4	5	3	1	2				6		1	2,8				2		7		
Crestline-Lake Arrowhead Water Agency	2	5	6	7	5	1	2				8		1	2,11	4	3		2,10		9		
Desert Water Agency	2	3	4	5	3	1	2				6		1	2,8				2		7		
Littlerock Creek Irrigation District	2	3	4	5	3	1	2				6		1	2,7				2				
Mojave Water Agency	2	4	5	6	4	1	2				7		1	2			3	2		8	3	
Palmdale Water District	2	3	4	5	3	1	2				6		1	2,8				2		7		
San Bernardino Valley Municipal Water District	2	4	5	6	4	1	2				7		1	2				1,2 3,9		8		
San Gabriel Valley Municipal Water District	2	4	5	6	4	1	2				7		1	2		2		2,9	3	8		
San Gorgonio Pass Water Agency	2	4	5	6	4	1	2				7		1	2		2					2,3	
The Metropolitan Water District of Southern California	1	9	10	11	9	1					13		1					1,3 8V,15	2,6 7	14	(a	
Ventura County Flood Control District	1	2	3	4	2		1				5			1,7						6		

1) Approved by the County of Butte on January 23, 1979

P = Pending
S = Special provisions of basic contract.

V = Amendment voided by subsequent actions.
a) Amendment Numbers 2, 3, 4, 5, 7, 8V, 12.

of contractors, other than Butte, which have indicated a desire for decreases, have not been pursued. The executed amendment, dated January 23, 1979 reduced Butte County's annual entitlements for 1978 through 1990. The amendment also revised the definition of the Project repayment period to provide that it would end December 31, 2035.

Kern County Water Agency requested that its water supply contract be amended to provide a contractual means of delaying payment of all, or a portion of, the capital components of the Delta and Transportation charges for up to three months in any year. All contractors were sent a draft of an amendment that would accomplish the requested delay and asked to comment on it and to notify the Department if they wished their contracts so amended. At year's end no objections to such an amendment had been received, and Kern was told that its contract would be amended to include the requested provision. No other requests for the amendment were made.

Hacienda Water District requested that the Department approve a transaction under which Hacienda's obligations under its water supply contract with the State be assumed by Tulare Lake Basin Water Storage District. Tulare Lake Drainage District intends to annex the Hacienda lands and Tulare Lake Basin Water Storage District would acquire Hacienda's Project water and contractual repayment obligation. The drainage district intends to use Hacienda land for the disposal of drainage water. The Department has agreed to the proposal because it will remove from future use certain agricultural lands thereby reducing ground water overdraft, provide beneficial wildlife habitat, and provide a needed disposal area for agricultural drainage water. Pending formal implementation of the proposal Hacienda's Project water will be delivered to Tulare under an interim agreement.

A previous section of this chapter discussed the fact that although Empire West Side Irrigation District has the "wet weather" provisions in its contract, they are inapplicable because the District has reached its maximum annual entitlement. The District took none of its Project entitlement water in 1978 due to an above-average local supply. Since the District would obtain no benefit through the wet weather provisions, its Table A amount for 1978 was amended by reducing it to zero. This action was made possible under the approved criteria set forth in the modified report of the Task Force on Water Deliveries. Under that criteria, the District's 1978 Delta Water Charge payment was credited to the District's long-term allocated Transportation capital costs. Project cash flow was thereby not adversely affected by this Table A change.

Devil's Den Water District, also at maximum entitlement, was unable to use all of its 1978 entitlement water. The District's request to amend its contract to include the wet weather provisions, so that it could use the undelivered 1979 entitlement water in a later year, was refused because the provisions, as in the case of Empire, would not be applicable. Devil's Den was also offered a reduction in its 1978 entitlement amount under the newly approved Task Force criteria and upon acceptance, its 1978 entitlement was reduced from 15 665 cubic dekametres (12,700 acre-feet) to 14 015 cubic dekametres (11,362 acre-feet). That portion of the District's Delta Water Charge payment in 1978 associated with the reduced entitlements was credited to the District's allocated Transportation capital costs.

During the year, the Department announced that the public would be welcome to observe contractual negotiations involving the Department and that notice of scheduled meetings would be furnished upon request.

Negotiation of Water Charge Settlements

A task force consisting of representatives of the State Water Contractors

Audit Committee, MWD and the Department's Water Service Contract Cost Negotiation Committee continued its discussions and negotiations during 1978.

Protests of Water Contractor Charges. Several issues concerning contractor's water service charges have not yet been resolved. It is the Department's desire to finalize certain computational methods used in determining water charges which need not be protested, therefore reducing the number of issues that remain unresolved. Water Service contractors Council Memo No. 1257, dated September 22, 1978, extended until December 21, 1979 the time for the Department and the water contractors to reach agreement on the following items:

- Charges for extra service. (The present method is described in Water Service Contractors Council Memo No. 593, dated July 10, 1970.)
- Transportation variable charges for fluctuations in reservoir storage.
- Allocation of Delta Pumping Plant operating costs between transportation and conservation.

Replacement of Project Operating Facilities. In 1978 the Department's Replacement Committee continued its study of the Department's procedures for establishing fund reserves necessary to finance future costs of replacement of Project facilities. Meetings were held with the Task Force and the Technical Accounting Subcommittee. The resulting financing and accounting procedures were approved by the Director on April 17, 1979 to be effective with the 1980 annual statement of charges to water contractors. The final report on Replacement of Operating Facilities of the State Water Project will be completed in 1979.

Project Purpose Cost Allocation. Assembly Bill No. 1514 was introduced in the Legislature in 1977 requesting reimbursement under provisions of the Davis-Dolwig Act for recreation and fish and wildlife enhancement costs that have previously been financed by SWP. The bill included requests for reimbursement of recreation capital costs totalling about $67,130,000 based on revised cost allocations for the California Aqueduct, Dos Amigos Pumping Plant and the Oroville Division. Assembly Bill No. 1514 was approved by the Legislature and signed by the Governor on August 22, 1978.

The study and negotiations to establish a project purpose cost allocation for the California Aqueduct, Dos Amigos Pumping Plant to termini continued in 1978. Department staff met with representatives of the water contractors twice in late 1978 and the meetings will continue through 1979. The cost allocation for Dos Amigos Pumping Plant to termini is scheduled to be reported to the Legislature in 1980 (Bulletin 132-80, Appendix D).

Budget Review

In the fall of 1978, in line with passage of Proposition 13, the Governor asked all State departments to review their 1978-79 budgets and to identify their lowest priority programs and activities making up 10 percent of their State funded operations. Accordingly, the Department reviewed all programs supported by the State's General Fund, Special State Funds, and SWP funds, and identified the lowest in priority. Implementation of the Governor's request together with a State hiring freeze resulted in planned budget reductions of about $6 million, including $2.6 million in Project funds for the 1978-79 fiscal year.

In September 1978 the Director had his annual meeting with representatives of the water contractors to review SWP expenditures for the 1979-80 fiscal year. This is the third year of water contractors' participation in the revised budget review process. This process replaced the after-the-fact negotiations of protested capital costs practiced in prior

years. This is done annually in order to answer questions concerning the Department's program direction and expenditure levels, to clarify any issues concerning specific planned actions and to reduce the number of cost items that might be contested by the water contractors.

In 1978 at the request of water contractor representatives, the Department expanded its cost accounting system to provide additional budget and accounting information for their review. The additional information was requested by the representatives to aid in auditing SWP expenditures by the Department. The additional information was limited to five sample work programs during the 1979-80 fiscal year. If the additional information proves helpful in the audit process, the Department has agreed to expand its accounting system to provide this information for all SWP work programs.

POWER CONTRACT MANAGEMENT AND ENERGY ACTIVITIES

Energy Activities

The Department's continuing activities regarding electrical energy for project pumping cover two distinct areas: (1) the management of current power purchase-sale contracts and development of power costs and use data required for the administration of SWP water supply contracts, and (2) the acquisition of cost-effective and reliable power supplies for SWP operations beyond March 31, 1983, when current firm power purchase-sale contracts terminate.

The Energy Committee, established in 1976, (see p. 72, Bulletin 132-77), provides a forum for water contractor briefing and commentary on current events and activities concerning the Department's energy activities. The treatment of power costs in computing water bills is also discussed. During 1978, the Committee met four times.

Power Contract Management Activities in 1978

Highlights of the Department's power contracts management during 1978 primarily reflected the rapid transition from unprecedented drought to abundant water supplies.

Pumping Power for the 1978 Exchange Program. MWD Exchange Programs were conducted to stretch total available water supplies during the 1976-77 drought. A major contribution to the cost-effectiveness of these programs was the power which was provided (for pumping additional water through MWD's Colorado River Aqueduct) by electric utilities at rates similar to those under the Suppliers Contract. (See pgs. 71-72, Bulletin 132-77, and p. 84, Bulletin 132-78, regarding power aspects of the 1976 and 1977 programs, respectively.)

The drought effectively ended in mid-December 1977, when most areas in California began to receive abundant precipitation. As part of the contingency preparations, should the drought extend into 1978, a 1978 Exchange Program was planned and implemented. In January 1978 the program was terminated. Again, electric utilities provided pumping energy for the program at rates similar to those under the Suppliers Contract.

In anticipation of a 1978 Exchange Program, 37 000 cubic dekametres (30,000 acre-feet) of water was pumped from the

Colorado River. This amount was pumped with energy supplied under MWD's arrangements with the Southern California Edison Company. By the Director's June 27, 1978 letter to the utilities, the Department requested that the energy MWD purchased for pumping the 37 005 cubic dekametres (30,000 acre-feet) be retroactively included in charges to the Department under terms and conditions of power arrangements basic to the 1977 Program. The following utilities agreed and provided the indicated energy quantities:

	millions of kWh
Pacific Gas and Electric Company	25.8
Southern California Edison Company	21.6
San Diego Gas and Electric Company	3.6
Total	51.0

By this agreement, costs of the 37 005 cubic dekametres (30,000 acre-feet) exchange were decreased by more than $35 per acre-foot to the SWP and to eventual users.

Adopted 1978 Flood-Water Benefit Allocation Procedures. Flood Waters are measured quantities which (1) are used for SWP purposes and (2) enter the "project transportation system" (including Southern California reservoirs) down-aqueduct from the Sacramento-San Joaquin Delta. When flood waters enter down-aqueduct from pumping plants, the primary economic benefit to the SWP is a savings of expenditures for pumping energy. Expenditures for power capacity, as distinguished from energy, are unaffected, because this capacity is contracted for six years in advance under the Suppliers Contract. A preliminary estimate of the energy savings for the 1978 operation was about $2 million. Over 86 percent of the total savings was due to inflow to Pyramid and Castaic Lakes. The remaining inflow was from the Kern River Intertie and from flood-flow entering the San Luis Canal.

Flood waters also can produce water conservation benefits, but only if the Delta water supply and/or SWP pumping and conveyance capacity are not adequate to conserve an equivalent amount under normal project operations. More than adequate water and capacity were available in 1978.

Flood-water operations also cause additional costs to the SWP and to the contractors ultimately served. Some of these costs can be readily identified (such as for silt-removal contracts); others cannot (such as for accelerated wear of pumps and for additional water treatment). However, not all such costs may be properly associated with flood-water operations. For instance, accepting flood inflow in the Joint-Use Facilities was contemplated in USBR designs as a means of saving construction expenditures for overchutes and wasteways.

Under the adopted procedures:

- The energy-savings benefit of the 1978 flood-water operation will be distributed among down-aqueduct facilities, whose actual operations made the energy savings possible. Up-aqueduct pumping plants would be assigned hypothetical energy costs, assuming that all water had entered the aqueduct at the Delta; the energy costs assigned to down-aqueduct plants would reflect actual costs less the estimated flood-water energy savings.

- Prior to distribution, the energy-savings benefits for each point of flood inflow along the aqueduct system will be reduced for the State's share of any readily identifiable maintenance or repair costs incurred for downstream reaches as a result of such inflow.

- The identifiable costs that are less than benefits will be paid through project power rates included in water charges; any portion of the identifiable costs in excess of benefits will be paid through fixed components included in water charges in the normal manner.

- The adopted procedures do not cover the treatment of any water conservation benefits that may be realized under future flood-water operations.

Procedures for Determining the Use of Power Ordered in Advance for Potential Surplus Water Service. In December 1975, under the two-year limited-adjustment provision of the Suppliers Contract, the Department scheduled 20 MW of Suppliers Firm Capacity for pumping surplus water (on an if-available basis) during 1978 for certain contractors who specifically underwrote the associated costs. This procedure is provided for by an amendment of Article 21 of the Water Supply Contract. 1978 was the first year for which such capacity was ordered and contractors were obligated to pay for any portion that the Department could not otherwise (1) use within the SWP or (2) dispose of outside the SWP. The basic procedures summarized below were adopted during 1978 for determining the contractors' residual obligations during any year when such ordered power is excess to project needs.

Project uses of Suppliers firm capacity scheduled specifically for surplus water contractors shall include the following:

First (to the exclusion of use of Suppliers firm capacity scheduled for entitlement service):

- Any capacity required for the delivery of surplus water during that year, whether or not such capacity is eventually assigned to contractors who committed themselves to repay the costs of such capacity.

- Any capacity required for the deferred delivery of entitlement water under Water Contract Articles 12(d) and 14(b).

- Any capacity required for other water deliveries made in lieu of surplus water (even though such water may be sold at prices based on the unit variable OMP&R component of entitlement water service) since such deliveries are supplemental to the amounts basic to the original order of Suppliers firm capacity for entitlement water service.

Second (to the extent Suppliers firm capacity originally scheduled for entitlement water service proves to be deficient):

- Increased capacity requirements for entitlement water service in a broad sense, which includes the pumping of water required for aqueduct operational losses and reservoir refill.

- Capacity reserves deemed prudent to assure entitlement water service, as indicated by the following:

  — Any unused Suppliers firm capacity during any period when DWR purchases additional on-peak power (such as from the Bonneville Power Administration).

  — Whenever unused capacity is less than a certain margin as determined by the Operations Control Branch (now 15 MW).

Reanalysis of Power Costs Included in 1978 Water Bills. In accordance with Article 29 of the Water Supply Contracts, the Department establishes water rates on or before July 1 for the recovery of SWP power costs expected to be incurred through the following calendar year — based on water delivery estimates provided by water contractors during the preceding Fall. Between the

Fall of 1977 and July 1, 1978, SWP water supply conditions changed dramatically -- from unprecedented drought to localized flooding (in the southern San Joaquin Valley and Southern California). SWP cost and repayment analyses could not keep up with the hydrologic situation, so rapid were the shifts in delivery requests and project operations. As a result of these extraordinary conditions, estimates of variable power charges reflected in July 1, 1978 water bills were reanalyzed in the latter portion of 1978, and revised invoices were issued in December 1978 to those contractors whose charges were noticeably affected.

San Luis Peaking Power Sale Agreement with PGandE. In response to PGandE requests, the Department agreed to provide peaking capacity from the San Luis Pumping-Generating Plant when PGandE has an emergency need for additional capacity. Assurances were received from the other parties to the Suppliers Contract that they had no objections to the agreement. San Luis facilities were subsequently used eight days during 1978 to generate for PGandE. This occurred during the months of May through September for which PGandE paid the Department about $107,000. The maximum generation rate was 215 megawatts on August 7, 1978. PGandE also was obligated to return, during off-peak hours, sufficient energy to pump back into the San Luis Reservoir the quantity of water required to produce the energy associated with the capacity sold to PGandE (or, at the Department's option, an equivalent amount of energy for use in operating SWP pumping plants). This particular arrangement terminated at the end of September 1978. However in 1979 the Department again assisted PGandE in meeting an emergency need for additional capacity and is negotiating with PGandE for an agreement that would provide for such emergency service until the termination of the Suppliers Contract in 1983.

Modified Oroville Insurance Coverage. The Oroville Bond Resolution requires the Department to maintain liability insurance for the Oroville-Thermalito power facilities in an amount not less than $10 million per occurrence. The resolution provides that a self-insured retention can be used if approved in writing by the Bond Trustee and the Companies (PGandE, SCE, and SDG&E).

The State of California provided insurance which protected all of its agencies against liability claims in excess of $5 million up to $50 million. The Department used this coverage and obtained additional coverage for the first $5 million of the $10 million obligation. However, the State allowed its $50 million policy to expire on May 20, 1978 because the cost had increased so sharply.

In 1977, the Department obtained the first $5 million liability coverage for the Oroville power facilities in conjunction with the liability insurance coverage for the SWP at an annual premium of $36,920 per year. When the SWP's policy came up for renewal, January 23, 1978, the coverage and premium costs were unacceptable and the liability coverage for the SWP was not renewed. At that time, the State Insurance Officer was able to obtain $5 million coverage for the Oroville-Thermalito power facilities at a greatly increased premium of $207,745 for one year's coverage. The Department accepted this coverage but began investigating other ways to provide for the insurance coverage and reduce the annual cost.

The Department first proposed to cancel the liability insurance policy and let the liability risks be covered by the General Reserve Fund of the Bond Resolution, which has a balance of about $35 million. However, the Companies recommended coverage of not less than $10 million with a reasonable level

of self-insurance of up to $1 million. The State Insurance Officer obtained $10 million per occurrence of liability insurance with self-insured retention of $1 million at an annual cost of about $63,000. The Trustee and Companies have agreed to this arrangement in writing.

Adjustment of Scheduled Firm Suppliers Capacity for 1981. On March 31, 1978, the Suppliers, collectively and individually, gave notice that the Suppliers Contract would be terminated effective April 1, 1983 (p. 81, Bulletin 132-78). Since Firm Suppliers Capacity is scheduled six years in advance under the Contract, no additional amounts can be scheduled. However, previously scheduled amounts can be adjusted within certain limits (plus or minus 10 percent, limited to 40 MW), based on a two-year notice. In November 1978, the Department adjusted the 200 MW previously scheduled for 1981 upwards by 20 MW. The adjustment allows for increases, since 1975, of entitlement delivery requests and for a probable delay in construction of the Cottonwood Powerplant on the East Branch. Suppliers Firm Capacity scheduled for 1981 now totals 220 MW -- 160 MW for entitlement water service and 60 MW for potential surplus water service.

Long-Range Energy Program Activities in 1978

During 1978, steady progress was made to meet the objectives of the Department's Long Range Energy Program, initiated in 1972. The Program will provide an assured energy supply commencing April 1, 1983, with minimal effects on the environment, consistent with minimizing the cost of energy for project pumping. As previously stated, the program consists of five specific actions:

(1) Continue to use project recovery generation to meet project needs.

(2) Retain Hyatt-Thermalito generation for project use after March 31, 1983.

(3) Select or develop additional energy sources for the balance of project energy requirements.

(4) Continue to purchase capacity and energy from other utilities.

(5) Exchange or sell capacity and energy which is temporarily in excess of project requirements.

Current estimates of long term energy requirements for each SWP pumping plant and estimates of recovery generation to be supplied by SWP power plants are shown in Table 4. The requirements are based on delivering entitlement water requests. These requests are shown in Appendix B of this Bulletin.

Continue to Use Project Recovery Generation to Meet Project Needs. During 1978, the Department continued its efforts to increase recovery generation capability on the California Aqueduct. Construction of Pyramid Powerplant on the West Branch was well underway, and contracts were awarded for fabrication of turbines and generators for Phase I (two units) of the plant.

Design of Cottonwood Powerplant on the East Branch continued throughout most of 1978. An Initial Study on construction of the plant was prepared in May 1978 in accordance with CEQA procedures. On the basis of the initial study, the Department adopted a Negative Declaration setting forth the finding that construction of the proposed plant will have no significant adverse effects on the environment. However, by the end of 1978, the schedule for construction of Cottonwood Powerplant had been modified to accommodate possible changes in the desired capacity of the East Branch enlargement--with initial 1982 operation of the plant now delayed until 1984.

TABLE 4: ANNUAL PROJECT ENERGY

(in millions of

Calendar Year	Energy													
		North Bay Aqueduct Pumping Plants				California Aqueduct								
	Glenn Reservoir Complex	Calhoun and Travis	Cordelia (a	Delta Facilities Pumping Plant	South Bay Aqueduct Pumping Plants (b	Los Vaqueros	Delta	San Luis	Dos Amigos	Buena Vista	Wheeler Ridge	Wind Gap	A. D. Edmonston (Tehachapi)	Pearblossom
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Subtotal, Actual for 17 years 1962-1978 (d	0	0	27	0	1,164	0	3,977	1,382	1,435	1,206	1,082	2,284	7,940	962
1979	0	0	3	0	119	0	598	111	271	305	292	667	2,390	467
1980	0	0	3	0	116	0	670	152	273	331	323	740	2,654	538
1981	0	0	4	0	117	0	715	254	294	357	347	794	2,848	515
1982	0	0	4	0	119	0	699	186	319	392	381	874	3,131	607
1983	0	0	4	0	122	0	864	276	342	407	391	896	3,232	609
1984	0	7	17	0	124	0	850	198	366	434	418	957	3,446	639
1985	0	8	7	0	131	0	884	252	365	420	399	912	3,268	586
7 years, 1979-1985	0	15	42	0	848	0	5,280	1,429	2,230	2,646	2,551	5,840	20,969	3,961
10 years, 1986-1995	35	168	95	356	1,425	666	11,111	2,652	4,724	5,633	5,373	12,355	44,158	6,251
10 years, 1996-2005	2,015	213	144	487	1,615	790	12,647	2,783	5,465	6,813	6,572	15,189	54,539	6,295
10 years, 2006-2015	1,951	225	173	514	1,618	790	13,393	2,985	5,779	7,354	7,133	16,516	59,457	6,302
10 years, 2016-2025	1,945	237	201	523	1,615	790	13,657	2,991	5,838	7,460	7,243	16,777	60,425	6,318
10 years, 2026-2035	1,945	238	205	526	1,615	790	13,745	3,038	5,849	7,481	7,264	16,827	60,609	6,327

a) During 1968 thru 1985 an interim pumping plant will pump from the federal Solano Project terminal reservoir.
b) Includes South Bay and Del Valle Pumping Plants and, during 1962 thru 1967, an interim pumping plant which pumped a supply provided by the federal Delta Mendota Canal.

REQUIREMENTS FOR PUMPING

kilowatthours)

Requirements				Recovery Generation									Net Energy Requirements Col.(18) minus Col.(27)	Calendar Year
Pumping Plants					California Aqueduct Power Plants									
Oso	Las Perillas and Badger Hill	Devil's Den Saw-tooth and Polonio	Total	Glenn Reservoir Complex	Los Vaqueros	San Luis	Devil Canyon	Castaic (c	San Luis Obispo	Cotton-wood	Pyramid	Total		
(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	
553	327	0	22,339	0	0	699	1,489	1,645	0	0	0	3,833	18,506	17 years, 1962-1978
78	32	0	5,333	0	0	118	810	257	0	0	0	1,185	4,148	1979
88	31	0	5,919	0	0	94	914	300	0	0	0	1,308	4,611	1980
119	32	0	6,396	0	0	154	864	402	0	0	0	1,420	4,976	1981
115	34	0	6,861	0	0	157	1,019	387	0	0	205	1,768	5,093	1982
122	37	0	7,302	0	0	128	951	387	0	0	238	1,704	5,598	1983
133	39	0	7,628	0	0	131	993	422	0	107	259	1,912	5,716	1984
131	39	0	7,402	0	0	126	896	421	0	100	254	1,797	5,605	1985
786	244	0	46,841	0	0	908	6,447	2,576	0	207	956	11,094	35,747	7 years, 1979-1985
2,446	476	709	98,633	0	142	1,499	9,467	7,938	127	1,092	4,785	25,050	73,583	10 years, 1986-1995
3,634	538	1,189	120,928	79	206	1,613	9,514	11,754	210	1,118	7,131	31,625	89,303	10 years, 1996-2005
4,219	564	1,394	130,367	1,638	206	1,712	9,155	13,565	244	1,122	8,284	35,926	94,441	10 years, 2006-2015
4,329	565	1,403	132,317	1,794	206	1,654	8,773	13,904	245	1,125	8,503	36,204	96,113	10 years, 2016-2025
4,348	565	1,403	132,775	1,794	206	1,648	8,766	13,962	245	1,126	8,540	36,287	96,488	10 years, 2026-2035

c) The City of Los Angeles Department of Water and Power constructed and operates the 1,250,000-kilowatt Castaic Power Plant and will supply the Project with electric power and energy equivalent to the generation from a 213,984-kilowatt power plant the State originally had planned to construct.
d) 1974 and thereafter -- entitlement deliveries only.

Previously, it was contemplated that the financing agreement for Pyramid and Cottonwood Powerplants would follow the form of the Devil Canyon-Castaic Contract. Because of passage of Proposition 13 during the June 1978 election, and consequent effects on the water contractors' ability to levy taxes to cover new obligations, the Department re-initiated studies of alternative procedures that would support the future issuance of CVP Revenue Bonds. Such bonds would finance the construction costs of future recovery plants as well as other project power plants. (See Chapter I for additional details on Pyramid and Cottonwood Powerplants.)

Retain Hyatt-Thermalito Generation for Project Use After March 31, 1983. As previously pointed out (p. 86, Bulletin 132-78), the Department has given official notice that Hyatt-Thermalito generation will be withdrawn from sale to the California Companies, effective April 1, 1983. During 1978, planning was initiated concerning the Department's assumption of scheduling and dispatching responsibilities, now performed by PGandE.

The remaining three actions specified for the Long Range Energy Program deal with securing additional energy sources for the balance of project requirements and flexible arrangements for the purchase and sale or exchange of energy. Activities during 1978 are discussed for these actions under the headings of (1) planning for the general future supply, including potential power purchases and (2) developing project-owned resources.

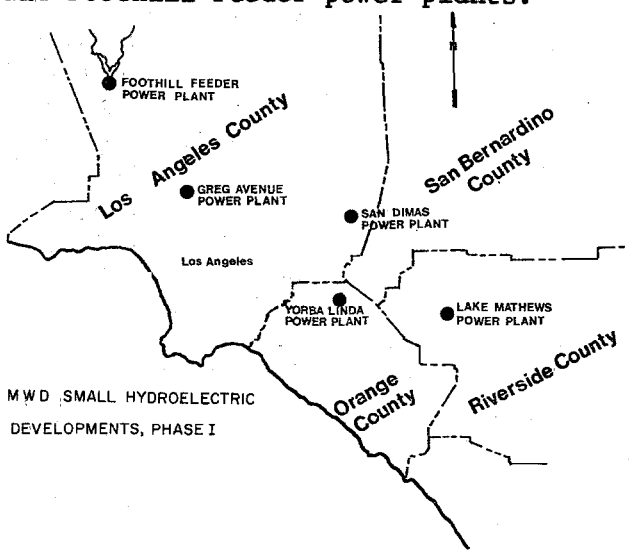
Planning for the General Future Supply and Power Purchase Arrangements. These activities are not identifiable with specific additional sources the project would own. Under current procedures, the costs of these general activities are paid concurrently as minimum OMP&R costs required for future pumping operations of the SWP. Costs of the activities were estimated to be about $740,000 in 1979 and $1,150,000 in 1980.

- *MWD Hydro.* In January, the Department signed a contract with The Metropolitan Water District of Southern California to purchase the output of five small hydroelectric plants of about 30 MW capacity to be built on MWD's water distribution system. The contract will run for a minimum of 25 years.

The five plants constitute Phase I of MWD's long-range plans. MWD also desires to proceed with construction of Phase II and III development, which could raise its total generating capability to about 47 MW. The Phase I plants are to be in operation before April 1983 and will be able to produce about 190 million kilowatthours per year with the MWD water system at full capacity.

Energy from the five MWD plants will be priced by the same method the Department presently uses to value power generated from its own recovery plants in Southern California. A specific figure is not firm, but the cost will be lower than the anticipated cost of energy purchased from a utility company.

The five plants will be built in Los Angeles, Orange and Riverside Counties where MWD now has pressure-reducing facilities to dissipate the energy of water in the system. The plants will be named the Greg Avenue, Lake Mathews, Yorba Linda, San Dimas and Foothill Feeder power plants.



MWD SMALL HYDROELECTRIC DEVELOPMENTS, PHASE I

- *Pine Flat Power.* In April, the Department signed a planning and feasibility study agreement with the Kings River Conservation District (KRCD) to provide for sale of the energy to be generated at Pine Flat Powerplant to the Department for operation of the SWP. The 165 MW plant, will be located at the base of the Corps of Engineers' Pine Flat Dam. It will generate about 400 million kilowatts annually, on an irrigation-release pattern and is scheduled for commercial operation in early 1983.

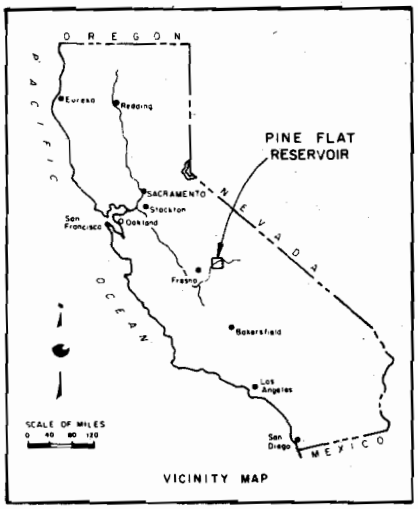
  The Department of Interior (DOI) submitted comments to the Federal Energy Regulatory Commission (FERC) on the KRCD application for a license for the Pine Flat Powerplant on August 15, 1978. The DOI recommended that certain conditions be placed on the KRCD license -- namely, that the Federal Government be given the first right to purchase the power at a price it sets, subject to review every five years, and that the license should be limited to a 25-year period.

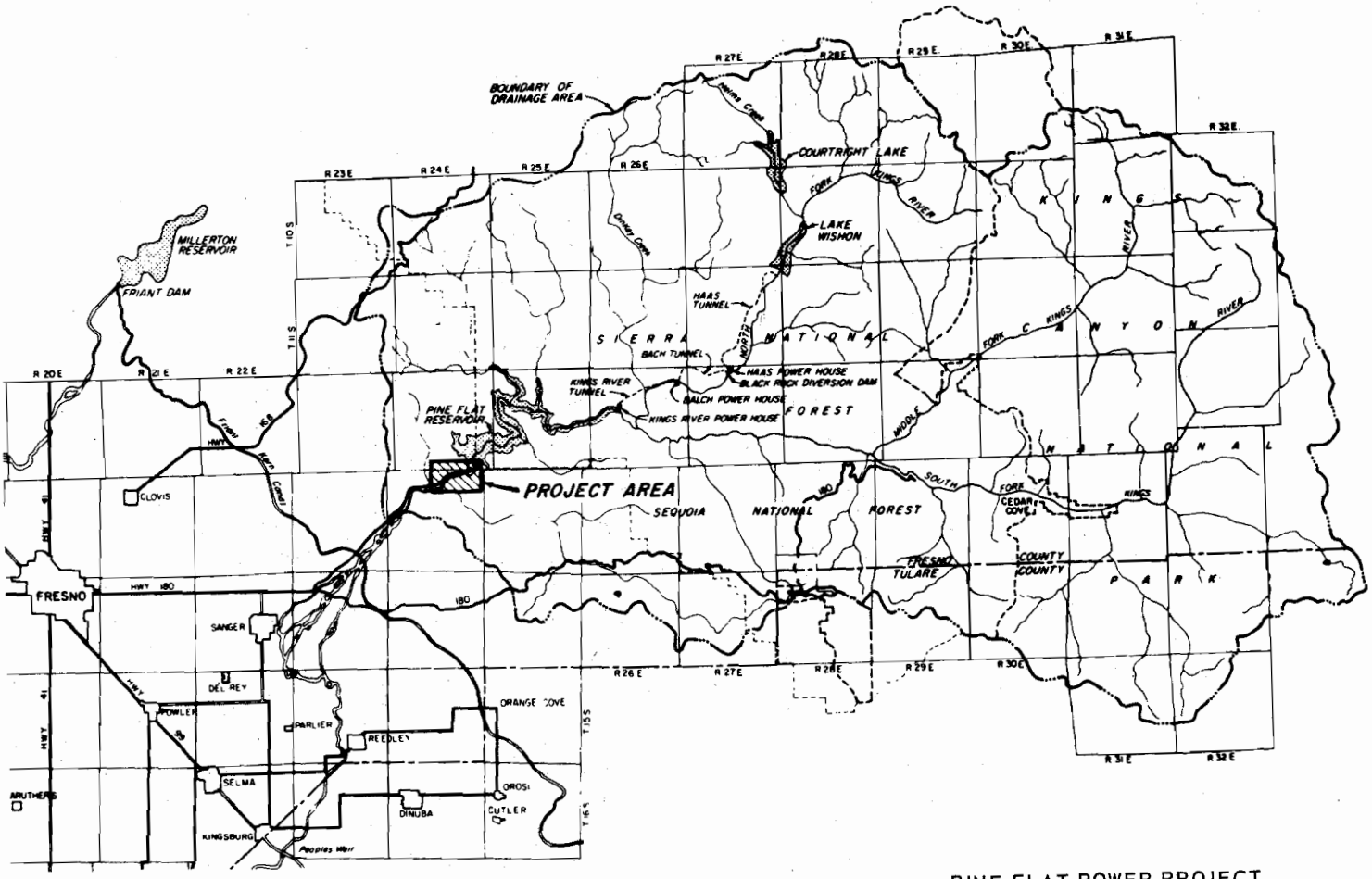
  These conditions were a serious concern to the Department; consequently, the Director wrote to DOI expressing these concerns. In 1977, KRCD obtained approval from its voters to sell 50-year term revenue bonds to finance the project. The bonds were authorized on the basis that they would be backed by guaranteed annual payments from the Department rather than by KRCD's taxing authority. (KRCD's constituency would not be required to repay the bonds.) The Director's response was in part as follows:

  > "If the conditions to the license were as recommended by DOI, KRCD would be unable to market the revenue bonds as it would not have a firm revenue source nor a firm market. Without these bonds, KRCD could not finance the Project. Our Department cannot undertake the financial risk of financing the Project without firm assurance that it will be entitled to the energy output and of an agreed upon price. (It is extremely doubtful that KRCD could find any substitute agency that would.) Also, the limiting 25-year period would have adverse effects on the cost of financing.
>
> "Throughout the three-year FERC preliminary permit time period, KRCD consulted with representatives of the U. S. Bureau of Reclamation, Bureau of Outdoor Recreation, and Fish and Wildlife Service, in addition to the U. S. Department of Energy. At no time did any of these agencies indicate they would step in at the last minute with such restrictive licensing conditions.
>
> "We feel certain that, if DOI had been aware of this background, they would not have recommended the conditions to the license that would so seriously endanger the project."

  On September 25, 1979, FERC granted a license to KRCD for the Pine Flat Hydroelectric Project without the conditions recommended by DOI.

- *Potential Small Hydro Developments.* During 1978, the Department continued to meet and discuss with several water agencies the possible purchase of energy from small hydroelectric developments on existing water facilities. The Department has identified a list of existing sites where such power facilities could be added. The Department is interested in the small hydroelectric developments that are economically and environmentally feasible to help supply energy for operation of the SWP. However, certain developments are no longer included in the Department's tentative resource plans, including:





LOCATION MAP

SCALE 2 0 2 4 6 8 MILES

PINE FLAT POWER PROJECT

- Sly Creek, because proposed contract conditions would place disproportionate responsibilities on the Department.

- Dinkey Creek, because this proposed peaking development is not suited for supplying project loads.

(In August 1979, the Department released Bulletin 205, "A Survey of Small Hydroelectric Potential at Existing Sites in California". The Bulletin identifies 212 existing water facilities where power plants could be added. If all such plants were constructed, they could produce about 2 billion kilowatt-hours of electrical energy annually.)

Negotiations with California Utilities. As previously stated, the California Suppliers notified the Department of their intent to cancel the existing Suppliers Contract effective April 1, 1983. This contract provides the Department with basic transmission arrangements and with supplemental energy and capacity to meet SWP needs not met by the Department's other resources.

In addition to the need for transmission arrangements and relatively small amounts of supplemental energy, the Department needs arrangements for future sale of power capacity. Such capacity will be available for sale or exchange for off-peak energy when Hyatt-Thermalito power is retained for project use after March 31, 1983, and melded with other existing and future project power resources.

Negotiations continued throughout 1978 with PGandE, Southern California Edison Company (Edison) and (to a lesser extent) San Diego Gas & Electric Company. Other than clarification of issues, little concrete progress has been made on contracts to assure the purchase of economical transmission service and supplemental off-peak energy from the utilities for post-1983 SWP operations.

During 1979, however, significant progress was made regarding negotiations with Edison. On October 11, 1979, the Department and Edison executed three important contracts. The first provides for transmission service for the Department's share of the output of Reid Gardner Unit 4. The second provides for transmission service for SWP pumping and power recovery plants located in Edison's service area; arrangements for purchasing capacity for on-peak and off-peak energy; and arrangements for exchanging a portion of the on-peak capacity of Hyatt-Thermalito, Devil Canyon, and proposed Cottonwood Powerplants. The third agreement provides for the settlement of matters before the Federal Energy Regulatory Commission and the California Public Utilities Commission and limits discovery procedures involving Edison under the Stanislaus antitrust action, described below.

Antitrust Activities. As an outgrowth of concerns regarding possible future SWP power transmission and sale arrangements, the Department, along with the Northern California Power Agency (NCPA) and the Cities of Anaheim and Riverside (Cities), filed a petition to intervene in PGandE's proposed Stanislaus Nuclear Project, Unit No. 1. The petitions were filed in the fall of 1976 before the Nuclear Regulatory Commission (NRC) on antitrust grounds.

The basis for litigation was provided by a 1970 amendment to the Atomic Energy Act requiring the NRC to conduct antitrust review of any applicant utility requesting a license for a nuclear power plant, in order to assure that the license would not "create or maintain a situation inconsistent with antitrust laws". The U. S. Department of Justice (USDJ) had previously reviewed PGandE's application and had developed with PGandE a set of commitments, to be met by the applicant, which USDJ felt would eliminate any antitrust concerns. USDJ recommended no formal hearing, but the

NRC granted an antitrust hearing on the grounds of the allegations contained in the petitions filed by the Department, NCPA, and the Cities.

The petitions allege, among other things, that PGandE has:

- Monopolized transmission in Northern California.
- Entered into restrictive and all-requirements-type contracts.
- Prevented or impaired public agencies from dealing with PGandE competitors.
- Impaired the use of the Pacific Northwest Intertie.
- Resisted ownership of transmission by others.
- Engaged in restrictive practices and market allocations.
- Refused to wheel power.

The petitioners allege that the participation commitments do not alleviate these problems and that the granting of a license to PGandE for the Stanislaus Nuclear Project would "maintain a situation inconsistent with the antitrust laws". Relief requested by the intervenors includes:

- A change in the vague and restrictive language of the commitments.
- Provisions for joint ownership of both transmission and generation facilities connected with the Stanislaus Nuclear Project.
- Modifications of conditions for PGandE energy sales.
- Modifications of PGandE interconnection and reserve-coordination requirements.
- Unrestricted use of the Pacific Northwest Intertie.
- A free market for the sale and purchase of bulk power in Northern California.

To date, there have been a number of prehearing conferences before the three-member Atomic Safety and Licensing Board regarding the scope of the litigation and discovery procedures. The proceedings are currently in the discovery phase, and the hearing is expected to be scheduled for 1980.

Alternative Transmission Plan. In view of the need for an alternative plan for transmitting power for project pumping in lieu of purchasing transmission service from electric utilities, the Department retained the consulting firm of R. W. Beck and Associates to develop a transmission plan that could be implemented without the cooperation of utilities. The consultant's report, "Preliminary Engineering Assessment of Power Transmission Requirements for California Department of Water Resources", August 1978, sets forth a general backbone transmission plan (from Hyatt-Thermalito on the north to the State of Nevada on the south) that would meet the needs of the SWP. Costs of the alternative are estimated to be about $310 million (1978 prices) excluding lands and rights of way and interest during construction.

Energy R&D Activities. During 1978, the Department increased its emphasis on Energy Research and Development activities directly related to future alternative energy supplies for the SWP. Greater expenditures for these activities are planned as indicated in the following tabulation; however, funding levels will still be well within the $500,000 annual limit as recommended by the California Water Commission (see p. 81, Bulletin 132-78):

Actual Expenditures, 1978-79	$137,756
Current Budget, 1979-80	$285,925
Proposed Budget, 1980-81	$386,000

As an example of such activities, the Department continued its evaluation during 1978 of the feasibility of using wind turbine generators. Areas with wind energy potential along the California Aqueduct have been identified as the Sacramento-San Joaquin Delta region, the northern and southern San Joaquin Valley western foothills, and the Tehachapi range adjacent to Edmonston Pumping Plant near Sandberg on Liebre Mountain and the Mojave Desert. The Department has identified four of the most promising areas to be the Pacheco Pass above the San Luis Reservoir, the top of the ridge near the Wheeler Ridge Pumping Plant, ridges above the proposed Cottonwood Powerplant, and the Altamont Pass region near the Delta Pumping Plant.

The selection of a specific wind turbine field site is a difficult task and requires careful evaluation of generally complex wind flow patterns. The effort and expense of acquiring the data necessary to evaluate areas for a site selection are justified, because the wind turbine performance and resulting energy costs are very sensitive to small variations in the average wind energy potentials.

The Department is using two procedures to survey the wind energy potential in the San Luis area:

- Use of portable anemometer equipment in likely locations and comparison of readings of the instruments as they are continually moved about the area.

- Use of a computerized numerical modeling technique that predicts wind flow patterns over complex terrain.

The latter approach consists of compiling available historical meteorology data in the area of interest, extrapolating the data throughout the region, mathematically modeling the terrain, and conducting a computer analysis that locates the most advantageous wind turbine sites and predicts the long-term wind energy potential.

During 1978, the Department retained two meteorological consultants familiar with wind flow over mountain terrain to survey the Pacheco Pass area and recommend the most likely wind turbine sites. To complement this effort, another consultant, Science Application, Inc., is conducting a computer modeling study of the wind-flow patterns of the area.

The Department is convinced that Pacheco Pass has potential for wind-power development. Early in 1979, arrangements were being pursued whereby a private company would build the wind units and the Department would buy the power. The first phase would be to install 20-50 KW units. If the units perform satisfactorily, an additional 480 units would be erected for a total installed capacity of 25 MW. Principles to be included in a power contract were developed early in 1979 -- but no contract has been signed. Furthermore, an Environmental Impact Report will have to be prepared.

Two publications were issued by the Department in 1978 in response to a continuing need for information on winds and solar energy:

- Bulletin No. 185, "Wind in California", January 1978, is an update of a study begun in the late 1960s to examine alternative energy sources. The report presents data from observations at airports, air pollution study areas, and wind power prospecting areas.

- Bulletin No. 187, "California Sunshine-Solar Radiation Data", May 1978, updates information presented in a department report, "Solar Radiation Data", January 1974. The report presents data on sunshine intensities derived from

many different sources. It summarizes 900 "station years" of solar intensity data from 150 solar measurement stations in California. Its purpose is to provide summaries of readily available data on solar radiation in one convenient volume. In the past, such data were used principally for irrigation planning, but now are also needed by builders and developers of solar-energy systems.

Developing Project-Owned Resources. Under the Department's procedures, the costs incurred for planning specific power sources that would be owned by the SWP are also recovered concurrently as minimum OMP&R costs necessary for future pumping operation of the SWP. If the Director takes formal action authorizing the construction of, or project participation in a specific source (after satisfying environmental documentation and review requirements), then all prior costs incurred by the Department for that source would be reclassified retroactively as capital costs and offsetting credits, with interest, applied to minimum OMP&R costs.

The following chart shows (as of October 1979) the Department's present projection through the year 2000 of energy loads for SWP pumping; the future resources the Department now considers to be firm; and the remaining load that will be satisfied by other, but currently unidentified resources. The Department's estimate of future loads reflects water conservation and waste water reclamation programs within water contractors' service areas and includes allowances for the conveyance of recharge water under future SWP ground water operations. The projected loads and recovery generation shown in this chart are generally less than those shown in Table 4 because of assumed increased emphasis of water conservation and waste water reclamation. Furthermore, the scenario of future resources assumed for Chapter III and the financial analysis in this bulletin extends beyond those now considered to be firm. Chapter III and the financial analysis reflect a scenario established early in 1979.

◦*DWR Coal Program.* In the spring of 1978, the Department expanded its coal program for the SWP. The program was initiated in 1975 when the Department, together with the California Energy Commission, contracted with the University of California at Los Angeles. This resulted in the May 1977 report, "Study of Alternative Locations of Coal-Fired Electric Generating Plants to Supply Energy from Western Coal to the Department of Water Resources". The program goal is to develop a 1,000 MW coal-fired power plant. The Department intends to retain ownership of about one-third of such a plant and to solicit participation by both public and private utilities for the remainder. Specific objectives of the program are as follows:

-- Accomplish all engineering and environmental studies necessary to file for site certification from the California Energy Commission.

-- Solicit participants and complete a participation agreement.

-- Locate a fuel source and complete a fuel and transportation study.

-- File for all other required permits and licenses.

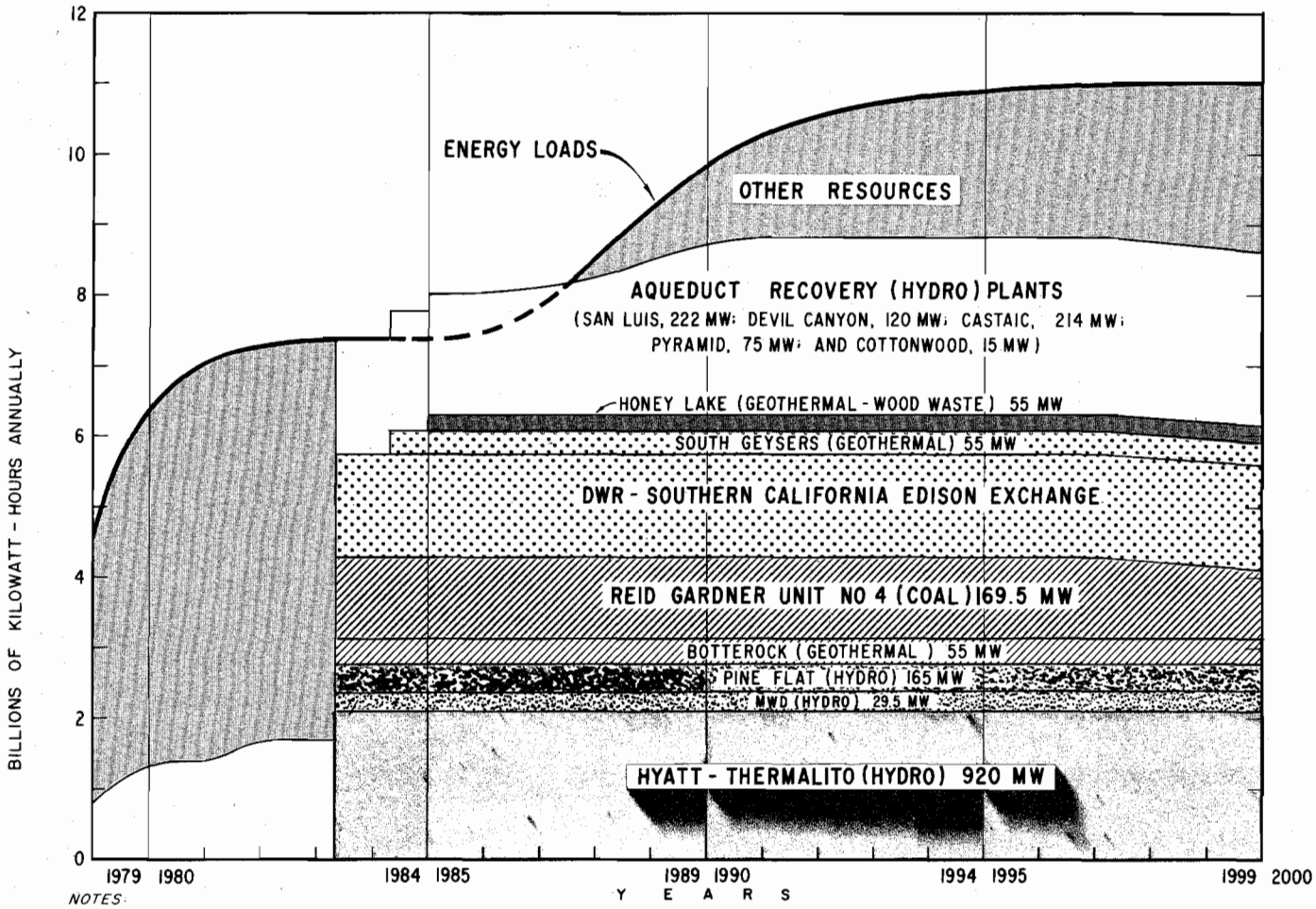
--Complete transmission arrangements.

A department unit, including 12 positions, was established February 1978 to manage this work. Most of the detailed studies will be contracted out to consulting firms. To assist the

CALIFORNIA STATE WATER PROJECT

ESTIMATED ELECTRICAL ENERGY LOADS AND RESOURCES

1979 - 2000

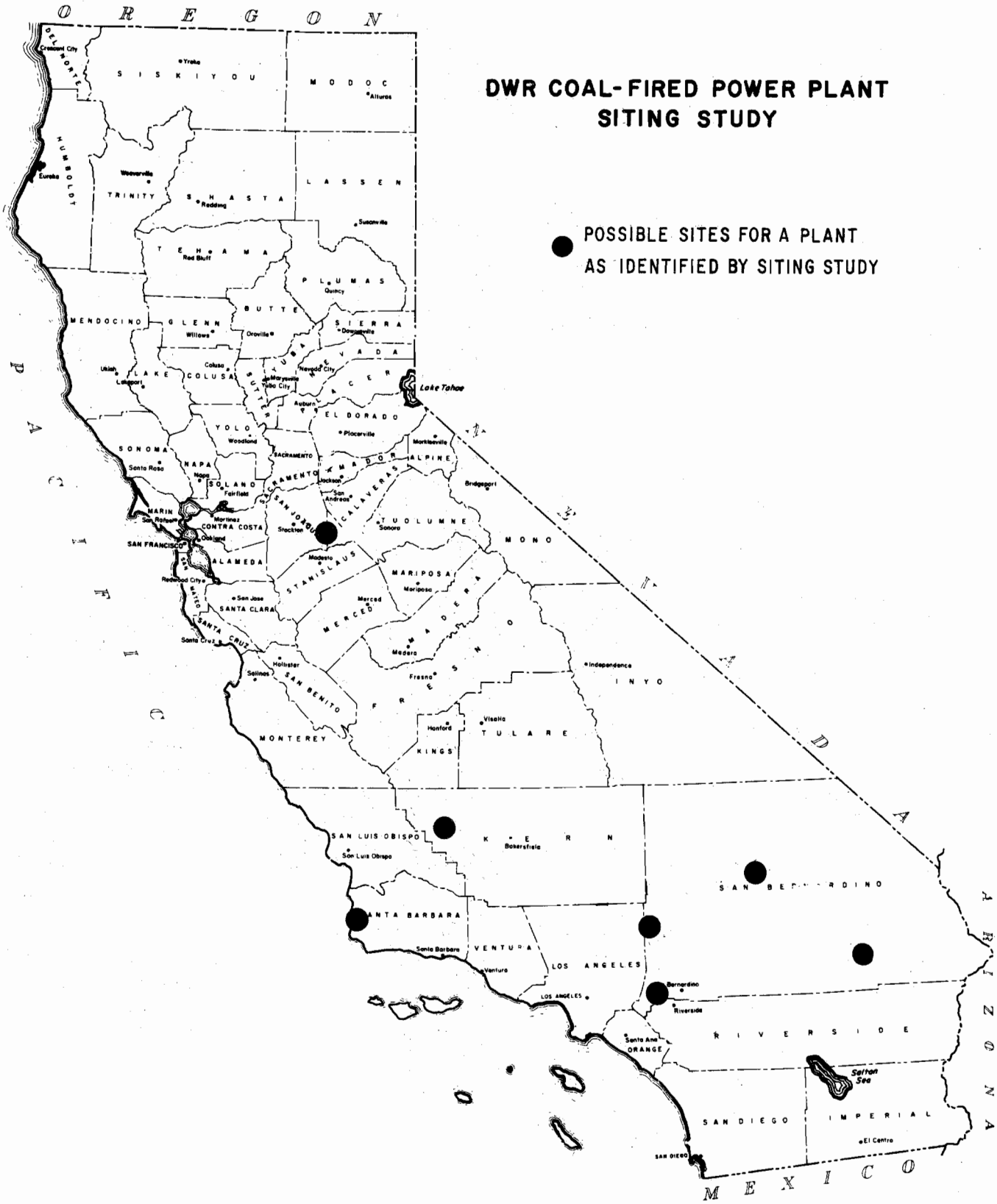


NOTES:

BASED ON ESTIMATED PROJECT PUMPING DURING MEDIAN CONDITIONS OF WATER SUPPLY IN THE SACRAMENTO-SAN JOAQUIN DELTA AND PROJECT SERVICE AREAS.

MAXIMUM GENERATING CAPACITIES SHOWN IN MEGWATTS (MW) FOR THE RESPECTIVE PLANTS DO NOT REPRESENT DEPENDABLE CAPACITIES AND ARE SUBJECT TO INTERRUPTIONS, WATER DELIVERY REQUIREMENTS, AND OTHER LIMITATIONS

10-79


DWR COAL-FIRED POWER PLANT
SITING STUDY
POSSIBLE SITES FOR A PLANT
AS IDENTIFIED BY SITING STUDY
OREGON
NEVADA
ARIZONA
MEXICO
PACIFIC
SISKIYOU
MODOC
TRINITY
SHASTA
LASSEN
TEHAMA
PLUMAS
BUTTE
GLENN
MENDOCINO
SIERRA
NEVADA
PLACER
LAKE
COLUSA
YOLO
EL DORADO
SONOMA
NAPA
SACRAMENTO
ALPINE
SOLANO
AMADOR
CALAVERAS
MARIN
CONTRA COSTA
TUOLUMNE
MONO
SAN FRANCISCO
ALAMEDA
STANISLAUS
MARIPOSA
SAN MATEO
SANTA CLARA
MERCED
MADERA
SANTA CRUZ
FRESNO
INYO
SAN BENITO
MONTEREY
KINGS
TULARE
SAN LUIS OBISPO
KERN
SAN BERNARDINO
SANTA BARBARA
VENTURA
LOS ANGELES
RIVERSIDE
ORANGE
SAN DIEGO
IMPERIAL
Lake Tahoe
Salton Sea
Crescent City
Yreka
Alturas
Eureka
Weaverville
Redding
Susanville
Red Bluff
Quincy
Willows
Oroville
Downieville
Colusa
Nevada City
Marysville
Yuba City
Lakeport
Auburn
Placerville
Woodland
Markleeville
Santa Rosa
Napa
Fairfield
Jackson
San Andreas
Bridgeport
San Rafael
Martinez
Stockton
Sonora
Oakland
Modesto
Redwood City
Mariposa
San Jose
Merced
Santa Cruz
Madera
Hollister
Salinas
Fresno
Independence
Hanford
Visalia
San Luis Obispo
Bakersfield
Santa Barbara
Ventura
Los Angeles
Bernardino
Riverside
Santa Ana
El Centro
San Diego

Department in this program, three committees were established in 1978: (1) a Department task force, (2) a committee of state agency representatives, and (3) a committee of representatives of major environmental organizations (the Environmental Advisory Committee).

Three consultant contracts for studies are scheduled to complete the Notice of Intention (NOI) for filing with the Energy Commission; (1) power plant siting, (2) coal source and transportation, and (3) preliminary engineering and environmental studies.

A contract for the siting study was awarded in November 1978. Phase I, the overall screening of the State for prospective sites, was completed prior to the end of the year. Phase II, the ranking of alternative sites based on environmental, economic and engineering factors, was completed in mid-1979. Seven potentially acceptable sites have been identified based on the site rankings and the desire for diverse environments as shown in the following location map. The seven potential sites must now be narrowed down to three sites for inclusion in the NOI. Program input is being solicited from many sources before the final decision is made. These sources include the Environmental Advisory Committee, State, Federal and local agencies, concerned public interests and legislators.

The contractor selection process for the coal source and transportation study was completed in January 1979. Work began in April and is scheduled to be completed in late 1979. The contract for preliminary engineering and environmental studies was advertised in January 1979 and the work is scheduled to begin in September to allow filing of the NOI in mid-1980.

In addition to the contract work described above, the staff is working with the Air Resources Board to resolve air quality issues associated with development of a coal-fired power plant. Studies are also progressing on stack clean-up and boiler combustion technologies.

Based on very preliminary estimates, the SWP's share of construction costs of the coal plant may approach $640 million, including allowances for future escalation. Initial operation would commence in 1988. Unit costs of generation including allowances for escalation to about 1985 price levels, are estimated to be about 56 mills per kilowatthour.

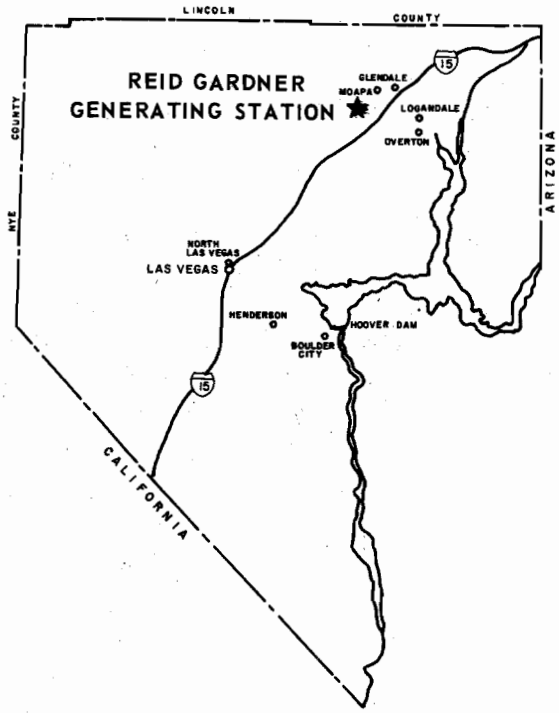
- *Participation in Reid Gardner Unit 4.* In 1978, the Nevada Power Company and the Department initiated plans to jointly construct and operate Reid Gardner Unit 4.

Based on preliminary estimates, the Project's share of construction costs of Reid Gardner Unit 4 will be about $182 million. Initial operation would commence in 1983. Unit costs of generation, including allowances for escalation to about 1985 price levels, are estimated to be about 34 mils per kilowatthour.

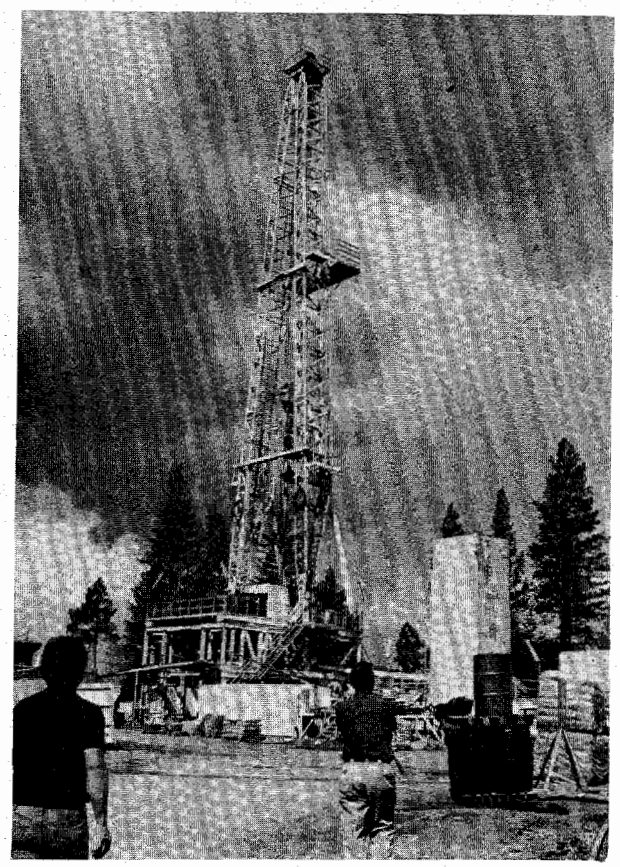
The proposed 250 MW coal-fired unit would be constructed at the existing 330 MW Reid Gardner Generating Station located near Las Vegas, Nevada. Both the Department and the Company would be entitled to specific portions of the Unit's capacity and energy. The Project could allow the distinct requirements of both systems to be met by the construction of just one facility that would supply baseload energy to the Department and peaking capacity, when needed, to the Company. The Department's share of the unit will be

67.8 percent and Nevada's share 32.2 percent. The unit will provide about 1.4 billion kWh annually during the first 15 years of its operation, with possible decreases of 90 million kWh each year thereafter for the following 15 years.

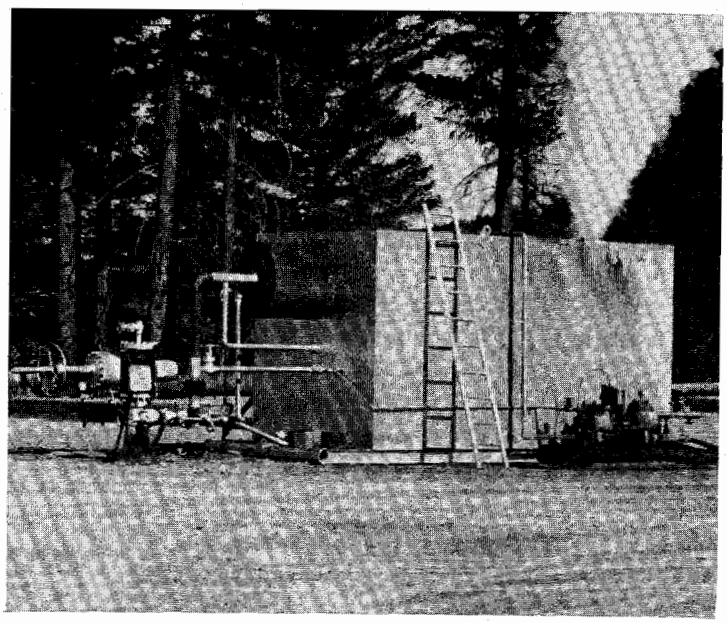
The Department prepared an Environmental Impact Report regarding its interest in participating in Unit 4 and distributed the Final Report in February 1979. On February 23, 1979, the Director signed the Notice of Determination and Certification of the Final EIR and adopted a Statement of Findings and a Statement of Overriding Considerations. The Director's action approved the project insofar as environmental considerations are concerned. In July 1979, the Participation Agreement was executed by the Department and the Nevada Power Company regarding joint development of Unit 4.



LOCATION OF EXISTING REID GARDNER
GENERATING STATION
OF THE NEVADA POWER COMPANY
CLARK COUNTY



This picture illustrates the proportions of the drilling rig used to drill the Coleman Well at Bottle Rock Powerplant. This well is over a mile deep, drilled through bedrock and lined with steel casing.



This picture illustrates the valve mechanism directly over the well, with the cylindrical muffler protruding from the main steam venting structure. Note the steam which is continually released from top of concrete structure to relieve the enormous pressure.

- *Proposed Participation in PGandE's Fossil 1 and 2.* The Department has expressed a desire to participate in PGandE's proposed Fossil 1 and 2 Project (a 1,600 MW coal-fired electric facility proposed for construction at the Collinsville site in Solano County). The Department is considering a 10 percent share. Negotiations have started with PGandE for a Licensing and Engineering Work Agreement to study the Project's environmental and economic feasibility. Based on very preliminary estimates, a 10 percent share of the construction costs of Fossil 1 and 2 may approach $250 million. Initial operation would commence in 1987. Unit costs of generation, including allowances for escalation to 1985 price levels, are estimated to be about 51 mills per kilowatthour.

  The Department also seeks to participate in any coal-fired development the Southern California Edison Company may propose to construct in Southern California. (In August 1979, the Department signed a letter of understanding with the Company and other utilities to share in certain study costs for the California Coal Project -- a proposed 1,500 MW development.) Also, the Department expects that either PGandE or Edison would participate in the Department's coal-fired development, depending on whether it is sited in Northern or Southern California.

- *Bottle Rock Powerplant.* This power plant, to be located on the Francisco Leasehold (see p. 78, Bulletin 132-78), is the first of a series of 55 MW geothermal units the Department plans to develop in The Geysers area of Lake and Sonoma Counties.

  In October 1978, DWR filed an NOI with the California Energy Commission to site the Bottle Rock Powerplant. During the remainder of 1978 and in early 1979, the Commission held seven technical workshops to exchange information between the Commission Staff and the Department and to resolve issues relating to the power plant siting.

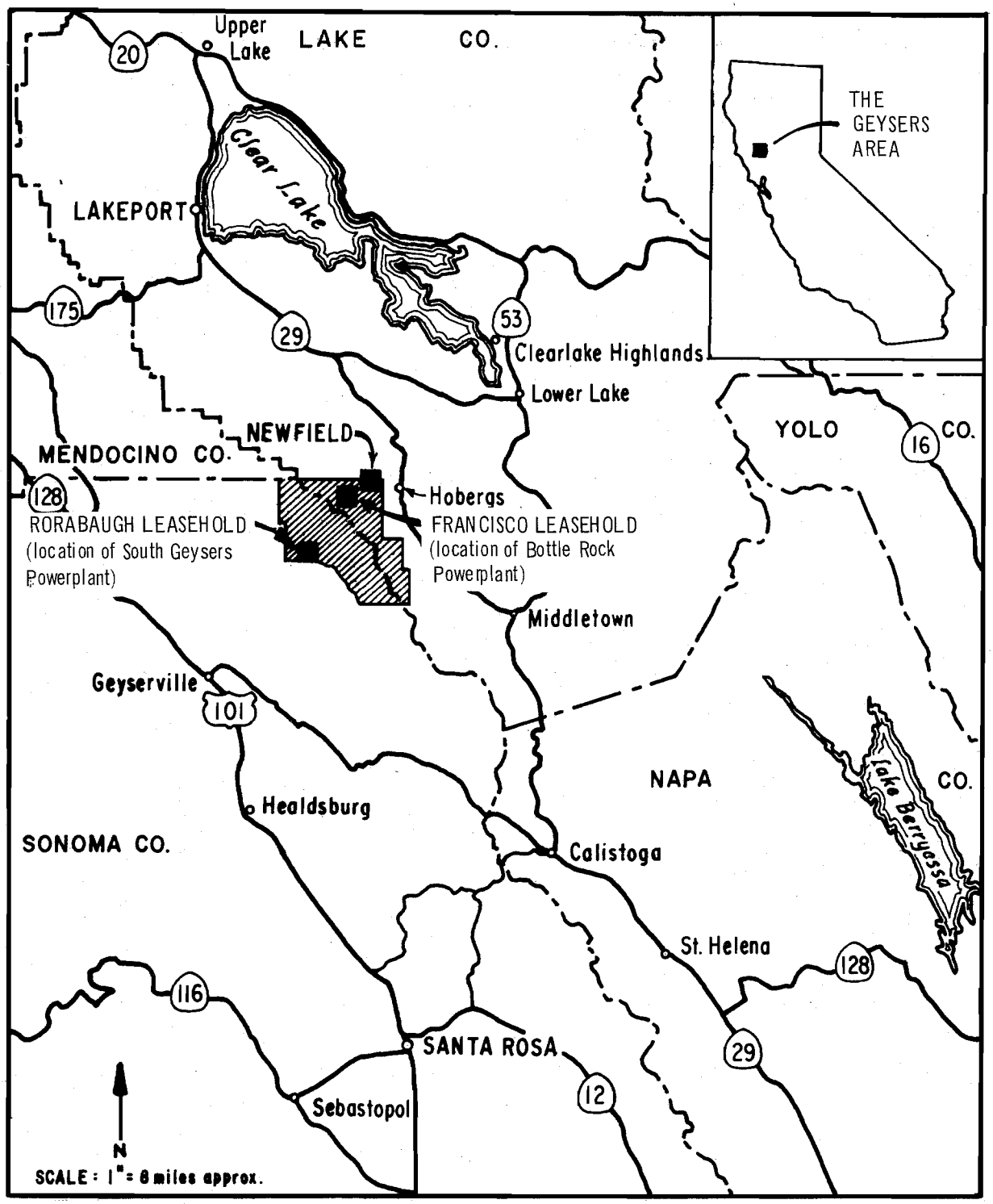
  In June 1979, the Commission approved the NOI. In July 1979, the Department filed an Application for Certification (AFC) -- the final phase of the two-phase environmental review process by the Commission. The Department anticipates approval of the AFC for Bottle Rock in early 1980.

  Based on preliminary estimates, the construction costs of Bottle Rock Powerplant may approach $28 million, including allowances for future escalation. Initial operation would commence in 1983. Unit costs of generation are estimated to be equivalent to about 32 mills per kilowatthour, including allowances for escalation to 1985 price levels.

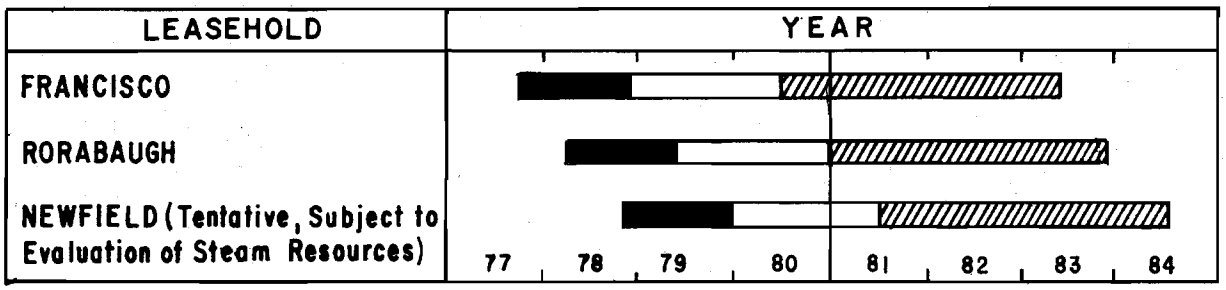
- *South Geysers Powerplant.* As reported last year (see p. 78, Bulletin 132-78), the Department signed an agreement in 1977 with Geothermal Kinetics, Inc. (GKI) to purchase geothermal steam for the proposed development of the Rorabaugh Leasehold near Geysers Resort in Sonoma County. In June 1978, the agreement was amended to allow the Department additional time for evaluation and acceptance of the steam resource, pending GKI's drilling at least two more wells. Under the terms of the Agreement, GKI will drill the wells and develop the steam field, install steam piping to the plant site, and arrange for disposal of plant effluent. The Department will install and operate the 55 MW power plant and transmission facilities.

  The Department expects to file a NOI for the power plant with the California Energy Commission in the fall of 1979. The County of Sonoma will be responsible for the preparation of the complete EIR.

PROPOSED GEOTHERMAL DEVELOPMENT IN THE GEYSERS AREA



DEVELOPMENT SCHEDULE



Prepare notice of intent

Construction

Approvals - notice of intent & application for certification

- *Newfield Exploration.* The Newfield Leasehold is located about two miles northeast of the Francisco Leasehold (see pps. 76 and 77, Bulletin 132-78). Drilling at the Newfield Leasehold was delayed due to a major breakdown of the drilling rig. However, a fracture with steam was found but was lost due to collapse of the well's walls. A decision regarding further drilling awaits evaluation and study of the data already collected.

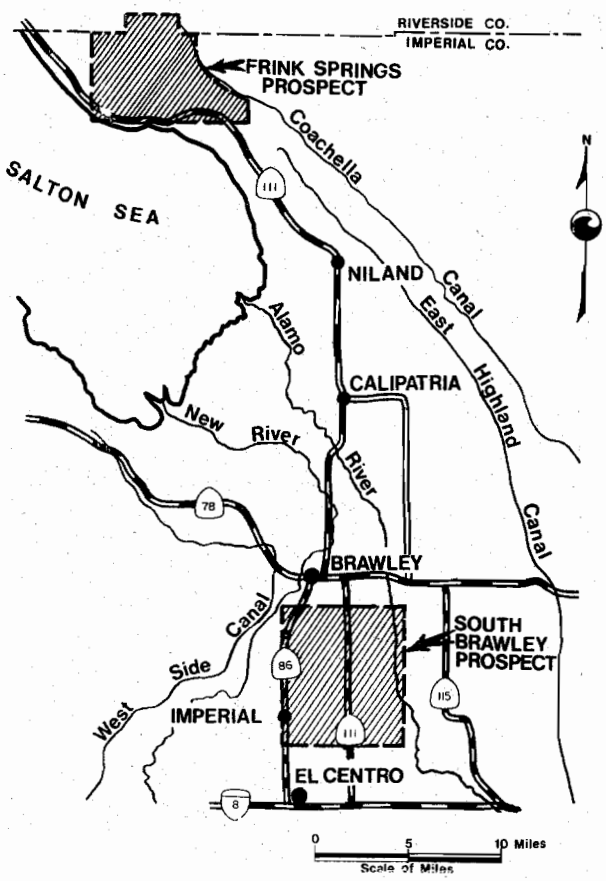
- *Binkley (BLM) Leasehold.* On November 22, 1978, the Department successfully submitted a $2,764,067.84 bid to the federal Bureau of Land Management (BLM) for the mineral rights to 190.5 hectares (470.72 acres) located next to the Francisco Leasehold. The Department has signed a letter of understanding with McCulloch Geothermal Corporation and GKI for the joint development of the Leasehold. Under this arrangement, the Department would give McCulloch and GKI a 75 percent share of the BLM Leasehold plus $1,235,932.16; in return, McCulloch and GKI would (1) give the Department a 7 percent carried interest in the Francisco Leasehold; (2) drill and test the first commercial well at the BLM Leasehold; (3) purchase all surface rights needed for the development of the geothermal resource including land needed for the power plant; and (4) sell their share of the steam to the Department at the same terms as provided in the Francisco Leasehold agreement. The Department also would have the right to build and operate the power plant.

  With the Binkley Leasehold, and depending on the results of exploratory drilling, the Department has acquired rights to geothermal steam supplies in The Geysers area which may support a total of four 55 MW power plants. Currently, geothermal plants in The Geysers area are the least expensive and environmentally disruptive thermal means of producing electrical energy. The Department is committed to the development of this resource for the benefit of the SWP.

- *Frink Springs and South Brawley Geothermal-Exploration Agreement.* On November 3, 1978, the Department signed an agreement with McCulloch Geothermal Corporation and GKI, for the joint exploration and development of the Frink Springs and South Brawley prospects in the Imperial Valley. The Frink Springs Prospect of approximately 2 750 hectares (6,800 acres) is located about 19 kilometres (12 miles) northwest of Niland. The South Brawley Prospect of about 4 600 hectares (11,400 acres) is located about 8 kilometres (5 miles) south of Brawley. Under this agreement, McCulloch and GKI will drill up to two wells in the South Brawley Prospect and the Department will drill up to two wells in the Frink Springs Prospect. In meeting this objective, the Department will earn the right to own 25 percent of the development of the first power block on each prospect. Participation in the first power block of each prospect will provide the Department a continuing option. In addition, the Department has the right of first refusal to build a 55 MW power plant on the power blocks in which it has an interest.

  The successful testing of a 4 079-metre (13,381-foot) exploratory well on the South Brawley prospect was announced March 16, 1979 by McCulloch. However, a 2 990-metre (9,800-foot) well drilled at the Frink Springs prospect was unsuccessful and was plugged because of low temperature gradients and lack of fractures in the formation.

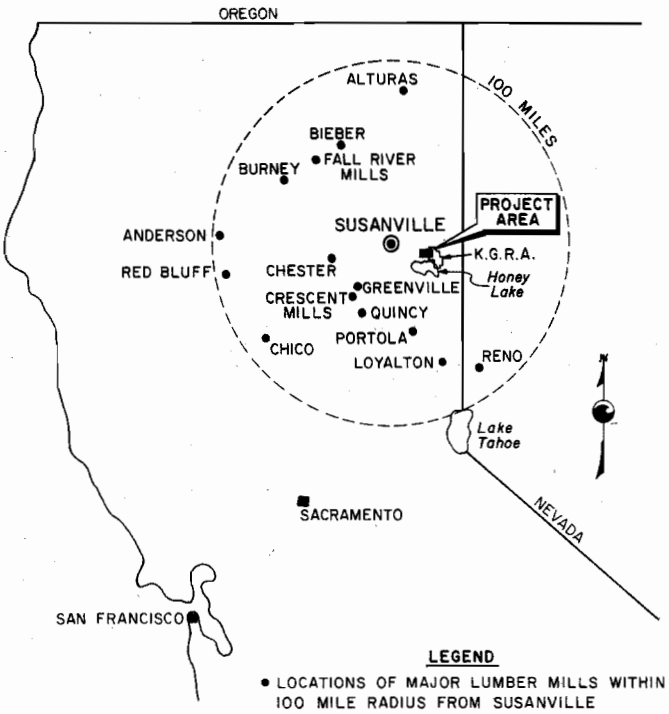
  This type of arrangement is definitely a risk venture, but the possible benefits to the SWP are great--if exploration proves successful and if technological advances are realized in the future. Currently, energy production from the hot geothermal water of the Imperial Valley is not cost-competitive



Frink Springs and South Brawley Prospect Geothermal Sites.

Department employees getting ready for final distribution of the Department's "Notice of Intention" to file an application for certification for Bottle Rock Powerplant. Standing left to right are Peter Chan, Gary Steenhoek and Do Nguyen with Jackie Bodkin in the foreground.

PROJECT LOCATION



55 MW HYBRID GEOTHERMAL-WOOD WASTE CO-GENERATION PROJECT

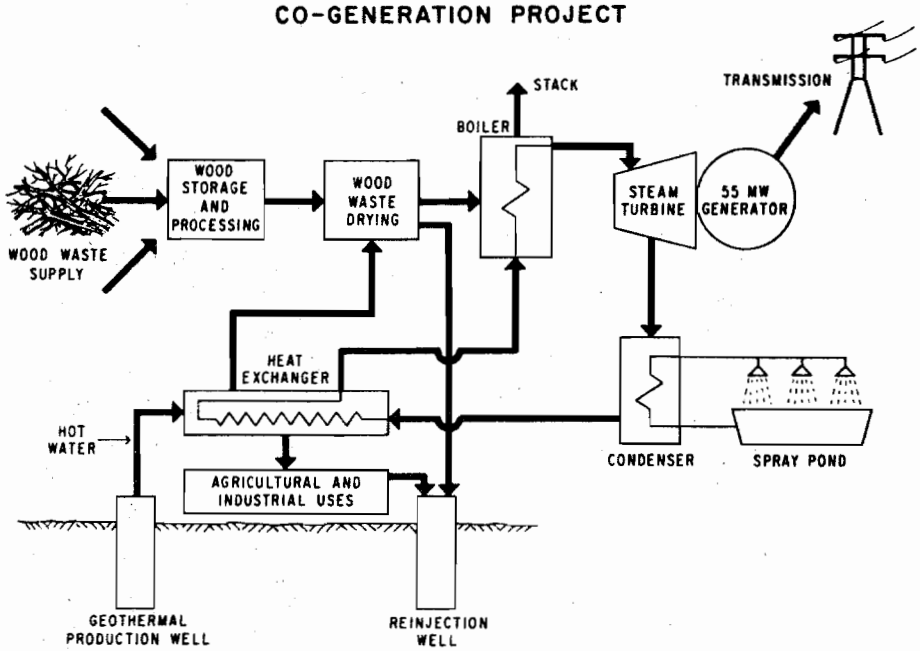


Diagram of project showing utilization of geothermal energy to dry wood pulp used for burning to produce steam for generation of electricity.

with other available energy sources. Given inevitable technological advances, however, and the limits of other available sources, the Department may have access to a significant low-cost future energy source through this type of arrangement. In fact, this type of risk venture now is probably the only way the SWP could gain access to the geothermal field underlying the Imperial Valley.

- *Geothermal/Wood-Waste Project.* The Department is involved in development of a hybrid geothermal and wood-waste power plant project near Honey Lake, east of Susanville, California, in Lassen County. The proposed 55 MW power plant would be the first to demonstrate the commercial feasibility of combining the use of forest residues and low-temperature geothermal fluid to generate electricity. The fluid would lower the water content of the wood waste and preheat the boiler feed water and combustion air (about 25 percent of the energy input); burning the wood waste would provide the remainder.

  An extensive planning and feasibility study, partially funded by the Department, will be performed prior to making a commitment to develop the project. The Forest Service, United States Department of Agriculture, has taken great interest in the demonstration project and will assist in funding the feasibility studies. GeoProducts Corporation of Oakland is the developer.

  Federal funding assistance for a portion of the capital cost of the plant may be necessary to make the project economically feasible. If the project is found to be technically and economically feasible, and federal funding is received, operation could commence in late 1984 or early 1985.

  In September 1979, the Department was awarded a $200,000 grant from DOE to start feasibility studies of the power plant and the Department signed a three-part agreement with the U. S. Forest Service and GeoProducts Corporation to undertake the studies. Feasibility studies are to be completed in 12 to 18 months. If found feasible, the plant could be operational in 1985.

  Under the agreement the project would be owned and operated by GeoProducts Corporation, and the Department would guarantee repayment of all production, operations and maintenance costs. It is possible that local entities may buy some of the power as well. For the Department to proceed beyond planning and feasibility studies, project costs must be competitive with the Department's proposed plants in The Geysers area.

- *Monticello Dam.* Previous bulletins have referred to the Department's interest in constructing a 15 MW power plant at the base of Monticello Dam of the Federal Solano Project. On October 20, 1976, the Solano Irrigation District filed an application with the Federal Power Commission (now Federal Energy Regulatory Commission) for a preliminary permit. On November 24, 1976, the Department filed a competing application. In a March 7, 1979 letter to Congressman Vic Fazio, the Director stated the Department will not object to the District's efforts to develop the project, but may resume our interests if the District makes no progress on its proposal within a year. On March 29, 1979, the Commission issued a preliminary permit to the District.

PROJECT OPERATIONS

PROJECT OPERATIONS IN 1978

This is a summary of SWP operations covering (1) water conditions, (2) water deliveries, and (3) other activities during 1978.

Water Conditions

During the 1977-78 water year (October 1, 1977 through September 30, 1978) statewide precipitation was 155 percent of normal, contrasting with the drought of the previous two years. From mid-December 1977 through April 1978, storm systems moved across California, some bringing torrential rains with subsequent floods, particularly in Southern California. This resulted in rapid recovery from the drought of the prior two years.

Statewide runoff of California streams averaged 153 percent of normal for the 1977-78 water year. Runoff of the Feather River basin was 131 percent of normal.

Rains were the heaviest on record in the southern San Joaquin Valley in 1978 with a 200 percent of normal snow pack in the southern Sierra Nevada.

The Kern River Intertie near Tupman, California, was used for the first time in 1978 when it was feared that warm rains on the heavy Sierra snowpack would fill Isabella Reservoir and cause flooding on the Kern River. The Project took 219 478 cubic dekametres (178,000 acre-feet) of Kern River water through the intertie in two months and 22 days, moving most of it south, but also moving some north by use of check gates and temporary pumps. This operation relieved Lake Isabella, enabling it to contain run-off and prevent possible flooding of Bakersfield and other areas in the southern San Joaquin Valley.

At the end of 1978, reservoir storage at Pyramid, Castaic, Silverwood and Perris were 198 389 (160,834 acre-feet), 362 839 (294,154 acre-feet), 87 903 (71,263 acre-feet) and 131 346 (106,482 acre-feet) cubic dekametres, respectively. This is a total storage increase of 360 445 cubic dekametres (292,213 acre-feet) over the 1977 year end total; 168 000 (136,200 acre-feet) of the 360 445 (292,213 acre-feet) cubic dekametre increase was natural runoff to Pyramid and Castaic that reverted to the SWP after all downstream users' claims were satisfied. This was an unusual occurrence and a direct result of the record rainfall of January, February, and March 1978. All the natural inflow into Silverwood Lake was released; in addition, 29 935 cubic dekametres (24,268 acre-feet) of Kern River was transported to Silverwood Lake to release to the Mojave River. Of the 29 935 cubic dekametres (24,268 acre-feet) of Project water, 720 cubic dekametres (584 acre-feet) were repayment water due to the Mojave Water Agency and 29 215 cubic dekametres (23,684 acre-feet) were released for storage in the Mojave Ground Water Basin, as part of the Department's ground water storage demonstration projects.

The classification of the 1977-78 water year was "wet", based on SWRCB's criteria in Decision 1485 of August 1978. This classification is indexed to the sum of the unimpaired runoff computed for the Sacramento River near Red Bluff, Feather River inflow to Lake Oroville, Yuba River at Smartville and American River inflow to Folsom Reservoir. This sum was 29 357 000 cubic dekametres (23,800,000 acre-feet) for the 1977-78 water year.

Details of water supply conditions during the 1977-78 water year are available in Department of Water Resources' Bulletin 202-78, "Water Conditions and Flood Events in California".

Water Deliveries

Water deliveries from SWP facilities during 1978 totaled 1 962 299 cubic dekametres (1,590,838 acre-feet), excluding those deliveries to satisfy prior water rights and to federal customers. The total, besides State Water Contractors' entitlement water, included repayment of preconsolidation water, regulated delivery of local supplies, special wet weather surplus and ground water demonstration project water. Also, a small amount (1 200 cubic dekametres or 973 acre-feet) of 1977 exchange water was delivered to San Francisco County.

Water delivered to USBR customers from the joint facilities in 1978 totaled 1 124 011 cubic dekametres (911,237 acre-feet). In addition, 10 346 cubic dekametres (8,387 acre-feet) of federal water was wheeled through project facilities for delivery to the Kern County Water Agency's Cross Valley Canal.

STATE WATER PROJECT BENEFITS THROUGH 1978

The quantitative benefits of project operations through 1978 are summarized in the tabulation below:

Year	Water Delivered (acre-feet) (a						Recreation Supported (Recreation days) (c	Electrical Energy Generated (Megawatt-hours) (d
	Entitlement Water			Other Deliveries		Total Delivery		
	Municipal and Industrial Use	Agricultural Use	Total	Surplus	Other Water (b			
1962					18,289	18,289	30,000	
1963					22,456	22,456	105,000	
1964					32,507	32,507	331,600	
1965					44,105	44,105	499,800	
1966					67,928	67,928	482,700	
1967	5,747	5,791	11,538		53,605	65,143	455,200	
1968	46,472	125,237	171,709	121,534	14,777	308,020	931,300	628,000
1969	34,434	158,586	193,020	72,397	18,829	284,246	1,554,800	2,614,000
1970	47,996	185,997	233,993	133,024	38,080	405,097	1,804,800	2,679,000
1971	85,286	272,054	357,340	296,019	44,119	697,478	2,085,900	3,302,000
1972	181,066	430,735	611,801	423,964	66,638	1,102,403	1,971,200	1,922,000
1973	293,824	400,564	694,388	296,416	42,511	1,033,315	2,502,000	3,298,000
1974	418,521	455,556	874,077	417,676	46,224	1,337,977	4,073,600	4,672,000
1975	641,621	582,369	1,223,990	622,902	63,793	1,910,685	4,189,300	3,159,000
1976	818,588	554,414	1,373,002	580,110	115,217	2,068,329	4,239,600	2,131,000
1977	280,919	293,236	574,155	0	389,065	963,220	3,957,000	958,000
1978	742,385	710,314	1,452,699	16,914	121,225	1,590,838	5,773,700	2,882,000
Total (e	3,596,859	4,174,853	7,771,712	2,980,956	1,199,368	11,952,036	34,987,500	28,245,000

a) Metric conversion is acre-feet times 1.2335 equals cubic dekametres.

b) Includes Emergency Relief Water, Kern River Intertie Water, Exchange Water, Repayment Water, Regulated Delivery of Local Supply, and Conveyance of Federal CVP Water.

c) A recreation day is the visit of one person to a recreation area for any part of one day.

d) Includes total generation from Hyatt-Thermalito, San Luis, Castaic and Devil Canyon Powerplants.

e) In addition, dams of the State Water Project have prevented millions of dollars' worth of flood damage.

TABLE 5: WATER QUALITY MEASUREMENTS AT SELECTED STATIONS IN 1978

Station	Monthly Samples	Concentrations (in parts per million unless otherwise noted)					
		Total Dissolved Solids	Total Hardness	Chlorides	Sulfates	(a Sodium (%)	Boron
Thermalito Afterbay, Outlet to Feather River	Minimum	47	30	0.8	0.0	15	0.0
	Average	54	34	1.7	1.1	19	0.0
	Maximum	68	42	3.4	3.0	22	0.0
Sacramento-San Joaquin Delta, Delta Pumping Plant	Minimum	126	64	20	17	38	0.0
	Average	203	83	46	30	46	0.2
	Maximum	402	125	129	55	60	0.4
South Bay Aqueduct, Santa Clara Terminal Facility	Minimum	127	63	23	19	30	0.0
	Average	216	90	50	34	40	0.15
	Maximum	398	131	121	53	51	0.3
California Aqueduct: Entrance to O'Neill Forebay	Minimum	125	64	19	14	38	0.0
	Average	205	85	46	34	46	0.15
	Maximum	411	138	128	63	56	0.3
Outlet from O'Neill Forebay	Minimum	157	72	29	23	43	0.0
	Average	230	98	51	38	47	0.18
	Maximum	374	146	100	55	52	0.3
Near Kettleman City	Minimum	158	73	29	15	43	0.0
	Average	264	108	57	55	49	0.23
	Maximum	437	180	103	167	55	0.5
Coastal Branch near Devil's Den	Minimum	159	73	29	17	24	0.1
	Average	302	113	83	53	61	0.17
	Maximum	643	175	242	131	154	0.3
Near Buena Vista Pumping Plant	Minimum	76	43	10	8	33	0.0
	Average	255	97	66	40	47	0.13
	Maximum	657	173	247	71	67	0.3
At Tehachapi Afterbay	Minimum	73	43	10	9	34	0.01
	Average	238	100	58	41	47	0.17
	Maximum	517	168	151	72	56	0.28
At Pearblossom Pumping Plant	Minimum	87	54	3.4	23	34	0.1
	Average	243	104	57	47	46	0.16
	Maximum	413	161	120	98	55	0.24
Silverwood Lake, Outlet to San Bernardino Tunnel	Minimum	128	59	16	20	20	0.1
	Average	244	93	61	38	45	0.16
	Maximum	356	128	114	59	56	0.26
Lake Perris, Outlet from Santa Ana Pipeline	Minimum	281	114	72	44	47	0.19
	Average	331	139	83	52	49	0.22
	Maximum	396	146	88	58	51	0.27
Pyramid Lake, Entrance to Angeles Tunnel	Minimum	178	94	24	48	35	0.2
	Average	304	145	50	88	40	0.28
	Maximum	419	197	93	140	49	0.4
Castaic Lake, Outlet Tower	Minimum	305	170	51	90	34	0.2
	Average	365	191	54	114	35	0.27
	Maximum	439	210	61	132	39	0.25
Monthly Average Quality Objectives		440	180	110	110	50	0.6

a) Amount of sodium in solution expressed as a percentage of the total sodium, calcium, magnesium and potassium in solution.

Other Activities

Heavy flood flows from continuous rains in the South San Joaquin Division carried large volumes of sediment that plugged aqueduct cross-drainage systems and threatened pumping plants. Runoff ponded against the uphill aqueduct embankments, depositing bedload, and erosion took place in some areas, with embankment breaks occurring at mile 155.00, 255.25, and 260.45. Many installations were damaged, including primary and secondary aqueduct roads and pumping plant sites.

Flood flows through Avenal Gap overflowed into Las Perillas Pumping Plant site, filling the forebay and Coastal Aqueduct Pool No. 1 with silt, washing out concrete canal lining, and causing other damage.

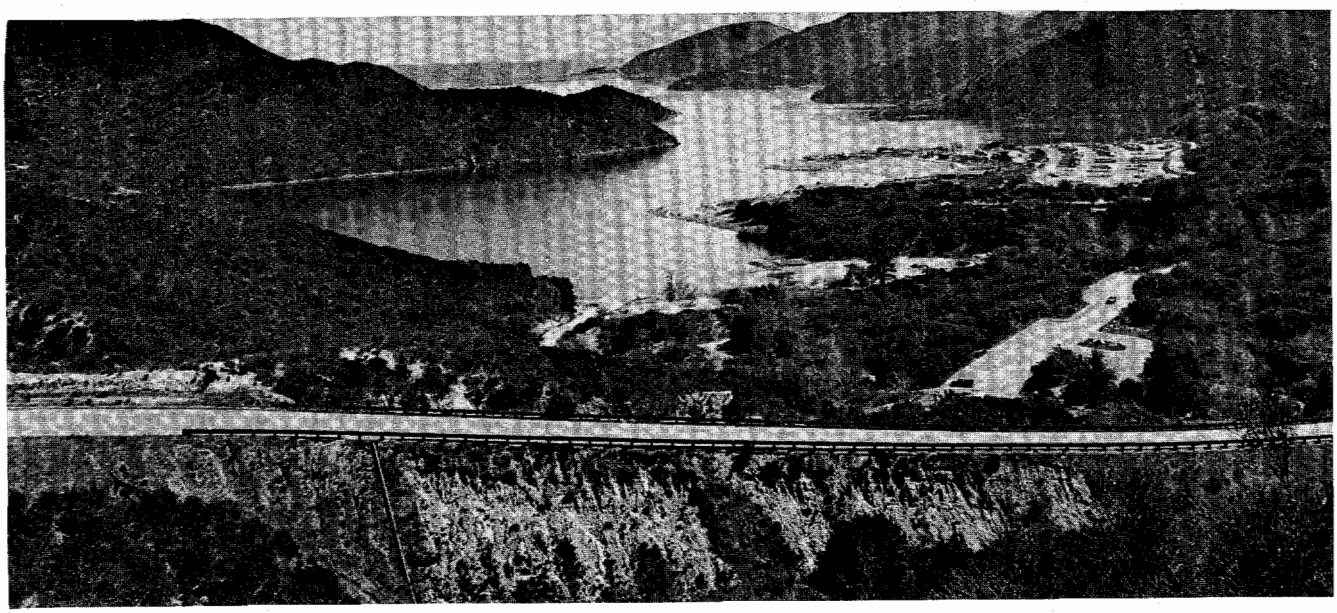
Hurricane strength winds of December 1977 spread tumbleweed seeds through the Division's area and, coupled with the heavy rains of 1978, caused a record crop of this weed. Late 1978 winds blew three to four times the normal volume of tumbleweed into the canal, plugging siphons, turnouts, and check structures.

Personnel working extended hours were able to keep the Division operational. The Division will not be completely repaired until 1980 but by August 1978, it was prepared to meet a normal precipitation year in 1979.

Table 5 shows summary data on the quality of water delivered during 1978 as measured at selected stations. Also shown at the bottom of Table 5 are the corresponding monthly average objectives for maximum concentrations of constituents as set forth in long-term water contracts. (Note that the mineral analyses are based on one each month, while the objectives are stated in terms of average conditions within a month.)

Figure 7 presents a pictorial summary of Project water operations during 1978. Also shown on Figure 7 are the areas of the Project's five field divisions, which have the responsibility for operations and maintenance activities.

Project power operations for each generating plant during each month of 1978 are summarized in Table 6.



Silverwood Lake regulates water deliveries to SWP contractors and provides for recreation on the California Aqueduct's East Branch.

TABLE 6: MONTHLY POWER

(in millions of

Operations	MONTH						
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.
ENERGY GENERATED BY EDWARD-HYATT AND THERMALITO POWERPLANTS (a							
Gross Generation	19.94	31.97	386.40	215.74	246.24	195.88	271.71
Power Plant Use and Pumpback Requirements	9.38	8.37	1.13	21.88	7.48	6.14	3.38
Delivered to California Power Pool Companies	10.56	23.60	385.27	193.86	238.76	189.74	268.33
ENERGY USED BY PROJECT PUMPING PLANTS							
Interim (Cordelia)	.17	.15	.19	.16	.40	.28	.20
South Bay	2.74	.28	3.38	4.35	9.67	11.93	14.85
Del Valle	.02	.02	.02	.01	.01	.01	.01
Tracy (State Share)	0	0	.30	0	0	0	0
Delta	110.17	103.66	32.80	10.02	17.88	58.76	63.36
San Luis (State Share)	83.92	94.14	19.68	2.75	0	.01	.01
Dos Amigos (State Share)	7.34	7.34	8.87	1.93	7.29	24.44	33.94
Las Perillas	.07	.06	.06	.16	.84	1.62	1.78
Badger Hill	.12	.07	.08	.36	2.24	4.15	4.66
Buena Vista	14.89	18.04	14.01	10.56	20.42	29.48	28.05
Wheeler Ridge	17.33	20.62	16.15	11.46	20.49	27.44	23.10
Wind Gap	38.57	46.28	35.98	24.57	44.16	58.51	48.03
A. D. Edmonston	136.49	163.37	126.83	86.72	150.89	204.12	163.85
Oso (West Branch)	9.35	13.16	12.16	.10	4.47	9.79	5.04
Pearblossom	17.68	16.87	8.53	25.02	30.48	31.01	29.86
Devil Canyon Station Service	0	0	0	0	0	0	0
Julian Hinds (c	53.09	0	0	0	0	0	0
Total	491.95	484.06	279.04	178.17	309.24	461.55	416.74
SOURCES OF ENERGY FOR PROJECT							
San Luis Pumping-Generating Plant (State Share)	0	0	0	.01	0	2.72	20.33
Castaic Generating Plant (State Share)	29.57	54.30	43.93	4.70	18.24	28.80	15.36
Devil Canyon Generating Plant	9.88	19.89	13.72	39.39	46.57	43.46	48.99
Canadian Entitlement Power	108.85	98.12	108.11	50.01	51.60	50.19	52.35
Bonneville Power Administration	0	0	0	0	.68	.34	1.52
California "Suppliers"	290.55	311.75	120.35	76.98	192.15	336.04	277.97
PG&E for San Luis Generation (b	0	0	0	0	0	0	.22
PG&E, SDG&E and SCE (c	53.09	0	0	0	0	0	0
Total	491.94	484.06	286.11	171.09	309.24	461.55	416.74

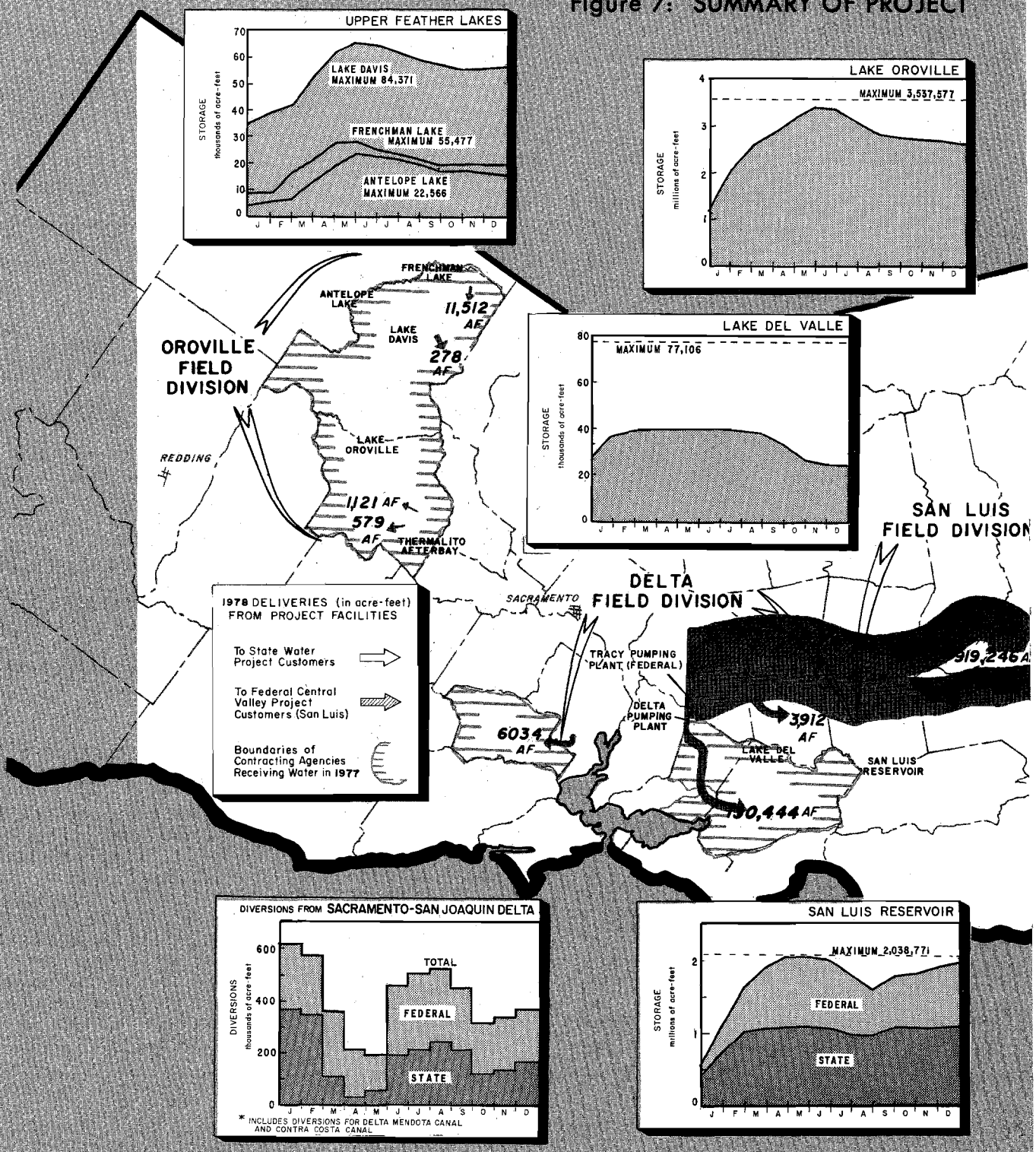
a) Sold under terms of the Oroville-Thermalito Power Sale Contract, November 29, 1967.
b) Energy for pumping Colorado River water for MWD in state water exchange program.
c) See "Power Contract Management and Energy Activities" section in Chapter II for a discussion of this arrangement.

OPERATIONS IN 1978

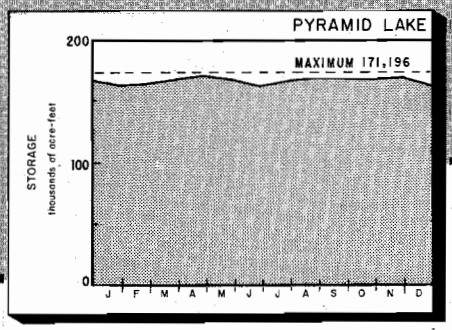
kilowatthours)

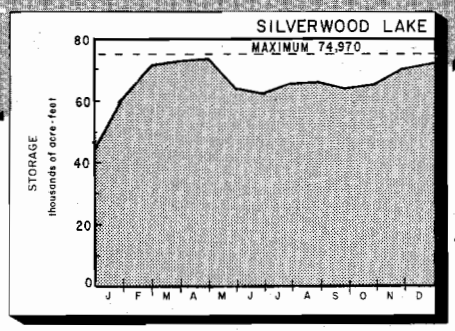
MONTH						
Aug.	Sept.	Oct.	Nov.	Dec.	Total	Operations
						ENERGY GENERATED BY EDWARD-HYATT AND THERMALITO POWERPLANTS (a
247.45	129.38	94.42	86.15	115.82	2,041.10	Gross Generation
3.60	4.41	3.42	11.88	21.13	102.20	Power Plant Use and Pumpback Requirements
243.85	124.97	91.00	74.27	94.69	1,938.90	Delivered to California Power Pool Companies
						ENERGY USED BY PROJECT PUMPING PLANTS
.30	.31	.33	.34	.28	3.11	Interim (Cordelia)
13.83	7.73	5.93	7.69	9.47	91.85	South Bay
.01	.01	.01	.01	.01	.15	Del Valle
0	0	0	0	0	.30	Tracy (State Share)
72.97	63.54	38.40	40.84	51.56	663.96	Delta
1.97	34.61	.10	.07	12.61	249.87	San Luis (State Share)
33.62	13.68	16.66	17.96	17.74	190.81	Dos Amigos (State Share)
1.43	.32	.64	.30	.52	7.80	Las Perillas
3.72	.79	1.71	.73	1.39	20.02	Badger Hill
22.36	14.51	24.10	26.19	23.97	246.58	Buena Vista
16.67	15.06	26.83	29.58	26.15	250.88	Wheeler Ridge
34.41	32.69	59.23	65.59	56.01	544.03	Wind Gap
114.30	111.49	209.81	231.20	195.62	1,894.69	A. D. Edmonston
0	0	7.14	12.08	10.12	83.41	Oso (West Branch)
28.38	29.44	41.42	39.04	33.69	331.42	Pearblossom
0	0	0	0	0	0	Devil Canyon Station Service
0	0	0	0	0	53.09	Julian Hinds (c
343.97	324.18	432.31	471.62	439.14	4,631.97	Total
						URCES OF ENERGY FOR PROJECT
4.98	0	.01	.01	0	28.06	San Luis Pumping-Generating Plant (State Share)
.96	2.40	22.72	44.59	36.24	301.81	Castaic Generating Plant (State Share)
48.49	53.92	68.30	61.48	57.43	511.52	Devil Canyon Generating Plant
52.50	50.74	51.71	49.94	51.85	775.97	Canadian Entitlement Power
0	0	0	0	0	2.54	Bonneville Power Administration
237.04	217.13	289.58	315.60	293.62	2,958.76	California "Suppliers"
0	0	0	0	0	.22	PG&E for San Luis Generation (b
0	0	0	0	0	53.09	PG&E, SDG&E and SCE (c
343.97	324.19	432.32	471.62	439.14	4,631.97	Total

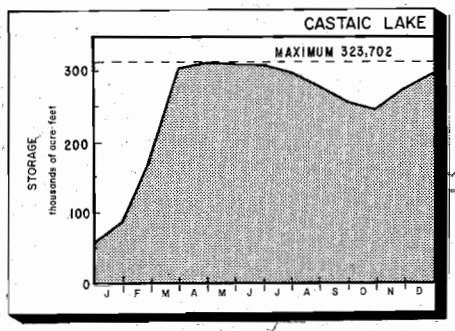
Figure 7: SUMMARY OF PROJECT



WATER OPERATIONS, 1978







SOUTHERN FIELD DIVISION

SAN JOAQUIN FIELD DIVISION

SILVERWOOD LAKE

LAKE PERRIS

44,345 AF

390,212 AF

671,159 AF

BAKERSFIELD

CASTAIC LAKE

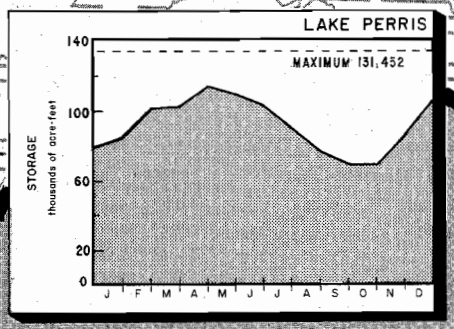
PYRAMID LAKE

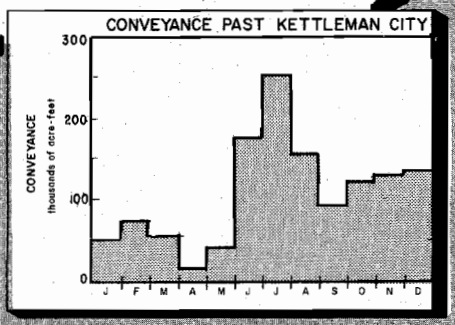
228,952 AF

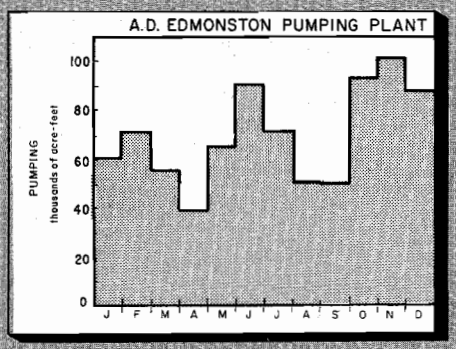
KETTLEMAN CITY

93,903 AF

A.D. EDMONSTON PUMPING PLANT







RECREATION AND FISH AND WILDLIFE ACTIVITIES

About 5.8 million people used SWP facilities for recreation during 1978, about a 45 percent increase from the 4.0 million recreationists reported in 1977. The increase in recreation use can be attributed to water levels in SWP reservoirs, returning to normal levels after the 1976-77 drought. The recreation use total includes camping, boating, swimming, fishing (lake or aqueduct), bicycling and other recreational activities at Project facilities.

Approximately 0.6 million visitor days of use occurred at SWP visitors centers. This is a 40 percent decrease from the 1.0 million people visiting the facilities in 1977. Visitors include people entering or stopping near visitor centers and overlooks, and those participating in guided tours of project facilities. No new visitor centers were constructed in 1978 and none are planned. Perris Visitor Center is receiving very low use and consideration is being given to closure and lease of the building.

About 2,900 cyclists used the California Aqueduct Bikeway in 1978; 900 along the Aqueduct from Bethany Reservoir to O'Neill Forebay, and 2,000 in the Antelope Valley area.

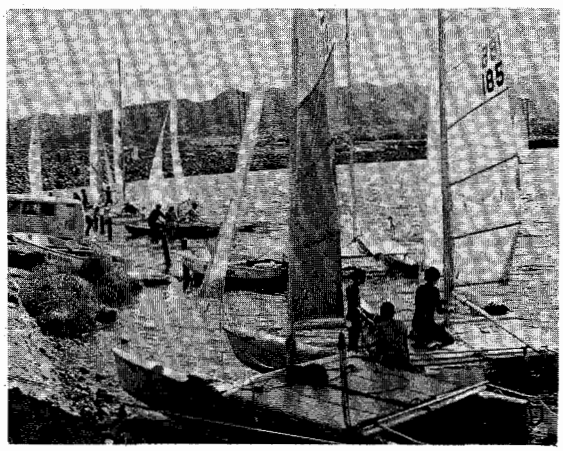
The total length of bikeway in operation is approximately 276 kilometres (172 miles). An additional 2.4 kilometres (1.5 miles) across Big Rock Creek in the Pearblossom area of Southern California will be completed in 1979.

After a six-month trial period that began in March 1978, the Department authorized the use of mopeds - bicycles with small auxiliary engines - on a part of the California Aqueduct Bikeway. The mopeds will only be allowed on the northern San Joaquin Valley portion of the bikeway - the 107 kilometres (67 miles) from Bethany Reservoir to O'Neill Forebay.

The Department decided to allow mopeds on the North San Joaquin Bikeway because of their growing popularity; however, the bikeway remains closed to other motorized vehicles except for operation and maintenance vehicles. The North San Joaquin Bikeway opened in 1972; however, use has been light.

In addition to contributing to the overall increase in recreation use in 1978, the end of the drought was also responsible for a significant increase in the quality of recreation at most facilities. Also, fish and wildlife habitat damaged by the drought is recovering satisfactorily with adequate rainfall and additional water storage.

Recreation use in 1977 and 1978 is shown in the following table:



Boating at Castaic Lagoon on the West Branch, California Aqueduct.

Facility	Recreation Use in Recreation Days	
	1978	1977
Oroville Field Division		
Frenchman Lake	140,900	121,700
Antelope Lake	91,300	14,700
Lake Davis	242,000	263,200
Lake Oroville Complex	508,600	411,200
TOTAL	**982,800**	**810,800**
Delta Field Division		
Lake Del Valle	390,300	313,400
Bethany Reservoir	3,000	–
Cottonwood Road F.A.S.	1,000	700
Niels Hansen F.A.S.	1,000	700
Orestimba F.A.S.	2,100	700
California Aqueduct		
Walk-in fishing	41,900	17,000
California Aqueduct		
Bikeway	900	900
TOTAL	**440,200**	**333,400**
San Luis Field Division		
San Luis Reservoir		
O'Neill Forebay, and		
Los Banos Reservoir	771,400	419,500
Canyon Road F.A.S.	700	400
Mervel Avenue, F.A.S.	700	300
Fairfax F.A.S.	800	400
Three Rocks F.A.S.	700	400
Huron F.A.S.	800	500
Avenal Cutoff F.A.S.	900	1,300

Facility	Recreation Use in Recreation Days	
	1978	1977
San Luis Field Division (Cont'd)		
California Aqueduct		
Walk-in fishing	3,300	3,400
TOTAL	**779,300**	**426,200**
San Joaquin Field Division		
Lost Hills F.A.S.	1,500	1,700
Buttonwillow F.A.S.	1,400	1,600
Cadet Road F.A.S.	400	500
Kettleman City F.A.S.	600	1,100
California Aqueduct		
Walk-in fishing	27,100	21,000
TOTAL	**31,000**	**25,900**
Southern Field Division		
Castaic Lake	1,084,000	832,500
Silverwood Lake	530,700	375,300
Pyramid Lake	428,900	320,800
Lake Perris	1,462,500	781,500
77th Street, East F.A.S.	8,200	5,300
Longview Road F.A.S.	5,600	7,300
California Aqueduct		
Walk-in fishing	18,500	15,200
California Aqueduct		
Bikeway	2,000	17,700
TOTAL	**3,540,400**	**2,355,600**
GRAND TOTAL, SWP	**5,773,700**	**3,951,900**

Additional details on recreation and fish and wildlife activities within each field division are presented in the following paragraphs:

Oroville Field Division

In 1978, the Feather River Fish Hatchery produced 2,910,730 king salmon smolts (fingerlings); 1,010,490 king salmon yearlings; 20,125 steelhead fingerlings; and 122,380 steelhead yearlings. In addition, 537,930 king salmon smolts and 704,540 king salmon yearlings were produced in the spawning channel for the Sacramento River system to lessen the impact of the 1976-77 drought on the fishery.

Antelope Lake returned to a normal level in 1978, and recreation use increased substantially over use in 1977. Antelope Lake was planted with 20,555 rainbow trout catchables and 230,000 rainbow trout fingerlings.

The Department of Fish and Game planted Lake Davis with 30,000 cutthroat/kamloops hybrid trout yearlings, 40,000 silver salmon yearlings, 183,600 rainbow trout subcatchables, 31,400 rainbow trout catchables, 2,430 brown trout catchables, and 82 silver salmon tagged for research.

At Frenchman Lake, the existing boat ramp was extended in 1978, and the lake was planted with 261,790 rainbow trout fingerlings.

Lake Oroville was planted with 60,010 Eagle Lake rainbow trout/domestic rainbow trout hybrid yearlings, 10,000 Pit River rainbow trout catchables, 60,000 Eagle Lake rainbow trout catchables, 27,000 brown trout catchables, 3,900 channel catfish yearlings, 150 black crappie yearlings, and 150 white crappie yearlings. In 1978 the Department of Parks and Recreation completed construction of a new outdoor program and campfire area at Loafer Creek.

At the Oroville Wildlife Area 728 hectares (1,800 acres) were planted with herbaceous cover, and 897 tree and shrub seedlings were planted for wildlife food and cover. One pond was dug and additional ditch widening and high ground development was provided for wildlife. Also, 25 wood duck nest boxes were erected and checked for nesting use. Approximately 1,550 largemouth bass and 1,950 channel catfish were planted in the Oroville Wildlife Area ponds to offset drought losses and re-establish fisheries.

Hunting and fishing access were maintained at Thermalito Afterbay during 1978. Estimated use by waterfowl hunters was 2,800 visitor-days. Thermalito Afterbay was planted with 5,590 striped bass yearlings, 775 channel catfish yearlings, and 150 white crappie yearlings. The Thermalito Diversion Pool was planted with 775 channel catfish yearlings.

Delta Field Division

Public hunting for waterfowl was conducted at Clifton Court Forebay from October 21, 1978 through January 21, 1979. A total of 777 hunters were issued permits and harvested 1,564 birds for an average of 2 birds per hunter-day. The Forebay is best suited for hunting by scull boat.

At Bethany Reservoir, improvement of the entry road was completed in 1978.

San Luis Field Division

At San Luis Reservoir, an existing wind-powered electric generator and wind velocity warning light was moved from Quien Sabe Point to Basalt Campground. Also, solar water heaters were installed in two of the Basalt Campground comfort stations.

San Joaquin Field Division

In planted areas along the California Aqueduct in the San Joaquin Valley,

where mature growths of shrubs and a few trees are providing protective cover and food, the heaviest use by wildlife occurs mainly from nongame song birds, followed by cottontail rabbits, pheasants, jackrabbits, raptors, Valley Quail, and small mammals, in that order. In general, greater numbers of wildlife and more species can be observed along the planted areas than in the nonplanted areas.

Southern Field Division

Striped bass angling at Silverwood Lake increased during 1978, primarily due to increased public awareness of this fishery. However, the trout stocking program is the mainstay of the fishery and provides the greatest attraction for public fishing. A trophy trout fishery is becoming established as water temperatures at Silverwood Lake during the summer months are suitable for a carryover of brown and rainbow trout. Silverwood Lake was planted with 243,670 rainbow trout and 5,000 channel catfish, and 200 adult and 6,000 young-of-the-year Sacramento perch.

At Lake Perris, completed construction includes 79 tent campsites, 102 recreation vehicle campsites with full hookups, six group campsites to accommodate a total of 500 people, a campfire center for 200 people, three interpretive displays, 10 comfort stations, a residence, 1.0 hectare (2.5 acres) of parking, 3.7 kilometres (2.3 miles) of roads and appropriate landscaping.

Lake Perris was planted with 187,740 rainbow trout and 230 channel catfish. Life history studies of Alabama spotted bass are continuing with a majority of the project completed. Three hundred adult Alabama spotted bass were tagged and released during February 1978. By the end of the year, 120 tags (40%) had been returned.

The fifth year of hunting activity at Lake Perris resulted in about the same hunting pressure and take of upland game and waterfowl as in previous years. Lake Perris continues to provide moderately productive recreational hunting opportunities for the unattached hunter in Southern California.

At Pyramid Lake, additional parking and dock facilities were constructed at Emigrant Landing, two floating restrooms were added on the lake, 45 shade ramadas were built at boat-in sites, and trees were planted at Yellow Bar and Spanish Point. Also, work is continuing on installation of three shore access docks at boat-in sites.

Pyramid Lake was planted with 134,950 rainbow trout and 7,000 channel catfish. Pyramid Lake continued to support an important striped bass fishery. During 1978 the lake accounted for over 5,000 angler days.

At Castaic Lake, construction of a boarding float at Castaic Ridge was completed in 1978. Castaic Lake was planted with 203,200 rainbow trout and 13,500 channel catfish. The experimental channel catfish planting program initiated in 1975 is nearing completion. Analyses of tagged-fish catch data is underway to evaluate the relative success of this fish stocking program. Also, Castaic Lagoon was planted with 32,900 rainbow trout.

Southern California Wildlife Preservation

The Department of Water Resources and the Department of Fish and Game continued efforts to finalize mitigation requirements for losses of wildlife habitat attributable to the construction of the SWP facilities in Southern California. The two Departments are in essential agreement concerning the issue. (See "Actions Concerning Project Recreation and Fish and Wildlife Activities", section in Chapter I.) Discussions during the year involved a cash settlement of $12,500,000 to develop, operate, and maintain a wildlife preservation area in the San Jacinto Valley, east of Lake Perris. However, further review was requested by the water contractors. A review of the mitigation problem by independent wildlife consultants is expected.

CHAPTER III

FUTURE CONSTRUCTION COSTS, OPERATING COSTS AND PROJECT FINANCING

As a result of the Delta Alternatives Review, which concluded with the publication of Bulletin 76 -- Delta Water Facilities -- in July 1978, a water management plan was formulated which defined recommended additional conservation facilities to supply water for the SWP through the year 2000. The water management plan also reflects water conservation and waste water reclamation in the projection of future water needs. The SWP financial analysis in this chapter includes the recommended additional conservation facilities from the Delta Alternatives Review, and unspecified future conservation facilities after year 2000 in order to deliver the maximum annual entitlements.

As of December 31, 1978, over $2.5 billion had been expended by the Department for the facilities of the State Water Project ($2.4 billion of construction expenditures and $0.1 billion for other capital requirements). These expenditures include costs of planning, design, relocations, land acquisition, and operations during the construction period of each facility.

While the initial project facilities were completed in 1973, continuing construction will be required to (1) complete staged construction of the aqueduct system; (2) develop the remaining minimum SWP yield, which will be used to satisfy future entitlement commitments; and (3) construct SWP-owned power generating facilities in order to assure an economical and reliable power supply. The Department's current assumptions concerning costs of future facilities indicate that capital expenditures would eventually be about $11 billion at prices prevailing on January 1, 1979. Future cost escalation at prevailing rates till year 2000 would add an additional $12 billion. The increase from costs shown in previous bulletins is due to an increase in the escalation rates assumed and the inclusion of assumed costs for SWP-owned power facilities, other than aqueduct recovery plants. This total also includes approximately $1.4 billion assumed to be paid by the federal government on facilities which will be jointly used (see Line 40). (Line numbers indicate lines of Table 7 and respective line descriptions in this chapter).

Excluded from the above estimates are the costs of project-associated works which, though essential for realizing full project benefits, are financed and constructed by local and State public agencies other than the Department. Such associated works include:

- Distribution systems, required to convey water from SWP aqueducts to users, which are financed and constructed by water contractors and their member units. The costs of such works are estimated to total $2.44 billion, $1.04 billion of which had been incurred as of the end of 1978.

- Onshore recreation developments at SWP facilities, which are financed and constructed by a variety of State and local agencies. Almost $100 million had been expended for such developments through 1978, with a like amount expected in the future.

The Department's capital expenditures for the SWP also include requirements other than those for construction, such as:

- Disbursements under the Davis-Grunsky Program (see Line 24).

- Annual principal and interest payments for additional water conservation storage capacity assumed to be eventually constructed by the federal government. Such additional storage is required to satisfy SWP water delivery demands after 1989 in the Department's water management plan (see Line 25).

- Special capital requirements under revenue bond financing (see Line 26).

This chapter presents a detailed analysis showing a financially viable State Water Project, producing enough revenues to pay all annual costs of operations and maintenance, to meet all repayment obligations on funds used to finance construction and, eventually to produce financing for additions to the SWP that may be authorized in the future.

The financial analysis is shown in Table 7 in two spreads. Actual and projected capital expenditures and sources of financing are shown in Spread 1 and graphically in Figure 8. Actual and anticipated revenues and the application thereof to pay SWP operating expenses, principal and interest on bonds, and to repay the California Water Fund are shown in Spread 2 and graphically in Figure 9.

The financial analysis is based on the major assumption that the Department would sell revenue bonds in connection with the construction of future SWP facilities -- with proceeds sufficient to fulfill the currently estimated need for supplemental financing. (Supplemental financing refers to funds required in excess of those (1) on hand; (2) anticipated under current agreements and legislative enactments; (3) authorized Water Bonds; (4) proceeds remaining from issued Revenue Bonds; and (5) assumed to be provided under future agreements with the United States in connection with the Delta Facilities and Los Vaqueros Reservoir.) The analysis indicates a total need for supplemental financing of $6.9 billion, which includes $5.8 billion for construction expenditures and $1.1 billion for special capital requirements under revenue bond financing. The analysis also assumes no change in the present statutory provisions regarding appropriation of State tideland oil and gas revenues. As explained in Line 29, if revenue available to the California Water Fund declines after 1985, approximately $500 million of additional supplemental financing would be required.

Supplemental financing needed would be supplied by future sale of revenue bonds as authorized by the Central Valley Project Act. Revenue to support the bonds could be provided by water contractor charges which can be associated with the facilities being financed.

Future conditions undoubtedly will cause changes in the financial analysis set forth in Table 7. For this reason, basic assumptions are comprehensively reviewed and the financial analysis updated periodically. Notable contingencies that could change the financial analysis are:

- A delay beyond the current 1982 target date for financial participation by the United States in the construction of joint-use Peripheral Canal.

- Deviation from the assumptions regarding SWP-owned power sources.

- Deviation of actual rates of future construction price inflation from those currently assumed for cost estimates.

- Rescheduling of currently planned construction for future facilities.

- Possible development of alternative sources of additional water not included in present plans.

- Need to expand the SWP to serve areas not now contemplated.

Figure 8: FINANCING OF CONSTRUCTION EXPENDITURES, 1952-2035

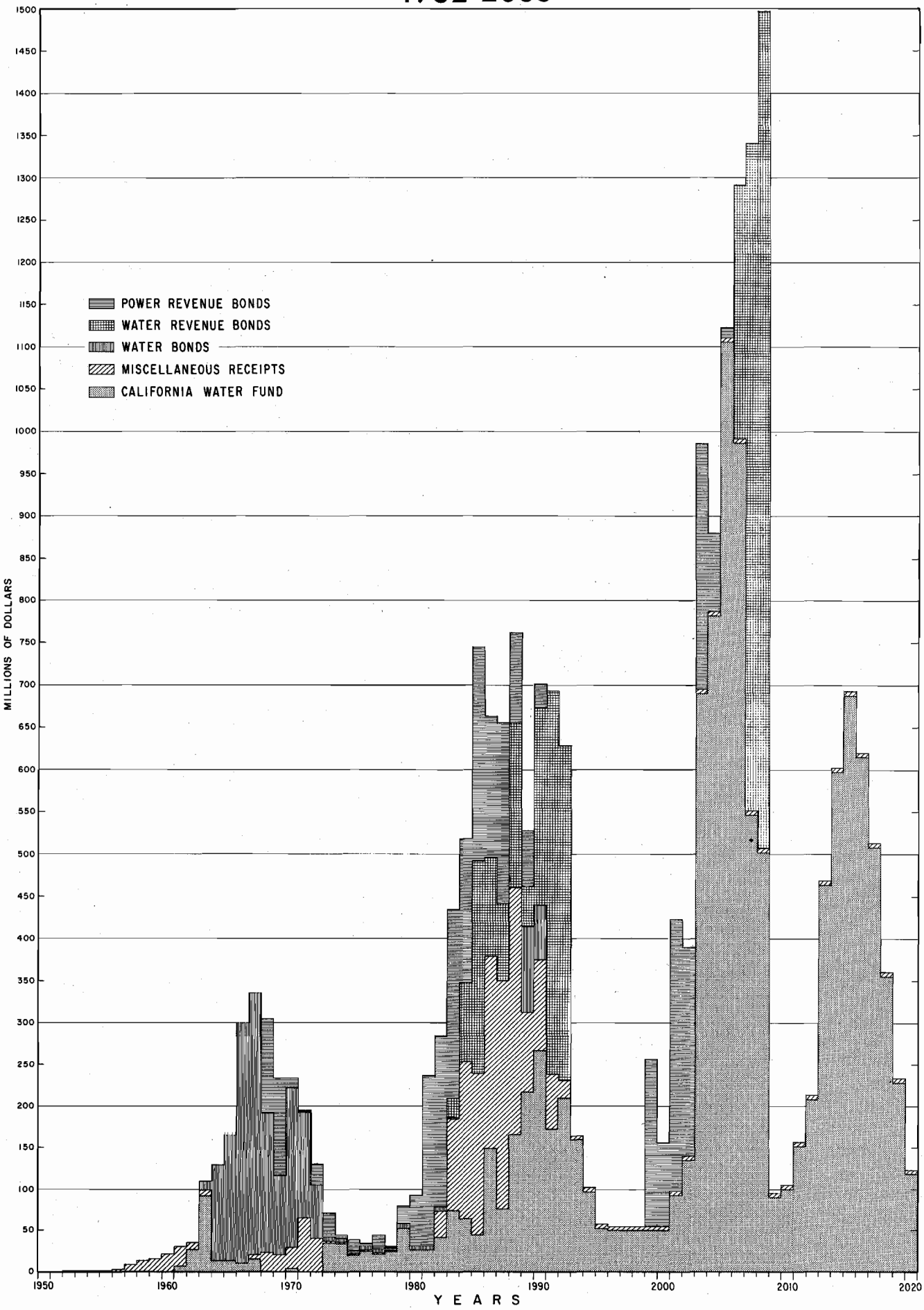


Figure 9: APPLICATION OF PROJECT OPERATING REVENUES

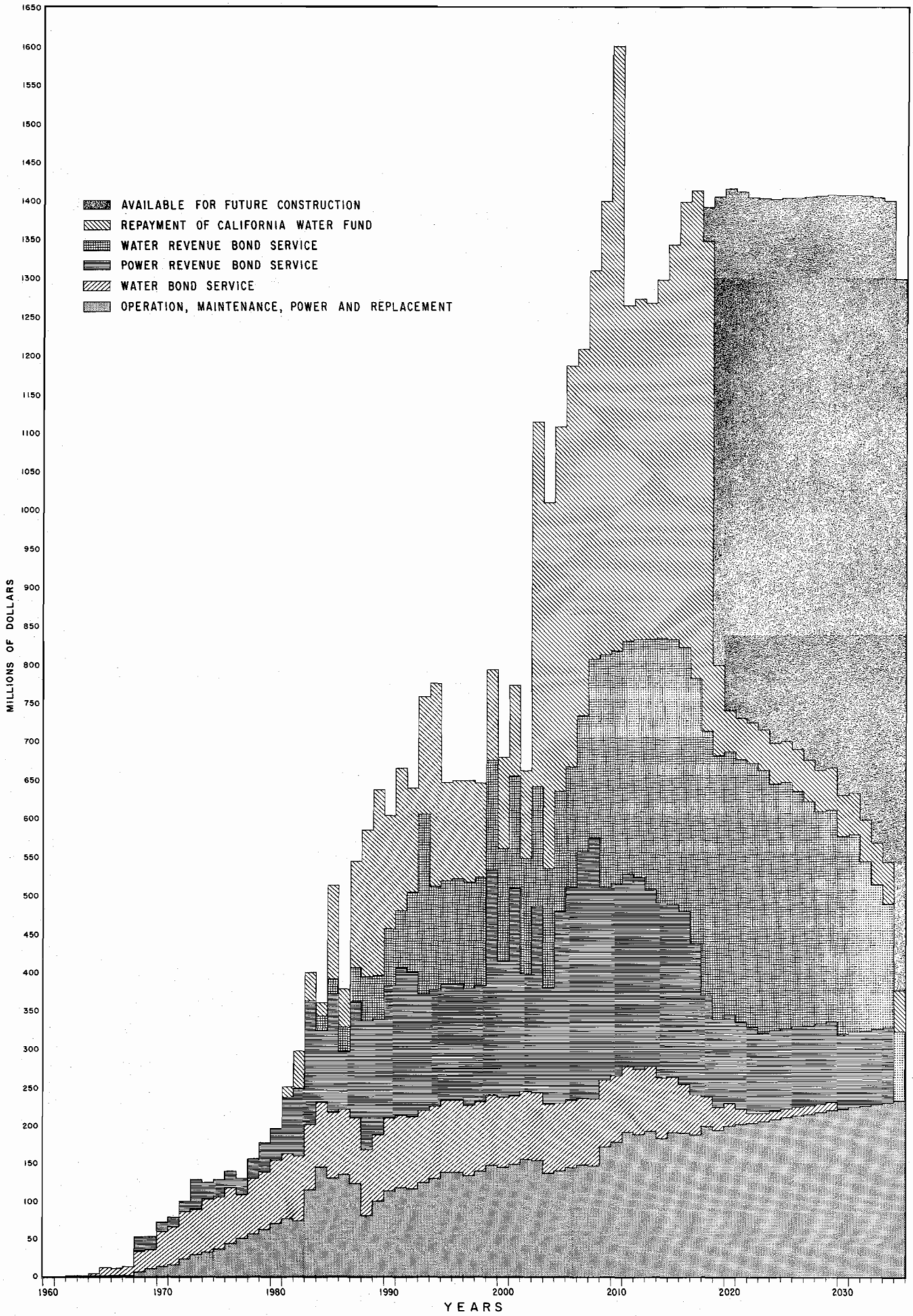


TABLE 7: PROJECT FINANCIAL

(in thousands

LINE NO.	LINE ITEM	CALENDAR 1952-1978	1979	1980	1981	1982	1983	1984	1985
	PROJECT CONSTRUCTION EXPENDITURES								CAPITAL
1.	Initial Project Facilities	2,180,126	0	0	0	0	0	0	0
2.	Abbey Bridge and Dixie Refuge Dams and Reservoirs	761	0	0	0	0	0	0	0
3.	Phase II North Bay Aqueduct	1,331	871	954	996	5,648	13,376	3,618	593
4.	Delta Facilities (including Suisun Marsh)	44,242	9,095	5,424	11,695	16,917	41,704	99,667	102,324
	California Aqueduct:								
5.	Final Four Units at Delta Pumping Plant	757	943	2,292	4,324	2,161	4,420	9,602	7,594
6.	San Luis Canal Modifications	0	0	0	500	1,500	3,592	5,873	6,990
7.	Final Three Units at A. D. Edmonston Pumping Plant	276	1,162	4,764	12,103	11,565	5,187	1,000	0
8.	Staged Units and Pipelines South of A. D. Edmonston	18,910	656	1,061	2,487	7,590	6,030	590	0
9.	Buttes Dam and Reservoir	50	8	25	150	331	1,042	7,735	9,057
10.	Final Three Units at Las Perillas and Badger Hill	6,311	0	0	0	25	125	496	854
11.	Peace Valley Pipeline and Pyramid Powerplant	27,995	29,632	32,054	19,111	7,339	625	4	0
12.	Cottonwood Powerplant	4,176	1,134	1,427	7,064	12,515	4,695	78	5
13.	Phase II of the Coastal Branch	0	478	1,673	2,581	8,843	34,727	43,145	26,992
14.	Enlargement of California Aqueduct, Mojave Division	0	0	0	510	2,430	4,520	13,600	45,250
15.	General Costs	50,265	5,599	6,669	2,146	1,269	4,634	927	710
16.	SUBTOTAL, California Aqueduct	108,740	38,612	49,965	50,976	55,568	69,597	83,050	97,452
17.	Miscellaneous Project Costs	15,524	3,252	940	1,465	357	320	300	285
18.	Additional Conservation Facilities	8,490	3,099	3,398	4,347	16,692	23,373	53,149	101,992
19.	Power Generating Facilities	0	0	5,053	85,262	77,008	96,319	85,985	100,023
20.	San Joaquin Drainage Facilities	8,787	282	100	100	100	100	100	100
21.	SUBTOTAL, PROJECT CONSTRUCTION EXPENDITURES	2,368,001	55,211	65,834	154,841	172,290	244,789	325,869	402,769
22.	Cost Escalation Allowance	0	881	3,040	25,333	40,809	85,541	156,007	244,819
23.	TOTAL PROJECT CONSTRUCTION EXPENDITURES	2,368,001	56,092	68,874	180,174	213,099	330,330	481,876	647,588
	OTHER CAPITAL REQUIREMENTS								
24.	Davis-Grunsky Act Program	108,147	5,006	5,239	5,256	5,260	1,092	0	0
25.	Additional Conservation Facilities-Storage Payments	0	0	0	0	0	0	0	0
26.	Special Capital Requirements under Revenue Bond Financing	39,121	17,287	17,135	52,187	67,091	103,603	36,365	95,699
27.	TOTAL OTHER CAPITAL REQUIREMENTS	147,268	22,293	22,374	57,443	72,351	104,695	36,365	95,699
28.	TOTAL CAPITAL REQUIREMENTS	2,515,269	78,385	91,248	237,617	285,450	435,025	518,241	743,287
									FINANCING OF
29.	APPLICATION OF CALIFORNIA WATER FUND MONEYS	330,563	52,714	25,750	25,750	40,290	73,848	62,986	43,764
	APPLICATION OF PROCEEDS FROM SALE OF BONDS:								
30.	Oroville Revenue Bonds	244,995	0	0	0	0	0	0	0
31.	Devil Canyon-Castaic Revenue Bonds	89,971	3,378	18,350	27,300	142	22	2	0
32.	Supplemental Water Revenue Bonds	0	0	0	0	0	24,725	95,499	252,454
33.	Supplemental Power Revenue Bonds	0	17,287	41,909	179,209	207,682	224,967	170,424	252,325
34.	Water Bonds, Davis-Grunsky Program	108,147	5,006	5,239	5,256	5,260	1,092	0	0
35.	Water Bonds, Additional Conservation Facilities	8,490	0	0	0	0	0	0	0
36.	Water Bonds, Initial Project Facilities	1,443,758	0	0	0	0	0	0	0
37.	TOTAL, Application of Proceeds from Sale of Bonds	1,895,361	25,671	65,498	211,765	213,084	250,806	265,925	504,779
38.	APPLICATION OF MISCELLANEOUS RECEIPTS TO CONSTRUCTION	289,345	0	0	102	32,076	110,371	189,330	194,744
39.	TOTAL FINANCING OF CAPITAL REQUIREMENTS	2,515,269	78,385	91,248	237,617	285,450	435,025	518,241	743,287

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Spread 1 of 2

YEARS									TOTAL 1952-2035	LINE NO.
1986	1987	1988	1989	1990	1991-2000	2001-2010	2011-2020	2021-2035		
EXPENDITURES										
0	0	0	0	0	0	0	0	0	2,180,126	1.
0	0	0	0	0	0	0	0	0	761	2.
111	33	10	7	1	0	0	0	0	27,549	3.
69,163	38,053	35,330	64,767	78,216	57,580	0	0	0	674,177	4.
1,967	34	1	8	10	10	0	0	0	34,123	5.
6,490	4,920	1,320	0	0	0	0	0	0	31,185	6.
0	0	0	0	0	0	0	0	0	36,057	7.
0	0	0	0	0	0	0	0	0	37,324	8.
1,245	16	8	5	4	2	0	0	0	19,678	9.
119	0	0	0	0	0	0	0	0	7,930	10.
0	0	0	0	0	0	0	0	0	115,760	11.
2	1	1	1	1	0	0	0	0	31,100	12.
3,492	1,445	76	38	23	13	0	0	0	123,526	13.
51,100	15,570	320	0	0	0	0	0	0	133,300	14.
223	81	41	87	109	110	0	0	0	72,870	15.
64,638	22,067	1,767	139	147	135	0	0	0	642,853	16.
264	264	264	263	264	1,277	0	0	0	25,039	17.
141,506	168,320	238,440	114,768	165,309	397,545	1,047,000	0	0	2,487,428	18.
88,630	71,870	47,932	28,048	10,816	23,465	125,542	539,012	0	1,384,965	19.
0	0	0	0	0	0	0	0	0	9,669	20.
364,312	300,607	323,743	207,992	254,753	480,002	1,172,542	539,012	0	7,432,567	21.
283,426	288,686	367,270	266,465	371,395	956,250	6,023,802 [a]	2,901,873 [a]	0	12,015,597	22.
647,738	589,293	691,013	474,457	626,148	1,436,252	7,196,344	3,440,885	0	19,448,164	23.
0	0	0	0	0	0	0	0	0	130,000	24.
0	0	53,647	53,647	53,647	536,470	536,470	536,470	804,705	2,575,056	25.
15,824	65,750	17,308	0	21,264	243,977	395,521	0	0	1,188,132	26.
15,824	65,750	70,955	53,647	74,911	780,447	931,991	536,470	804,705	3,893,188	27.
663,562	655,043	761,968	528,104	701,059	2,216,699	8,128,335	3,977,355	804,705	23,341,352	28.
CAPITAL EXPENDITURES										
148,255	75,691	164,192	216,073	266,850	931,077	5,024,621	3,927,355	804,705	12,214,484	29.
0	0	0	0	0	0	0	0	0	244,998	30.
0	0	0	0	0	0	0	0	0	139,165	31.
117,637	91,677	194,694	47,490	233,070	851,847	2,079,332	0	0	3,988,425	32.
168,017	213,818	106,720	66,773	28,049	385,188	974,382	0	0	2,956,750	33.
0	0	0	0	0	0	0	0	0	130,000	34.
0	0	0	102,069	65,683	0	0	0	0	176,242	35.
0	0	0	0	0	0	0	0	0	1,443,758	36.
285,654	305,495	301,414	216,332	326,802	1,157,035	3,053,714	0	0	9,079,335	37.
229,653	273,857	296,362	95,699	107,407	128,587	50,000	50,000	0	2,047,533	38.
663,562	655,043	761,968	528,104	701,059	2,216,699	8,128,335	3,977,355	804,705	23,341,352	39.

a) No additional escalation after year 2000.

TABLE 7: PROJECT FINANCIAL

(in thousands

LINE NO.	LINE ITEM	CALENDAR 1952-1978	1979	1980	1981	1982	1983	1984	1985
							MISCELLANEOUS RECEIPTS AND		
	MISCELLANEOUS RECEIPTS								
40.	Federal Payments for Project Capital Expenditures	75,815	1,718	13	1	30,529	49,216	115,960	179,707
41.	Appropriations Prior to the Burns-Porter Act	98,975	0	0	0	0	0	0	0
42.	Appropriations for Capital Costs Allocated to Recreation	65,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
43.	Appropriations Under SB 261 (1968)	82,661	0	0	0	0	0	0	0
44.	City of Los Angeles Payments for Castaic Power Development	36,502	0	0	0	0	0	0	0
45.	Water Contractor Advances for Construction Requested Works	71,887	34	60	16	94	85	24	37
46.	Investment Earnings on Unexpended Miscellaneous Receipts	82,917	7,000	7,400	6,900	6,700	5,500	15,000	10,000
47.	TOTAL MISCELLANEOUS RECEIPTS	513,757	13,752	12,473	11,917	42,323	59,801	135,984	194,744
	PROJECT OPERATING REVENUES								
48.	Payments Under Oroville Power Sale Contract	157,887	16,150	16,150	16,150	16,150	32,883	20,031	20,032
49.	Payments Under Devil Canyon-Castaic Contract	48,480	9,677	9,677	9,677	9,677	10,577	10,572	10,562
50.	Payments Under Long-term Water Supply Contracts	825,514	126,355	144,368	163,938	194,693	242,222	281,636	375,819
51.	Federal Payments for Project Operating Costs	18,493	2,873	3,159	3,338	3,386	3,408	3,412	3,410
52.	Appropriations for Operating Costs Allocated to Recreation	12,466	2,753	3,146	3,154	3,204	3,500	4,416	4,342
53.	Payments Under Davis-Grunsky Loan Repayment Contracts	2,583	435	703	1,074	1,221	1,696	1,882	1,905
54.	Miscellaneous Revenues	132,608	19,287	19,135	54,187	69,091	105,603	38,365	97,699
55.	TOTAL PROJECT OPERATING REVENUES	1,198,031	177,530	196,338	251,518	297,422	399,889	360,314	513,769
56.	TOTAL MISCELLANEOUS RECEIPTS & PROJECT OPERATING REVENUES	1,711,788	191,282	208,811	263,435	339,745	459,690	496,298	708,513
							APPLICATION OF MISCELLANEOUS RECEIPTS		
57.	CARRYOVER (+) AND APPLICATION (-) OF RECEIPTS AND REVENUES HELD TEMPORARILY IN RESERVE	60,512	13,004	14,637	11,815	10,247	-56,869	-53,346	0
58.	PROJECT OPERATING COSTS	318,090	62,263	70,663	76,601	73,790	114,977	144,376	130,794
59.	DEPOSITS TO SPECIAL RESERVES UNDER REVENUE BOND FINANCING	62,058	17,582	8,993	24,486	27,292	88,869	12,685	43,036
	PAYMENTS OF BOND SERVICE:								
	Bonds Sold Through December 31, 1978:								
60.	Interest Payments	928,455	82,968	88,117	87,151	86,091	84,957	83,697	82,377
61.	Principal Repayments	53,328	15,465	17,965	20,070	21,380	23,665	25,105	26,050
	ASSUMED FUTURE BOND SALES:								
	Water Revenue and General Obligation Bonds:								
62.	Interest Payments	0	0	0	673	673	673	19,903	19,903
63.	Principal Repayments	0	0	0	0	0	0	0	0
	Power Revenue Bonds:								
64.	Interest Payments	0	0	8,436	27,997	40,098	52,757	52,557	84,081
65.	Principal Repayments	0	0	0	0	0	3,054	3,977	5,023
66.	TOTAL BOND INTEREST PAYMENTS	928,455	82,968	96,553	115,821	126,862	138,387	156,157	186,361
67.	TOTAL BOND PRINCIPAL REPAYMENTS	53,328	15,465	17,965	20,070	21,380	26,719	29,082	31,073
	REPAYMENT OF THE CALIFORNIA WATER FUND								
68.	Required for Construction	0	0	0	14,540	48,098	37,236	18,014	122,505
69.	Not Required for Construction	0	0	0	0	0	0	0	0
70.	APPLICATION OF MISCELLANEOUS RECEIPTS TO CONSTRUCTION	289,345	0	0	102	32,076	110,371	189,330	194,744
71.	SUBTOTAL, Repayment of Capital Financing	342,673	15,465	17,965	34,712	101,554	174,326	236,426	348,322
72.	RESERVATION FOR FUTURE CONSTRUCTION	0	0	0	0	0	0	0	0
73.	TOTAL APPLICATION OF MISCELLANEOUS RECEIPTS AND PROJECT OPERATING REVENUES	1,711,788	191,282	208,811	263,435	339,745	459,690	496,298	708,513

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YEARS										
1986	1987	1988	1989	1990	1991-2000	2001-2010	2011-2020	2021-2035	GRAND TOTAL	LINE NO.
PROJECT OPERATING REVENUES										
216,253	261,957	281,562	88,999	94,707	59,787	0	0	0	1,456,224	40.
0	0	0	0	0	0	0	0	0	98,975	41.
5,000	5,000	5,000	5,000	5,000	50,000	50,000	50,000	75,000	350,000	42.
0	0	0	0	0	0	0	0	0	82,661	43.
0	0	0	0	0	0	0	0	0	36,502	44.
0	0	0	0	0	0	0	0	0	72,237	45.
8,400	6,900	9,800	1,700	7,700	18,800	0	0	0	194,717	46.
229,653	273,857	296,362	95,699	107,407	128,587	50,000	50,000	75,000	2,291,316	47.
20,041	20,040	20,053	20,053	20,055	200,618	200,693	200,710	301,095	1,298,791	48.
10,554	10,546	10,540	10,528	10,522	104,578	105,303	108,210	31,502	521,182	49.
318,716	433,401	521,878	589,870	534,102	6,171,147	10,413,004	12,956,458	20,448,485	54,741,606	50.
4,821	5,329	5,317	7,769	7,741	75,242	73,989	73,991	111,000	406,678	51.
4,607	5,339	5,566	5,424	5,568	54,225	54,485	56,056	83,385	311,636	52.
1,924	1,985	2,012	2,027	1,986	19,180	18,936	9,589	5,917	75,055	53.
17,824	67,750	19,308	2,000	23,264	270,221	504,261	67,000	0	1,507,603	54.
378,487	544,390	584,674	637,671	603,238	6,895,211	11,370,671	13,472,014	20,981,384	58,862,551	55.
608,140	818,247	881,036	733,370	710,645	7,023,798	11,420,671	13,522,014	21,056,384	61,153,867	56.
AND PROJECT OPERATING REVENUE										
0	0	0	0	0	0	0	0	0	0	57.
135,182	123,646	80,966	100,472	113,165	1,329,955	1,524,996	1,913,261	3,254,243	9,567,440	58.
-36,834	10,715	18,401	1,097	22,364	201,969	157,298	10,645	0	670,656	59.
80,994	79,536	77,995	76,423	74,823	648,371	429,493	134,841	1,697	3,127,986	60.
27,505	29,365	30,845	32,435	33,915	412,720	577,875	579,207	27,265	1,954,160	61.
32,595	44,903	58,365	58,365	84,129	1,341,014	1,698,038	2,339,742	1,419,574	7,118,550	62.
0	0	0	0	625	56,512	343,545	1,105,664	2,662,079	4,168,425	63.
83,754	108,107	107,478	106,158	104,752	1,000,036	1,389,705	871,754	503,986	4,541,656	64.
5,350	9,676	20,301	21,621	23,027	331,050	726,351	882,098	925,222	2,956,750	65.
197,343	232,546	243,838	240,946	263,704	2,989,421	3,517,236	3,346,337	1,925,257	14,788,192	66.
32,855	39,041	51,146	54,056	57,567	800,282	1,647,771	2,566,969	3,614,566	9,079,335	67.
49,941	138,442	190,323	241,100	146,438	1,573,584	3,266,844	3,550,944	804,705	10,202,714	68.
0	0	0	0	0	0	1,256,526	755,244	0	2,011,770	69.
229,653	273,857	296,362	95,699	107,407	128,587	50,000	50,000	0	2,047,533	70.
312,449	451,340	537,831	390,855	311,412	2,502,453	6,221,141	6,923,157	4,419,271	23,341,352	71.
0	0	0	0	0	0	0	1,328,614	11,457,613	12,786,227	72.
608,140	818,247	881,036	733,370	710,645	7,023,798	11,420,671	13,522,014	21,056,384	61,153,867	73.

- Changes in contractors' entitlements due to changing needs.

Furthermore, the outcome of certain lawsuits now pending before the courts (see Chapter I) could affect SWP capital expenditures or anticipated SWP revenues.

With regard to the first contingency listed above, developments during the latter part of 1979 indicate that the United States' position is that they do not need to participate in the Peripheral Canal in order to meet water quality requirements in the Delta. If the canal is built without financial participation by the United States, the need for supplemental financing would increase during the period 1982 through 1998.

Project Construction Expenditures

Actual and projected construction expenditures for each construction division of the SWP are shown in Table 8, together with a preliminary allocation of such total expenditures among SWP purposes. A generalized construction schedule for the contracts in progress and future contracts is shown in Figure 10.

Described in the following sections are the Department's current assumptions concerning the costs of each facility of the future construction program, as set forth in Table 7. As to any project not yet constructed, a decision to proceed will be made only after examination of all alternatives and completion of a final environmental impact report and other review processes.

Lines 1 through 21 show costs based on prices and salaries prevailing on December 31, 1978. The portion of cost attributed to escalation is shown in Line 22.

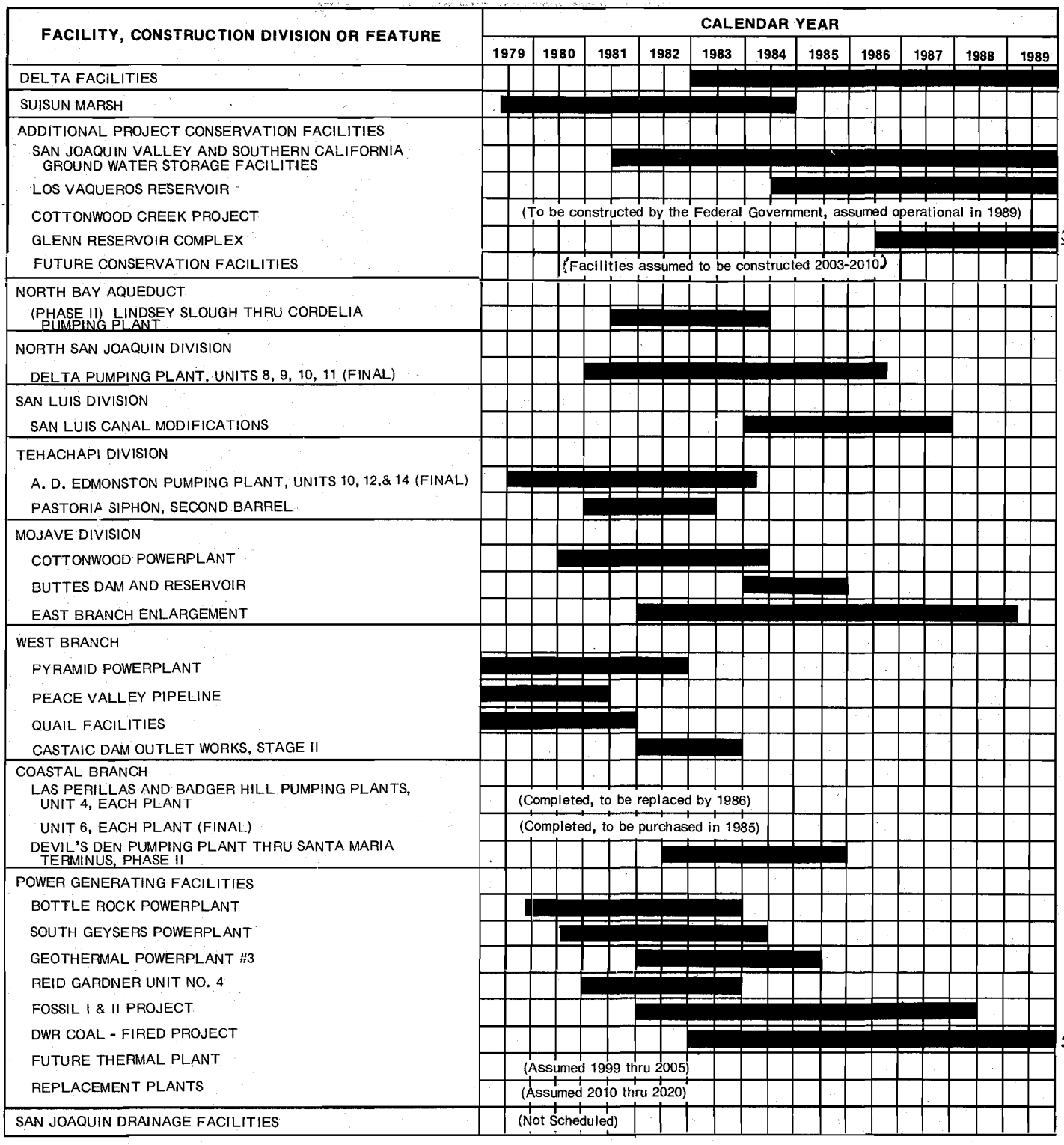
Line 1: Initial Project Facilities. This is the cost of the facilities included in the initial construction program concluded in 1973 (see Chapter II, Bulletin 132-74). Additional costs after 1973 and estimated costs of remaining work on the initial SWP facilities are included in Lines 15 and 17, "California Aqueduct, General Costs" and "Miscellaneous Project Costs".

Line 2: Abbey Bridge and Dixie Refuge Dams and Reservoirs. Beginning in Bulletin 132-76, the Department assumed these reservoirs to be postponed indefinitely until there is local support and demonstrated need for them.

Line 3: Phase II of the North Bay Aqueduct. The assumed schedule is for Phase II to be operational in 1984. The Solano and Napa County Flood Control and Water Conservation Districts and the Department are proceeding with discussions and negotiations regarding the construction of Phase II and the Department has started the environmental documentation process.

Line 4: Delta Facilities. As a result of the Delta Alternative Review study the Department has recommended the Peripheral Canal as the Delta Transfer Facility. The expenditures shown in this line assume that Stage 1 and Stage 2 would be operational in 1987 and Stage 3 operational in 1991. This timing was based on the assumption that a decision to proceed with the Peripheral Canal will be made by the end of 1979 and would be the earliest date at which the State would be able to develop a water supply from this facility. Under dry or critically dry conditions, the State will not be able to meet the contractors' entitlement water requirements after 1981, unless the projected requirements are reduced by increased water conservation and/or use of reclaimed water.

Figure 10: GENERALIZED CONSTRUCTION SCHEDULE



1/ Assumed to extend thru 1994.
2/ Assumed to extend thru 1991.
3/ Construction of Initial Stage Facilities assumed to extend thru 1994.
4/ Assumed to extend thru mid 1990.

TABLE 8: PROJECT CAPITAL EXPENDITURES

(in thousands of dollars)

FACILITIES AND CONSTRUCTION DIVISIONS	INCURRED THRU 1978	FUTURE EXPENDI-TURES	TOTAL	PRELIMINARY ALLOCATIONS AMONG PROJECT PURPOSES			
				Water Supply and Power Generation	Flood Control (a	Recreation and Fish and Wildlife Enhancement	Other (b
PROJECT CONSTRUCTION REQUIREMENTS							
Feather River Facilities:							
Upper Feather Division	14,518	153	14,671	1,299	0	13,372	0
Oroville Division	530,690	3,478	534,168	451,532	70,497	12,139	0
North Bay Aqueduct	4,801	34,599	39,400	39,400	0	0	0
Delta Facilities	44,242	1,073,745	1,117,987	519,662	0	84,403	513,922
South Bay Aqueduct	70,223	195	70,418	49,743	7,169	13,482	24
California Aqueduct:							
North San Joaquin Division	157,472	42,566	200,038	193,220	0	6,818	0
San Luis Division	176,927	45,562	222,489	214,217	0	8,063	209
South San Joaquin Division	266,686	2,067	268,753	260,663	0	8,090	0
Tehachapi Division	264,583	52,579	317,162	307,655	0	9,507	0
Mojave Division	220,824	299,641	520,465	511,485	0	8,980	0
Santa Ana Division	189,682	4,667	194,349	183,787	0	10,562	0
West Branch	384,128	116,190	500,318	482,177	0	17,831	310
Coastal Branch	16,072	172,278	188,350	188,245	0	0	105
Subtotal	1,676,374	735,550	2,411,924	2,341,449	0	69,851	624
Additional Conservation Facilities	8,490	12,263,988	12,272,478	11,009,809	0	407,640	855,029
San Joaquin Drainage Facilities	8,787	882	9,669	0	0	0	9,669
Unassigned	9,876	3,161	13,037	0	0	0	13,037
Subtotal	2,368,001	14,115,751	16,483,752	14,412,894	77,666	600,887	1,392,305
OTHER CAPITAL REQUIREMENTS							
Power Generating Facilities	0	5,539,468	5,539,468	5,539,468	0	0	0
Davis-Grunsky Act Program	108,147	21,853	130,000	0	0	0	130,000
TOTAL	2,476,148	19,677,072	22,153,220	19,952,362	77,666	600,887	1,522,305

a) Reflects Department's allocation to this purpose, irrespective of federal payments.
b) Includes costs currently unassigned to purpose, planning costs of deleted features of project facilities, initial costs of inventoried items, joint costs assigned to the Federal Government, and costs assigned to the Davis-Grunsky Act Program.

Line 5: California Aqueduct, Final Four Units at Delta Pumping Plant. Two of these 30.2 cubic-metre-per-second (1,067-cubic-feet-per-second) units would be operational in 1985 and the remaining two in 1986. Installation and operation of these units is subject to the permit authority of the Corps of Engineers after compliance with the National Environmental Policy Act and the California Environmental Quality Act.

Line 6: California Aqueduct, San Luis Canal Modification. These modifications would be required to maintain and, eventually, to augment the present conveyance capacity between Dos Amigos Pumping Plant and Kettleman City. Measures to compensate for subsidence along the canal would cost about $8.6 million (State share) between 1981 and 1985. Also included is $22.6 million ($35.5 million, including escalation allowance) between 1983 and 1988 for increasing the State's share of conveyance capacity by about 28.3 cubic metres per second (1,000 cubic feet per second). This increase would be required to meet the contracted delivery commitments, which were increased after 1959 when design capacities were established for these reaches of the aqueduct.

Line 7: California Aqueduct, Final Three Units at A. D. Edmonston (Tehachapi) Pumping Plant. The assumed schedule is for these 8.9-cubic-metre-per-second (315-cubic-feet-per-second) units to be operational in 1983.

Line 8: California Aqueduct, Staged Units and Pipelines South of A. D. Edmonston (Tehachapi) Pumping Plant. Additional capacity would be installed as needed to convey growing SWP water deliveries through the existing first stage and includes the second barrel of Pastoria Creek Siphon (to be completed in 1982) and Castaic Dam and Outlet Works, Second Stage (to be completed in 1984).

Line 9: California Aqueduct, Buttes Dam and Reservoir. The assumptions are that this off-aqueduct reservoir would be operational by 1986 to regulate project water deliveries to Antelope Valley-East Kern Water Agency. Under the Agency's water supply contract, construction of the facility by the State is conditioned on engineering and financial feasibility.

Line 10: California Aqueduct, Final Three Units at Both Las Perillas and Badger Hill Pumping Plant. These 3.2-cubic-metre-per-second (112-cubic-feet-per-second) units were installed by the Berrenda Mesa Water District in 1971, at the District's expense, under special agreement with the Department. Units No. 5 and the second discharge line at Badger Hill were purchased, at depreciated value, in January 1977. The assumptions are that the Department would replace Units No. 4 by January 1986 and Units No. 6 would be purchased at depreciated values in January 1985.

Line 11: California Aqueduct, Peace Valley Pipeline and Pyramid Powerplant. The costs shown in this line are for the first stage of the pipeline and power plant complex which is scheduled to be operational in 1982. For a description of the facilities see Chapter I, Future Southern California Recovery Plants. These costs are not equivalent to the Pyramid Hydroelectric Project which the Department intends to finance by the issuance of revenue bonds. The Pyramid Hydroelectric Project consists of the portion of facilities from and including Quail Lake through Pyramid Powerplant allocable to power generation.

Line 12: California Aqueduct, Cottonwood Powerplant. This proposed power recovery plant on the East Branch is scheduled for operation in 1984. For a description of the facilities see Chapter I, Future Southern California Recovery Plants. Bulletin 132-78 assumed this power plant would be operational by

1982; however, the schedule has been delayed to allow for time to reach agreement between the Department and the affected contractors on the capacity of the enlargement of the California Aqueduct, Mojave Division. While the contractors have not agreed on the size of the aqueduct enlargement, they have agreed that sufficient capacity should be provided through the power plant so that the aqueduct could be enlarged to the maximum feasible capacity.

Line 13: California Aqueduct, Phase II of the Coastal Branch. Phase II construction of the Coastal Branch would include and extend from the proposed Devil's Den Pumping Plant to a terminus on the Santa Maria River for water service to San Luis Obispo and Santa Barbara County Flood Control and Water Conservation Districts. For purposes of this analysis, Phase II is assumed to be operational in 1986. The construction of this facility is dependent upon the election of options available to the two contractors, and it appears the facility may not be built to the size assumed herein. (See Chapter I, "Future Construction of the Coastal Branch, California Aqueduct" for further discussion.)

Line 14: Enlargement of California Aqueduct, Mojave Division. One of the recommendations of the Delta Alternative Review was to enlarge the California Aqueduct between the Cottonwood Powerplant and Devil Canyon Powerplant afterbay, exclusive of the San Bernardino Tunnel. This is to provide enough capacity to transport both increased amounts of entitlement water for The Metropolitan Water District of Southern California and water for ground water storage in Southern California ground water basins. The analysis assumes the enlargement will be completed in 1988. (It should be noted that the operation studies which determined projected energy requirements for this analysis do not reflect this potential enlargement.)

Line 15: California Aqueduct, General Costs. These expenditures cover such items as general design and construction costs, completion of operation and maintenance facilities, and other completion activities for initial SWP facilities of the California Aqueduct. Portions of these costs would be allocated to the aqueduct units described in the preceding paragraphs.

Line 16: Subtotal, California Aqueduct. The total of Lines 5 through 15.

Line 17: Miscellaneous Project Costs. These expenditures cover such items as the completion of monitor and control systems and other completion activities for SWP facilities other than the California Aqueduct.

Line 18: Additional Conservation Facilities. The increasing water delivery commitments are rapidly approaching the dependable water supply provided by Lake Oroville and San Luis Reservoir. As discussed in Chapter I, the Delta Alternatives Review recommended future actions which will include the construction of certain water storage facilities and ground water storage operations to meet projected water needs to year 2000. Line 18 includes construction and capitalized costs for ground water storage, Los Vaqueros Reservoir, the Glenn Reservoir Complex, Stage I, and future water supply planning costs. The above mentioned facilities, ground water storage operations and the federal Cottonwood Creek Project (Line 25) would provide enough storage to meet projected demands through the year 2000, provided the SWP contractors meet future water conservation and waste water reclamation goals.

The financial analysis in this Bulletin continues last year's assumption of 25 percent State and 75 percent federal sharing of the Los Vaqueros Reservoir costs. However, it is assumed that the Glenn Reservoir will be a State-only facility. The construction costs shown in

this line assume construction of a first stage of the Glenn Reservoir with completion in 1993. An unspecified future conservation facility, which could be a second stage Glenn Reservoir or an enlarged Shasta Reservoir, is assumed to be operational by year 2009 and will furnish the yield required to meet the current total of maximum entitlements of SWP water contractors.

The timing and sizing of the future facilities depends upon several contingencies which include:

- Legislative approval, to the extent necessary, of the facilities included in SB 200.
- Federal participation in facilities that are to be joint SWP-CVP facilities.
- Increased water conservation by water users and increased waste water reclamation.
- Changes in the projected water demands due to changing needs.

Line 19: Power Generating Facilities. The Department's Long Range Energy Program includes developing and constructing SWP-owned generating plants. This portion of the program is described in Chapter II of this Bulletin under the "Long Range Energy Program" section.

For the first time in the Bulletin 132 series the costs for these SWP-owned plants are included as capital expenditures in the financial analysis. The plants included in this line and their respective assumed costs are shown below. The current assumptions are that the thermal-electric plants will only have a 30-year economic life and will require replacement before 2035. These assumptions will be reviewed for Bulletin 132-80.

Facility	Construction Cost ($ million)	Escalation Allowance ($ million)	Total Cost ($ million)
Bottle Rock	24.7	3.1	27.8
South Geysers	23.7	4.3	28.0
3rd Geothermal	27.3	6.6	33.9
Reid Gardner	141.0	41.3	182.3
Fossil I & II	143.5	105.6	249.1
DWR Coal	336.8	302.7	639.5
Future Thermal	143.6	760.0	903.6
replacements			
Bottle Rock	23.7	127.6	151.3
South Geysers	23.7	127.6	151.3
3rd Geothermal	23.7	127.6	151.3
Fossil I & II	143.5	772.3	915.8
DWR Coal	329.8	1,775.8	2,105.6
Total	1,385.0	4,154.5	5,539.5

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Line 20: San Joaquin Drainage Facilities. Included are the costs of (1) monitoring the quality of subsurface agricultural waste waters in the San Joaquin Valley; (2) studies on treatment of agricultural waste waters for reuse, management, and disposal in support of San Joaquin Valley Interagency Drainage Program; and (3) the Department's share of the costs for the Interagency Drainage Program involving the Department, the State Water Resources Control Board, and the U. S. Bureau of Reclamation. These items are scheduled for completion during 1979.

The amounts for 1980 through 1985 are assumed for continuing work on the San Joaquin Master Drain Program.

Line 21: Subtotal: Project Construction Expenditures. The total of Lines 1 through 20.

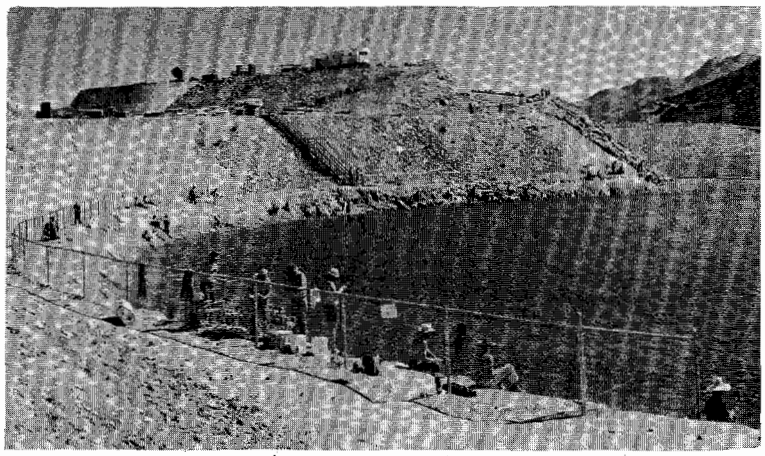
Line 22: Cost Escalation Allowance. Estimates of future construction expenditures shown in Lines 1 through 20 are based on prices and salaries prevailing on December 31, 1978. The amounts in Line 22 are the estimated cost increases that could be expected to occur due to escalation. The following assumed percentages were applied to allow for escalation:

Year	Percent Increase Per Annum	
	State Salaries	Construction Prices
1979 thru 2000	7	9 1/
After 2000	0	0

Land acquisition costs are assumed to escalate 10 percent per annum.

These escalation rates assume that the high inflation rates experienced in the last few years will continue until year 2000. The Department does not predict that inflation will cease after 2000; however, the Department recognizes that there is little, if any, value in extrapolating these rates any further into the future.

Line 23: Total Project Construction Expenditures. The total of Lines 21 and 22.



Anglers from the bank of Silverwood Lake.

1/ The effect of escalation can be illustrated by applying the 9 percent rate to commonly purchased items. For example, a $6,000 automobile and a $100,000 house in 1979 would escalate to almost $36,000 and $610,000 respectively, by the year 2000.

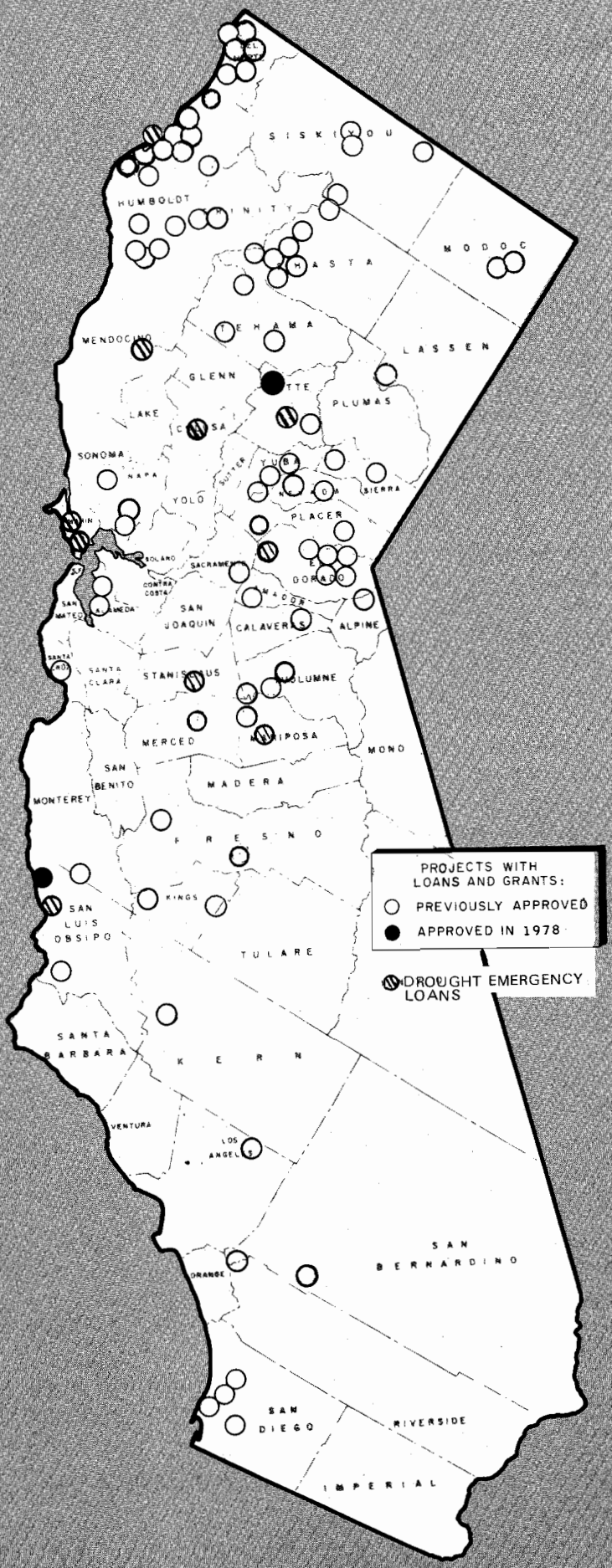


Figure 11: LOCAL PROJECTS UNDER THE DAVIS-GRUNSKY ACT PROGRAM

Other Capital Requirements

In addition to construction expenditures, capital requirements of the SWP include the items discussed in the following paragraphs:

Line 24: Davis-Grunsky Act Program. This state financial assistance program for water developments constructed by local public agencies is authorized by the Burns-Porter Act which provided $130 million in capital financing. These expenditures include disbursements for approved loans and grants and the Department's administrative costs incurred while the developments are under construction. (Administrative costs following construction are funded by SWP revenues.)

As of December 31, 1978, the Department and the California Water Commission had approved more than $106.1 million in grants and loans for 88 local agencies located throughout the State, as indicated on Figure 11. New loan and grant applications were approved during 1978 for the following agencies:

- $193,000 drought emergency loan to Redwood Valley County Water District, Mendocino County.
- $97,940 amendment to drought emergency loan to Denair Community Services District, Stanislaus County.

- $235,000 amendment to a construction loan for Lime Saddle Community Services District, Butte County.

One previously approved loan for $3,122,000 to Cambria County Water District, San Luis Obispo County, was cancelled at the request of the District.

Of the total approved applications over $43.9 million (41 percent) were for loans and the remaining $62.2 million (59 percent) were for grants.

The Department estimates that funds presently authorized for the program would be disbursed by 1983.

Line 25: Additional Conservation Facilities-Storage Payments. In addition to the additional conservation facility construction shown in Line 18, the Department assumes the State will purchase water storage rights in the future federal Cottonwood Creek Project. The storage rights would be purchased under a federal Water Supply Act of 1958 contract, in which annual payments of principal and interest would be made to the federal government. Line 25 is an estimate of the annual payments.

Line 26: Special Capital Requirements Under Revenue Bond Financing. The authority under which revenue bonds are sold provide that proceeds may also fund interest and operation of the financed facilities through one year following completion of construction.

The analysis assumes that power facility bond proceeds will pay bond interest and operating costs through one year following completion of construction. The revenue bonds for facilities other than power generating facilities (hereafter termed water revenue bonds) include proceeds for one year's bond interest and the first year's operation cost. Application of proceeds to these special requirements is shown below for actual and assumed revenue bond sales.

Application of Revenue Bond Proceeds	Oroville (actual)	Devil Canyon-Castaic (actual)	Supplemental Water (assumed)	Supplemental Power (assumed)
	(in millions)			
Construction Expenditures	$218.0	$127.1	$3,629.5	$2,166.7
Plus, Other capital requirements:				
Reimbursement of General Fund	$ 2.6	$ 0.0	$ 0.0	$ 0.0
Bond interest through one year following completion of construction	19.9	10.0	279.2	706.6
Operating costs for one year following completion of construction	1.5	0.7	39.8	38.1
Bond discount	3.0	1.4	39.9	45.4
Subtotal	$ 27.0	$ 12.1	$ 358.9	$ 790.1
TOTAL, Principal amount of bonds	$245.0	$139.2	$3,988.4	$2,956.8

Line 27: Total Other Capital Requirements. The total of Lines 24, 25, and 26.

Line 28: Total Capital Requirements. The total of Lines 23 and 27.

Located in Humboldt County, north of Eureka; is the City of Trinidad's Water Treatment Facility, funded thru a Davis-Grunsky Loan.

Financing of Capital Expenditures

Three general types of financing have been used for the SWP:

- Burns-Porter financing, derived from the sale of California Water Resources Development Bonds (Water Bonds) and a portion of the State's tideland oil and gas revenues that are deposited in the California Water Fund as authorized by the Burns-Porter Act (California Water Code Sections 12920-12944), approved by the electorate in 1960.

- Revenue Bond Financing, derived from the sale of revenue bonds as authorized by the Central Valley Project Act (California Water Code Sections 11100-11925). The Department's authority to issue revenue bonds was confirmed by a decision of the Supreme Court of California in 1963 (Warne v. Harkness 60 Cal., 2d 579).

- Miscellaneous Receipts, derived from payments and appropriations (including certain additional tideland oil and gas revenues) as authorized by a variety of special contracts, cost-sharing agreements, and legislative actions concerning the State Water Project.

To date, Water Bonds have financed most of the construction costs of the Project. The Burns-Porter Act authorized an issue of $1.75 billion of general obligation

bonds of the State, which are made self-supporting by revenues received under the water supply contracts. This authorization includes a reservation of $130 million specifically for the Davis-Grunsky Act Program. Proceeds from the sale of Water Bonds are deposited in the California Water Resources Development Bond Fund-Bond Proceeds Account, from which monies may be expended only for the construction of SWP facilities and for the Davis-Grunsky Act Program.

Monies deposited in the California Water Fund are appropriated for purposes of the Burns-Porter Act. Such deposits are derived from a portion of the State's tideland oil and gas revenues under a continuing authorization.

In the past, the Legislature has acted both to decrease and increase the level of deposits. Money may be expended from the Fund only for the construction of SWP facilities and for the Davis-Grunsky Act Program.

About $384 million of revenue bonds had been sold by the Department as of December 31, 1978 -- no additional revenue bonds were sold during 1978.

Future issues of revenue bonds are planned to supplement SWP financing. Proceeds from the sale of revenue bonds are deposited in the Central Valley Water Project Construction Fund, from which money is expended only for purposes specified in the resolution authorizing such sale. These purposes, in addition to construction, planning, and right of way costs, may include the payment of (1) bond interest during the construction period, and for one year following completion of construction, and (2) operating costs during a period of one year after completion of construction.

Miscellaneous receipts are deposited in the Central Valley Water Project Construction Fund and may be expended for (1) Water Bond interest and (2) construction of SWP facilities. Under the Department's financial management, miscellaneous receipts are first used to the extent needed for coverage of any Water Bond interest which exceeds available revenues.

Described below is the application of funds to capital expenditures under the financial analysis:

Line 29: Application of California Water Fund Monies. The Burns-Porter Act provides that any available money in the California Water Fund shall be used for construction in lieu of proceeds from the sale of Water Bonds. When the Act became effective in late 1960, approximately $97 million had been accumulated in the Fund. This balance and continuing annual appropriations to the Fund through June 28, 1968, financed a total of $176 million of project construction costs. On June 28, 1968, SB 261 became effective (California Statutes of 1968, Chapter 411), which transferred the remaining balance to the Central Valley Water Project Construction Fund and deferred accruals to the California Water Fund until July 1, 1972. Since the latter date, appropriations again are being deposited in the California Water Fund in annual amounts of $25 million.

The projected use of appropriations to the California Water Fund is shown in the financial analysis only to the extent required under current estimates of future construction expenditures. However, the Department expects that appropriations to the Fund would continue indefinitely in the full annual amounts now provided for by law. The Department also expects that repayments to the California Water Fund, to be derived from SWP revenues in excess of operating costs and Water Bond debt service, would be available for financing future capital expenditures (see Line 68) -- particularly, the long-range costs of additional conservation facilities and San Joaquin Drainage Facilities.

Under present California law, the State's annual tideland revenues are allocated as follows: approximately $4 million to the General Fund; $25 million to the California Water Fund; $5 million to the Central Valley Water Project Construction Fund; and the remainder to capital outlay for higher education.

The financial analysis indicates that full annual appropriations of tideland revenues to the California Water Fund (and short-term interest earnings thereon, amounting to an estimated $0.75 million annually) would be required for financing construction expenditures through 2008. Commencing in 1981, annual repayments to the Fund (see Line 68, Spread 2), would supplement annual appropriations. After 2008, all future financing could be provided by such repayments.

In regard to the above assumption, it should be pointed out that the $25 million may not always be available. During legislative hearings on SB 346 in 1977, the State Lands Commission testified that with the current federal oil and gas pricing regulations, revenue available to the California Water Fund would decline after 1985 and be virtually nonexistent after 1990. If this were to occur, an estimated additional $500 million in supplemental revenue bond financing would be needed to finance the capital expenditures shown in this analysis.

Finally, it is emphasized that the projected use of the California Water Fund is based on current estimates and assumptions as to the timing and magnitude of future capital costs. Such costs could change significantly with future events, especially in regard to the nature and timing of additional conservation facilities and San Joaquin Drainage Facilities.

Line 30: Application of Proceeds From Sale of Oroville Revenue Bonds. All proceeds from sale of Oroville Revenue Bonds in April 1968 (Series A) and in April 1969 (Series B) had been applied as of December 31, 1973.

Line 31: Application of Proceeds From Sale of Devil Canyon-Castaic Revenue Bonds. Construction funds provided by the sale of Devil Canyon-Castaic Revenue Bonds, in August 1972, included (1) $98.9 million which reimbursed other project funds used to finance construction of the Devil Canyon and Castaic Facilities prior to the delivery of the bonds; and (2) $28.2 million which was reserved to complete construction of the Facilities. Shown in Line 31 is the projected use of the remaining reimbursement funds ($45.7 million) and of remaining funds reserved for future completion of the Facilities ($3.5 million).

Line 32: Application of Proceeds From Sale of Supplemental Water Revenue Bonds. As previously indicated in the description of Line 26, future water revenue bond issues are assumed to provide nearly $3.99 billion for application to the construction expenditures and other special capital requirements under revenue bond financing. This is, in effect, the supplemental amount necessary to complete the State Water Project as now contemplated. Future developments could reduce or increase this amount. It should also be noted that the assumptions regarding staging of the additional conservation facilities and cost escalation can have a significant effect on the need for supplemental water revenue bonds.

Line 33: Application of Proceeds From Sale of Supplemental Power Revenue Bonds. Future power revenue bond issues are assumed to provide nearly $2.96 billion for construction of power generating facilities and other special capital requirements under revenue bond

financing. These facilities include those listed on Line 19 (excluding the replacement plants) and Pyramid and Cottonwood Power Plants. The financial analysis assumes the replacement plants could be financed from repayments to the California Water Fund.

Line 34: Application of Proceeds From Sale of Water Bonds, Davis-Grunsky Act Program. For simplification, the $130 million of capital expenditures authorized for the Davis-Grunsky Act Program under the Burns-Porter Act are shown to be funded solely by proceeds from the sale of Water Bonds. Actually, $28.0 million of the California Water Fund was used for the Program in lieu of bond proceeds prior to 1969. This simplification does not in any way affect the validity of the analysis.

Line 35: Application of Proceeds From Sale of Water Bonds, Additional Conservation Facilities. The Burns-Porter Act provides that to the extent California Water Fund monies are expended, an equal amount of proceeds from the sale of Water Bonds is reserved ("offset") for financing the construction of certain additional conservation facilities to be located in either the North Coastal area or the Sacramento Valley or both. In mid-1972, the maximum reservation of "offset" bonds was effectively limited to $176 million -- the total amount of California Water Fund monies which had been expended up to that time. By mid-1972, all remaining Water Bond proceeds from the Burns-Porter authorization had either been "offset" or reserved for the Davis-Grunsky Act Program.

Approximately $8.5 million of the "offset" bonds have been used to finance planning studies of the Eel River Development. In the analysis, the offset bonds were assumed for the construction of the Glenn Reservoir Complex.

Line 36: Application of Proceeds From Sale of Water Bonds, Initial Project Facilities. Financing of initial facilities from water bonds was completed in mid-1972, and amounted to $1.444 billion -- i.e., the total of $1.75 billion Burns-Porter authorization less $130 million reserved for the Davis-Grunsky Program and $176 million "offset" for additional conservation facilities.

Line 37: Total Application of Proceeds From Sale of Bonds. The total of Lines 30 through 36. See Table 9 and 9A for a summary of actual and projected bond sales.

Line 38: Application of Miscellaneous Receipts to Construction. This line matches Line 70 and illustrates the use of Miscellaneous Receipts for capital expenditures.

Line 39: Total Financing of Capital Requirements. This line -- the total of Lines 29, 37 and 38 -- matches Line 28 and confirms that all estimated capital expenditures would be funded under the analysis.

Miscellaneous Receipts

Sources of Miscellaneous Receipts are described in the following paragraphs:

Line 40: Federal Payments for SWP Capital Expenditures. The federal share of the State's capital expenditures includes payments for (1) "open-space" grants at certain project reservoirs, (2) costs of Lakes Oroville and Del Valle allocated to flood control under existing agreements, and under current expectations, (3) a share of the State's construction costs of the Delta Facilities and Los Vaqueros Reservoir under future agreements. In the analysis, only the State's share of costs is included for works constructed by the

TABLE 9: ACTUAL BOND SALES AND PROJECT INTEREST RATES

Bond Sales	Date of Sale	Dollar-years (a	Interest Cost (b	Percent Interest Cost (c	Project Interest Rate (d
	(1)	(2)	(3)	(4)	(5)
Actual Issues					
$50,000,000 Bond Anticipation Notes	11/21/63	26,944	531	1.970	1.970
$100,000,000 Series "A" Water Bonds	2/18/64	3,402,000	119,750	3.520	3.508
$50,000,000 Series "B" Water Bonds	5/ 5/64	1,726,000	60,986	3.533	3.516
$100,000,000 Series "C" Water Bonds	10/ 7/64	3,452,000	123,764	3.585	3.544
$100,000,000 Series "D" Water Bonds	2/16/65	3,497,900	122,403	3.499	3.531
$100,000,000 Series "E" Water Bonds	11/23/65	3,497,900	130,029	3.717	3.573
$100,000,000 Series "F" Water Bonds	6/ 8/66	3,497,900	137,359	3.927	3.638
$100,000,000 Series "G" Water Bonds	11/22/66	3,497,900	143,788	4.111	3.711
$100,000,000 Series "H" Water Bonds	3/21/67	3,497,900	129,261	3.695	3.709
$100,000,000 Series "J" Water Bonds	7/18/67	3,497,900	143,199	4.094	3.754
$100,000,000 Series "K" Water Bonds	11/14/67	3,497,900	163,887	4.685	3.853
$150,000,000 Revenue Bonds, Oroville Division, Series "A"	4/ 3/68	5,228,700	270,289	5.197	-
$100,000,000 Series "L" Water Bonds	7/11/68	3,497,900	166,918	4.772	3.941
$100,000,000 Series "M" Water Bonds	10/22/68	3,497,900	169,989	4.860	4.021
$94,995,000 Revenue Bonds, Oroville Division, Series "B"	4/ 1/69	3,423,460	195,902	5.767	-
$46,761,000 Cumulative 1970 General Fund Borrowing; repaid 7/10/70	-	4,938	346	7.007	4.021
$200,000,000 Series "N" and "P" Bond Anticipation Notes	6/16/70	200,000	11,660	5.830	4.030
$100,000,000 Series "N" Water Bonds	2/ 2/71	3,447,900	190,292	5.519	4.148
$100,000,000 Series "Q" Bond Anticipation Notes	3/10/71	100,000	2,349	2.350	4.143
$100,000,000 Series "P" Water Bonds	4/21/71	3,397,900	193,377	5.691	4.255
$150,000,000 Series "Q" and "R" Water Bonds	11/ 9/71	5,171,850	265,734	5.138	4.342
$40,000,000 Series "S" Water Bonds	3/28/72	1,399,160	76,509	5.468	4.371
$139,165,000 Devil Canyon-Castaic Revenue Bonds (e	8/ 8/72	4,776,204	258,839	5.419	4.457
$10,000,000 Series "T" Water Bonds	3/20/73	185,265	9,491	5.122	4.459
$10,000,000 Series "U" Water Bonds	1/13/76	158,750	8,731	5.50	4.462
$10,000,000 Series "V" Water Bonds	11/15/77	158,750	7,573	4.769	4.462
TOTAL (Excluding Oroville CVP Revenue Bonds)		59,088,761	2,636,765		

a) A unit equivalent to one dollar of principal amount outstanding for one year, in thousands.
b) In thousands of dollars.
c) The total interest cost (without regard to premiums received) divided by the total dollar-years, expressed as a percent.
d) Determined by dividing cumulative interest costs by cumulative dollar-years, expressed as a percent. Excluding Central Valley Project Revenue Bonds, Oroville Division, which do not affect the calculation of the "project interest rate".
e) Bonds sold at a net interest cost of 5.446 percent. Net proceeds for financing construction costs plus bond discount amounting to $126,893,000 are used for purposes of the project interest rate.

TABLE 9-A: PROJECTED BOND SALES AND PROJECT INTEREST RATES

Bond Sales	Discounted Values (a	Date of Sale	Dollar-years (b	Interest Cost (c	Percent Interest Cost (d	Project Interest Rate (e (f
	(1)	(2)	(3)	(4)	(5)	(6)
$89,764,000 Supplemental Power Revenue Bond	$ 89,764,000	10/79	3,373,719	227,726	6.75	4.565
$36,547,000 Supplemental Power Revenue Bond	33,529,000	1/80	838,907	54,529	6.50	
$12,248,000 Series "W" Water Bond	11,237,000	7/80	194,437	10,694	5.50	
$38,500,000 Supplemental Power Revenue Bond	35,321,000	11/80	1,108,000	72,020	6.50	4.615
$227,228,000 Supplemental Power Revenue Bond	191,253,000	1/81	4,989,308	324,305	6.50	
$35,222,000 Supplemental Power Revenue Bond	29,646,000	7/81	808,923	52,580	6.50	4.745
$143,126,000 Supplemental Power Revenue Bond	110,520,000	1/82	3,572,369	232,204	6.50	
$43,053,000 Supplemental Power Revenue Bond	33,245,000	7/82	988,246	64,236	6.50	4.818
$194,761,000 Supplemental Power Revenue Bond	137,974,000	1/83	4,861,277	315,983	6.50	
$274,725,000 Supplemental Water Revenue Bond	194,622,000	12/83	8,491,571	594,410	7.00	5.087
$200,277,000 Supplemental Power Revenue Bond	130,166,000	12/84	4,397,631	285,846	6.50	5.147
$288,654,000 Supplemental Power Revenue Bond	172,115,000	1/85	6,627,508	430,788	6.50	
$181,319,000 Supplemental Water Revenue Bond	108,115,000	7/85	5,485,014	383,951	7.00	5.314
$175,824,000 Supplement Water Revenue Bond	96,182,000	7/86	5,318,857	372,320	7.00	5.396
$380,048,000 Supplement Power Revenue Bond	190,733,000	1/87	7,965,446	517,754	6.50	5.465
$192,308,000 Supplement Water Revenue Bond	88,544,000	1/88	5,818,086	407,266	7.00	5.541
$167,752,000 Series "X" Water Bond (Offset)	70,860,000	1/89	4,881,182	268,465	5.50	5.539
$236,264,000 Supplemental Water Revenue Bond	91,560,000	1/90	7,146,871	500,281	7.00	5.617
$450,549,000 Supplemental Water Revenue Bond	160,186,000	7/91	13,629,629	954,074	7.00	5.744
$398,104,000 Supplemental Water Revenue Bond	129,853,000	7/92	12,042,843	842,999	7.00	5.838
$409,976,000 Supplemental Power Revenue Bond	73,152,000	1/99	10,642,385	691,755	6.50	5.866
$472,462,000 Supplement Power Revenue Bond	77,341,000	7/2001	10,847,169	705,066	6.50	5.898
$397,132,000 Supplement Power Revenue Bond	65,010,000	1/2003	8,720,985	566,864	6.50	5.923
$299,673,000 Supplemental Water Revenue Bond	49,056,000	7/2006	5,732,057	401,244	7.00	5.940
$788,792,000 Supplemental Water Revenue Bond	129,124,000	7/2007	15,087,729	1,056,141	7.00	6.018
$990,867,000 Supplemental Water Revenue Bond	162,203,000	7/2008	18,952,829	1,326,698	7.00	6.101

a) Amounts shown represent the discounted value of the bond from the year of sale to 1979 at the assumed escalation rate of 9 percent until the year 2000.
b) A unit equivalent to one dollar of principal amount outstanding for one year, in thousands.
c) In thousands of dollars.
d) The total interest cost (without regard to premiums received) divided by the total dollar-years, expressed as a percent.
e) Determined by dividing cumulative interest costs by cumulative dollar-years, expressed as a percent. Excluding Central Valley Project Revenue Bonds, Oroville Division, which do not affect the calculation of the "project interest rate".
f) Net proceeds for financing construction costs plus bond discount are used for purposes of the project interest rate.

United States, such as the San Luis joint-use facilities.

About $1.6 million in federal payments has been received for acquisition costs of project and recreation lands reserved for open space at Lakes Perris and Del Valle, Castaic and Silverwood Lakes. The final payment for "open space" was received in 1975.

Federal payments received through December 31, 1978 for Project costs allocated to flood control totalled $74.0 million -- $68.8 million for Lake Oroville and $5.4 million for Lake Del Valle. This line includes an allowance for $1.7 million of additional payments in 1979 for costs allocated to flood control at Lake Oroville. This additional amount is subject to revision after the Corps completes its final audit of the Department's records of joint costs.

The South Pacific Division, Corps of Engineers, released a public notice on February 9, 1973, on its review of the Del Valle flood control payments. The District Engineer found that modification of the Del Valle cost allocation was justified because of a substantial increase of costs and because economic patterns of development in the floodplain had changed from the original projection shown in Senate Document No. 128. As a result, the District Engineer recommended that the federal payment be increased by $0.57 million. This increase was authorized by the Water Resources Development Act of 1976, 94th Congress. The federal government paid $300,000 to the Department during 1977 and the final payment of $270,000 was received during fiscal year 1978-79.

The amounts shown in this line for 1982 and thereafter are for assumed federal financial participation in the Delta Facilities and in Los Vaqueros Reservoir. In accordance with the Bureau of Reclamation's 1969 feasibility report on the Peripheral Canal as an addition to the federal Central Valley Project, construction costs of the joint-use Delta Facilities would be shared with the State on a 50-50 basis. The amounts shown in Line 40 are based on the assumption that congressional authorization for federal participation would be secured so that payments to the State would commence in 1982, based on a concurrent 50 percent share of the State's annual construction expenditures. "Catch-up" payments for joint costs incurred prior to 1982, together with accrued interest at the State's project interest rate, are assumed to be equally distributed during the three-year period 1982 through 1984. Such "catch-up" payments to the State would total about $30.5 million.

As noted previously in this chapter the United States has, as a result of recent studies, indicated that they do not need to participate in the Peripheral Canal. If their participation is not forthcoming and the same size canal is built as as State-only facility, the receipts assumed in this line would be approximately $492 million less and the need for supplemental financing would increase a like amount.

The financial analysis assumes the Los Vaqueros Reservoir would be built and financed by the State, with federal participation in the form of payments based on the concurrent federal share of annual construction costs. The assumed Federal share of Los Vaqueros Reservoir (75 percent) results in payments of approximately $855 million between 1982 and 1991.

Line 41: Appropriations Prior to the Burns-Porter Act. Year-to-year appropriations by the Legislature financed all capital expenditures prior to the effective date of the Burns-Porter Act on November 8, 1960. Expenditures so financed substantially ended in 1963 and totalled about $11 million from the

General Fund and $88 million from the Investment Fund (succeeded by the California Water Fund in 1959). These amounts exclude $1.3 million from the local Projects Assistance Fund, which financed the Davis-Grunsky Act Program prior to the $130 million authorization of the Burns-Porter Act. While these special appropriations do not fit the general definition of "miscellaneous receipts" in that they were not deposited in the Central Valley Water Project Construction Fund, they are so classified herein for simplifying the presentation of the financial analysis.

Line 42: Appropriations for Capital Costs Allocated to Recreation and Fish and Wildlife Enhancement. In accordance with Public Resources Code Section 6217, $5 million of the State's tideland oil and gas revenues is deposited annually in the Central Valley Water Project Construction Fund for repayment of (1) costs of constructing multipurpose SWP facilities that are allocated to recreation and fish and wildlife enhancement and (2) costs of acquiring land for recreation developments associated with SWP facilities. As indicated in Table 8, such costs are now estimated to eventually total about $601 million. This is an increase of $337 million over that shown in Table 8 of Bulletin 132-78, due primarily to an increase in the assumed escalation rates for construction costs. The $5 million annual appropriation would not be adequate to reimburse the SWP for these allocated costs. Efforts will have to be made to adjust the future program to available funds.

Release of the $5 million annual appropriation to the Department for expenditures is dependent on legislative approval for the costs reported annually by the Department. In 1978, the Department reported costs totalling over $66.9 million, including over $11.0 million of accrued interest (Appendix D, "Costs of Recreation and Fish and Wildlife Enhancement". Bulletin No. 132-78, April 1978). This was an increase of about $1.0 million over the previous report (see page 7, Appendix D, Bulletin No. 132-78). Most of this increase was due to costs incurred in 1977 and interest accrued during 1977. AB 1514 was amended to include these increased expenditures.

Costs allocated to recreation and fish and wildlife enhancement which have not been reported to the Legislature include those for the California Aqueduct south of Dos Amigos Pumping Plant, Delta Facilities and additional conservation facilities. The costs for the California Aqueduct system south of Dos Amigos Pumping Plant are scheduled to be reported in 1980. The costs for the other facilities will be reported after construction is completed.

By Appendix D to Bulletin No. 132-79, April 1979, the Department reported an additional $0.2 million -- raising the total costs reported to the Legislature to $67.1 million. Most of this increase was due to costs incurred in 1978 and interest accrued during 1978. These expenditures were included in AB 927 introduced in 1979.

Line 43: Appropriations Under SB 261 (1968). By enactment of SB 261, June 28, 1968, the balance in the California Water Fund was transferred to the Central Valley Water Project Construction Fund, together with appropriations of tideland oil and gas revenues in the annual amounts of $11 million through June 30, 1970, and $25 million thereafter, until June 30, 1972.

Line 44: City of Los Angeles Payments for Castaic Power Development. Under a 70-year contract executed September 2, 1966 (see page 12, Bulletin No. 132-67), the State constructed the Angeles Tunnel with a 30-foot diameter instead of with a 17-foot diameter as originally planned. In return, the City constructed, operates, and maintains a 1,250-megawatt Castaic Powerplant and will supply the

State, without charge, power equivalent in value to that which the State would have produced in its originally planned 214-megawatt plant. The value of this equivalent power is accounted for in Line 58 as a credit to SWP operating costs in the same manner as other aqueduct power credits. In addition, the City has made certain payments, shown in Line 44, to ensure that the benefits of joint development are equally realized by both the State and the City. Neither the estimated capital expenditures for the Project nor the payments shown in Line 44 include amounts for the Castaic surge chamber -- which was constructed by the State but directly financed by the City.

Line 45: Water Contractor Advances for Construction of Requested Works. Water supply contractors are required to finance, in advance, the construction costs of delivery structures (turnouts) and of any excess capacity the Department is requested to construct in SWP facilities. Advance payments for State construction requested by contractors are summarized in the following table:

	(in millions)
Requested Excess Capacity:	
° The Metropolitan Water District of Southern California:	
(a) for 188 cubic foot per second excess capacity in reaches from Kettleman City to junction of the West Branch	$19.4
(b) for enlargement of Lake Perris above a basic capacity of 100,000 acre-feet	$13.9
(c) for 787 cubic-foot per second excess capacity in the San Bernardino Tunnel	$12.0
° San Gabriel Valley Municipal Water District: for 21 cubic foot per second of excess capacity in the San Bernardino Tunnel	$ 0.3
° Antelope Valley-East Kern Water Agency: for 19 cubic-foot per second excess capacity in the reaches of the West Branch from the junction through Quail Facilities	$ 0.3
Subtotal	$45.9
Required advance payment of water charges by The Metropolitan Water District of Southern California for originally requested excess capacity in the West Branch, now classified as basic Project capacity	$16.3
Requested delivery structures constructed or to be constructed by the State	$10.0
Total water supply contractor advances for State construction of requested works	$72.2

Excess capacity may be requested for the purpose of increasing the instantaneous rates of water delivery over the "peaking" rates normally provided for by the contracts.

Advance payments for requested excess capacity are determined by contract formula to assure more than enough funds to cover the additional construction costs. After construction of the excess capacity, differences between advance payments and additional costs are to be credited to the contractor's account. A complete determination of the additional construction costs and the credits for overpayments will be reported in 1980. For purposes of the financial analysis, the Department expects that such advance payment would exceed the additional construction costs involved, with interest, by about $45 million. As of December 31, 1978, $32.8 million in credits have been applied to the contractor's accounts. Additional credits for the overpayments have been assumed to reduce estimated SWP revenues in 1981, which otherwise would be derived from water charges described in a subsequent section.

Line 46: Investment Earnings on Unexpended Miscellaneous Receipts. Unexpended SWP funds are invested through its Surplus Money Investment Fund in the State Treasury. Interest earnings during the last half of 1978 were at a rate of 8.10 percent per annum, and 8.99 percent per annum for the first half of 1979. For the financial analysis, the Department estimates that future interest earnings of the Fund will average 7.25 percent per annum.

This line also includes the interest earning on the Devil Canyon-Castaic Revenue Bond proceeds used to reimburse prior Burns-Porter bond expenditures and unexpended Supplemental Bond proceeds.

Line 47: Total Miscellaneous Receipts. The total of Lines 40 through 46.

Project Operating Revenues

Project operating revenues are deposited in two primary accounts: the Central Valley Water Project Revenue Fund, in which are placed all revenues pledged to revenue bonds, and the California Water Resources Development Bond Fund-Revenue Account, in which are placed all other SWP operating revenues, including interest earnings on any unexpended proceeds from the sale of Water Bonds.

Line 48: Payments Under Oroville-Thermalito Power Sales Contract. Until April 1, 1983 all of the generation from Hyatt-Thermalito Powerplants will be sold under a Power Sale Contract dated November 29, 1967 to three electric utilities (Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas and Electric Company). Revenues under the Contract are pledged to the payment of annual operating expenses of Hyatt-Thermalito Powerplants (limited to $1.5 million annually) and annual debt service on Oroville Revenue Bonds. Firm revenues consist of $8,075,000 paid semiannually. Revenues are also derived from energy adjustment accounts for cumulative theoretical generation in excess of 2.1 billion kilowatthours annually.

During 1978, preliminary studies indicate a 40 million kilowatthour debit will be made against energy adjustment accounts bringing the cumulative positive balance on December 31, 1978 to 3,690 million kilowatthours (equivalent to a credit as of that date of $9,557,100).

On April 1, 1983, the State Power Contract which will replace the Power Sale Contract and the generation will be available for use in the SWP. Revenues and the application of revenues under

the State Power Contract will remain the same as under the Power Sale Contract -- except that the firm semiannual payments will be increased to cover the actual operating expenses of Hyatt-Thermalito Powerplants in excess of $1.5 million annually. Thus, the amounts shown on Line 48 after March 31, 1983 include an additional revenue of $1,340,000 annually. Also included are revenues to compensate for additional transmission and station service charges after termination of the Power Sale Contract, building up from $1,327,000 in 1983 to $1,806,000 by 2020. Also, Line 48 includes an additional revenue of $15,840,000 from the electric utilities in 1983 to clear an estimated positive balance in energy adjustment accounts. Thereafter, Line 48 includes estimated revenues for energy generation in excess of 2.1 billion kilowatthours annually equivalent to 300 million kilowatthours ($777,000) annually.

For the financial analysis, the Department assumes that revenues from the sale or other disposal of Hyatt-Thermalito power will continue after termination of the State Power Contract (November 29, 2017, or until all Oroville Revenue Bonds have been retired, whichever occurs later), in the same amounts as under the Contract.

Line 49: Water Contractor Payments Under Devil Canyon-Castaic Contract. These payments by the six water contractors located below Devil Canyon and Castaic Facilities are equal to (1) the annual service of Devil Canyon-Castaic Revenue Bonds and (2) annual operating costs of the Facilities allocated to power generation (see page 2, Bulletin 132-73).

Line 50: Water Contractor Payments Under Long-Term Water Supply Contracts. Water supply contracts provide for payments of two general charges: (1) a Delta Water Charge and (2) a Transportation Charge.

The Delta Water Charge is assessed for each acre-foot of water the contractors are entitled to receive. The Charge is computed to return to the State during the contract term all appropriate costs of SWP conservation facilities, together with interest thereon. SWP conservation facilities are defined as those facilities which conserve water, including Lake Oroville, Delta Facilities, additional conservation facilities and San Luis Reservoir, together with a portion of the California Aqueduct from the Delta to San Luis Reservoir. Current studies of operating ground water basins to provide for conservation of SWP water may result in an amendment of water supply contracts to include such facilities as conservation facilities. Costs allocated to flood control, recreation, and fish and wildlife enhancement are not paid under the water supply contracts. Both charges for power costs and credits for power revenues are included in the determination of the Delta Water Charge.

The Transportation Charge is computed to return to the State during the contract term the costs of the aqueducts necessary to deliver water to the respective contractors, including interest costs. Such costs exclude those allocated to flood control, recreation, and fish and wildlife enhancement. In addition, costs of the Devil Canyon and Castaic Facilities allocable to power are excluded from the Transportation Charge and are paid under the Devil Canyon-Castaic Contract.

Each year's costs of each aqueduct reach are allocated among contractors whose deliveries are or will be conveyed through that reach. For contractors with predominantly municipal and industrial water use, the allocated amounts of each year's construction expenditures are required to be repaid, together with interest, in 50 equal annual installments. For contractors with predominantly agricultural water use, allocated construction costs are repaid by

a uniform charge per acre-foot of water entitlement, computed to return those costs with interest to the State during the contract term.

Operating costs are paid currently under the Transportation Charge and therefore do not include any interest charges. Construction costs under the Transportation Charge and all construction and annual operating costs under the Delta Water Charge are to be repaid with interest at the "project interest rate".

The project interest rate is defined as the weighted average of the rates paid on securities issued and loans obtained to finance SWP facilities, excluding Oroville Revenue Bonds. Under original contract provisions, the basis for determining the project interest rate was the weighted average of rates paid on Water Bond sales only. Under contract amendments executed in 1969, after issuance of Oroville Revenue Bonds, the basis was expanded to include rates on all other securities sold and loans obtained thereafter for financing SWP facilities, including revenue bonds (see page 28, Bulletin No. 132-70). However, not all proceeds from the sale of revenue bonds are melded in the calculation of the project interest rate -- only those proceeds applied to construction costs (the only application of general obligation bonds permitted by law) and those consumed on the bond discount (a component of the total interest cost of a revenue bond issue). Shown below is the percent of total proceeds from revenue bond issues which affect the actual and projected calculation of the project interest rate:

Revenue Bond Proceeds	Devil Canyon-Castaic (actual)	Supplemental Water (assumed)	Supplemental Power (assumed)
		(in millions)	
Applied to construction costs	$127.1	$3,629.5	$2,166.7
Less, portion of such proceeds derived from interest earnings prior to delivery of bonds	1.6	-0-	-0-
Plus, bond discount and financing costs	1.4	39.9	45.4
Subtotal, proceeds included in calculating the project interest rate	$126.9	$3,669.4	$2,212.1
Principal amount of bonds	139.2	3,988.4	2,956.8
Percent total principal amount included in calculating the Project Interest Rate	91%	92%	75%

Tables 9 and 9A present information basic to the calculation of the actual and projected project interest rates.

A detailed development of water charges for each contractor is presented in Appendix B which is based on presently known conditions and supports the Department's determination of 1980 water charges -- billed July 1, 1979. However, there are the following significant differences between the projection of charges shown in Line 50 and the substantiation of 1980 charges shown in Appendix B:

Future capital costs shown in Appendix B are based on prices prevailing on December 31, 1978. Those shown in the financial analysis include allowances for future price escalation.

- The project interest rate basic to charges shown in Appendix B includes actual bond sales. (4.462 percent). The project interest rate basic to the charges shown in Line 50 also reflects the projected supplemental water revenue bond sales shown in Table 9A. The power revenue assumed for the analysis include the recovery, with full interest, of power capital costs.

- Pre-1980 charges shown in Appendix B represent what charges should have been under presently known conditions. Pre-1980 charges shown in Line 50 are those actually paid under previously determined bills.

- Charges for 1980 and thereafter shown in Appendix B are unadjusted. Such charges shown in Line 50 include adjustments for any apparent overpayments or underpayments of pre-1979 charges and credits due to prepayments of the capital cost components which will result under various contract amendments involving excess aqueduct capacity.

- The charges shown in Appendix B are those which would apply in the absence of the Devil Canyon-Castaic Contract. The charges shown in Line 50 exclude those under the Contract.

- The charges in Appendix B reflect the variable OMP&R transportation Charge resulting from the contractor water requests shown in Table B-5. The revenues shown in Line 50 assume a reduction in charges due to lower demands resulting from water conservation and waste water reclamation.

- The charges in Appendix B do not include a capital cost component for the repayment of the Enlargement of the California Aqueduct, Mojave Division. Line 50 includes an estimate of the repayment for the enlargement expenditure.

The payments shown in Line 50 also includes revenue which would be pledged to support supplemental revenue bonds. The amount of revenue pledged is that portion which is identifiable with the facilities financed with revenue bonds. The analysis assumes, with regard to future revenue bonds, that there will be no revenue payment defaults and that revenue used to provide bond service "cover" would be returned to the California Water Resources Development Bond Fund.

Line 51: Federal Payments for Project Operating Costs. Under the December 31, 1961, Agreement between the State and the United States, the Department operates and maintains the San Luis joint-use facilities. Under the January 12, 1972, Supplement to the Agreement, the United States pays 45 percent of the costs incurred by the Department for these activities (The percentage does not apply to power costs. The United States and the Department provide their own power to pump their respective amounts of water through the joint facilities). This percentage was reviewed in 1975, and will remain at 45 percent, subject to review again in 1980. The amounts shown in Line 51 are based on the assumption that the current percent federal share would be extended indefinitely.

Line 51 also includes an assumed 50 percent federal share of the joint operating costs of the Delta Facilities (also excluding power costs) as proposed in the Bureau's feasibility report on the Peripheral Canal. Line 51 also includes the assumed federal share of Los Vaqueros Reservoir.

Line 52: Appropriations for Operating Costs Allocated to Recreation. Under the Davis-Dolwig Act, the Legislature declared its intent that, except for funds provided pursuant to AB 12 (1966), the Department's budget shall include appropriations from the General Fund of monies necessary for enhancement of fish and wildlife and for recreation in connection with State water projects. The $5 million annual appropriation under Section 6217 of the Public Resources Code (Line 42) is for repayment of construction expenditures -- annual operation, maintenance, power and replacement costs allocated to recreation and fish and wildlife enhancement are paid by annual General Fund appropriations.

Line 53: Local Agency Payments Under Davis-Grunsky Loan Repayment Contracts. As pointed out in the description of Line 24, $43.9 million in loan applications had been approved as of December 31, 1978. The amounts shown in Line 53 are based on the assumption that $13.4 million in future contracts would be approved -- bringing estimated total loans under the $130 million authorization (which excludes an initial loan of about $1.3 million) to $59.5 million (46 percent). All future loans are assumed to be repaid in 50 years at 2.5 percent interest, with an initial five-year deferment of principal repayment.

Line 54: Miscellaneous Revenues. Miscellaneous revenues include annual payments by the City of Los Angeles for a share of the maintenance costs of the Angeles Tunnel, interest earnings on unexpended proceeds from sale of Water Bonds, and other short-term investment earnings on SWP revenues. Based on experience to date, an allowance of $2 million annually through 2020 is included in Line 54 to approximate these revenues.

This line also includes future bond proceeds that are special reserves under revenue bond financing, described in Line 26. These proceeds are not classified as revenues, but are shown in this line to simplify the financial presentation since they are used for operation and maintenance costs and revenue bond service.

Line 54 also includes assumed payments from the Nevada Power Company from 1998 through 2013 for their increasing use of the Reid Gardner Unit 4 Powerplant during the second 15 years of the plant's assumed life. The DWR participation in the Reid Gardner Unit 4 is discussed in Chapter II of this Bulletin in the Long Range Energy Program section.

Line 55: Total Project Operating Revenues. The total of Lines 48 through 54.

Line 56: Total Miscellaneous Receipts and Project Operating Revenues. The total of Lines 47 and 55.

Application of Revenues and Miscellaneous Receipts

Revenues pledged to revenue bonds, deposited in the Central Valley Water Project Revenue Fund, are disbursed in accordance with resolutions authorizing the issuance of such bonds. All other operating revenues, deposited in the California Water Resources Development Bond Fund-Revenue Account, are disbursed in accordance with the following priorities of use as specified in the Burns-Porter Act.

(1) Project operating costs.

(2) Water Bond Service.

(3) Repayment of SWP expenditures from the California Water Fund.

(4) Deposits to a reserve for future construction of the State Water Resources Development System -- a system of facilities which may be

added to under certain authorizations of the Legislature and designations by the Department as specified in the Burns-Porter Act, and which includes the State Water Project.

Line 57: Carryover (+) and Application (-) of Miscellaneous Receipts and Revenues Held Temporarily in Reserve. The only carryover of receipts and revenues from year to year concerns a temporary reserve established by the Department to insure that future annual service on Water Bonds will be met. Receipts accruing after 2020 -- not needed for either bond service or construction expenditures under this analysis -- are included in Line 72 as being available for financing future construction of the State Water Resources Development System.

Line 58: Project Operating Costs. Historical and estimated project operating costs are presented in Table 10 by project facilities. Line 58 in the financial analysis is composed of operating costs that are assumed to occur under the assumptions of lower water demands due to waste water reclamation and water conservation, and are shown in the top portion of Table 10. This line also includes the operating costs for the Federal share of joint facilities and operating costs allocated to recreation, which are offset by revenues shown in Lines 51 and 52, respectively. The lower portion of Table 10 are the costs that are assumed to occur with the water requests submitted by the SWP contractors in the fall of 1978. Allowances for future cost escalation are included for power costs through 1984 and operation and maintenance costs through 1981. Allowances for further future long-term price escalation are not included in these estimates since such operating costs do not substantially affect the overall results of the financial analysis. (For the most part, changes of operating costs cause direct offsetting changes of operating revenues.)

Power cost is the major item of annual operating expense for the SWP, and there have been significant changes in the assumptions regarding the future development of power sources and costs. Near the end of this chapter is a section titled "Power Costs" which explains the current assumptions regarding future power sources and their related costs.

Line 59: Deposits to Special Reserves Under Revenue Bond Financing. In regard to Oroville Revenue Bonds, deposits include the following:

- Payments to the Department for energy and generating capability prior to April 1, 1969, under terms of interim letter agreements, and all other power revenues for one year following completion of construction.
- Payments to the Department from the energy adjustment account for net annual energy generation in excess of 2.1 billion kilowatthours.
- Federal flood control contributions in the amount of $1.65 million for allocated operations and maintenance costs.
- Annual amount of Oroville power sales revenue that is excess over the operating cost and Oroville bond service payment.

In regard to Devil Canyon-Castaic Revenue Bonds, such deposits consist of about $9.4 million to provide a reserve approximating maximum annual bond service.

For this analysis, deposits to special reserves provide a reserve approximating maximum annual bond service on all future supplemental revenue bond sales. The ultimate effect of these reserves, together with interest earnings is to accelerate the last year that operating revenues are applied to revenue bond service. For simplicity, the operation of these reserves is ignored in the financial analysis.

TABLE 10: PROJECT

(in thousands

FEATURE	Calendar						
	1962-1978	1979	1980	1981	1982	1983	1984
OPERATING COSTS FOR PROJECT FACILITIES WITH IMPLEMENTATION OF WATER CONSERVATION AND RECLAMATION GOALS[a]							
Feather River Facilities	51,845	9,945	10,423	9,109	8,708	7,489	8,316
North Bay Aqueduct	747	95	112	113	113	152	611
Delta Facilities	0	0	0	0	0	0	0
South Bay Aqueduct	17,500	1,906	2,150	2,249	2,260	3,893	4,304
California Aqueduct:							
Mainline - Delta to A. D. Edmonston	145,888	28,080	31,951	34,668	33,000	59,245	78,876
Mainline - A. D. Edmonston thru Perris	66,572	17,833	20,600	22,826	24,276	50,765	63,391
West Branch	18,590	2,407	3,149	5,098	2,907	-9,164	-13,794
Coastal Branch	9,054	1,110	1,312	1,419	1,436	1,573	1,679
Additional Conservation Facilities	0	0	0	0	0	0	0
Water Quality Monitoring Program - Sacramento-San Joaquin Delta	7,220	827	906	1,059	1,030	964	933
Davis-Grunsky Act Program (continuing administrative costs)	674	60	60	60	60	60	60
TOTAL OPERATING COSTS	318,090	62,263	70,663	76,601	73,790	114,977	144,376
OPERATING COSTS FOR PROJECT FACILITIES TO DELIVER CONTRACTORS' REQUESTED WATER[b]							
Feather River Facilities	51,845	9,945	10,423	9,109	8,708	7,489	8,316
North Bay Aqueduct	747	95	112	113	113	152	611
Delta Facilities	0	0	0	0	0	0	0
South Bay Aqueduct	17,500	1,906	2,150	2,249	2,260	3,893	4,304
California Aqueduct							
Main Line - Delta to A. D. Edmonston	145,888	28,080	31,951	34,668	33,000	59,245	78,876
Main Line - A. D. Edmonston thru Perris	66,572	17,833	20,600	22,826	24,276	50,765	-63,391
West Branch	18,590	2,407	3,149	5,098	2,907	-9,164	-13,794
Coastal Branch	9,054	1,110	1,312	1,419	1,436	1,573	1,679
Additional Conservation Facilities	0	0	0	0	0	0	0
Water Quality Monitoring Program - Sacramento-San Joaquin Delta	7,220	827	906	1,059	1,030	964	933
Davis-Grunsky Act Program (continuing administrative costs)	674	60	60	60	60	60	60
TOTAL OPERATING COSTS	318,090	62,263	70,663	76,601	73,790	114,977	144,376

a) Projected costs reflect the Department's future management plans and are included in Table 7, Project Financial Analysis, December 31, 1978. Water conservation and waste water reclamation goals are outlined in the Department's Delta Water Facilities Bulletin 76, page 74, Table 18.
b) Projected costs are included in Appendix B of this Bulletin.

OPERATING COSTS

of dollars)

Years										
1985	1986	1987	1988	1989	1990-1995	1996-2005	2006-2015	2016-2025	2026 2035	TOTAL, 1962-2035
8,296	8,188	8,264	8,257	8,240	48,913	82,057	86,698	82,177	82,178	529,103
660	647	590	450	520	3,809	8,137	8,030	9,033	10,688	44,507
0	3,952	5,043	5,231	5,184	30,284	45,931	46,915	47,269	47,408	237,217
3,897	3,763	3,474	3,060	3,155	21,310	35,733	35,737	38,967	43,743	227,101
73,032	70,938	68,839	54,335	56,968	401,401	745,795	859,849	963,808	1,030,751	4,737,424
52,958	53,967	45,156	23,741	41,458	317,698	598,482	705,544	870,686	1,031,113	4,007,066
-13,137	-12,579	-15,122	-21,411	-25,848	-194,490	-375,865	-412,113	-432,808	-435,501	-1,929,681
1,620	2,883	2,480	1,560	1,638	12,397	31,192	34,928	35,484	35,578	177,343
2,487	2,475	2,352	3,174	6,590	82,816	258,072	359,818	371,172	371,553	1,460,509
921	888	2,510	2,509	2,507	15,001	8,869	8,871	8,871	8,871	72,757
60	60	60	60	60	360	600	600	600	600	4,094
130,794	135,182	123,646	80,966	100,472	739,499	1,439,003	1,734,877	1,995,259	2,226,982	9,567,440
8,296	8,188	8,264	8,257	8,240	48,913	82,057	86,698	82,177	82,178	529,103
729	762	710	583	656	4,646	9,426	10,255	11,403	11,556	52,669
0	3,952	5,043	5,231	5,184	30,284	45,931	46,915	47,269	47,408	237,217
4,326	4,478	4,226	3,732	3,830	25,238	46,080	45,523	45,823	45,908	263,426
76,347	76,467	74,651	62,719	64,750	467,966	909,385	1,010,805	1,061,737	1,064,697	5,281,232
61,105	67,556	59,440	39,238	55,844	433,826	895,678	1,021,198	1,091,570	1,102,672	5,094,390
-14,509	-14,868	-17,527	-21,858	-25,401	-185,323	-385,339	-421,362	-433,684	-436,571	-1,947,249
1,620	2,883	2,480	1,560	1,638	12,397	31,192	34,928	35,484	35,578	177,343
2,487	2,475	2,352	3,174	6,590	82,816	258,367	359,929	371,172	371,553	1,460,915
921	888	2,510	2,509	2,507	15,001	8,869	8,871	8,871	8,871	72,757
60	60	60	60	60	360	600	600	600	600	4,094
141,382	152,841	142,209	105,205	123,898	936,124	1,902,246	2,204,360	2,322,422	2,334,450	11,225,897

In addition, Line 59 includes the power revenue bond proceeds assumed to pay interest during construction and deposited in the year of sale. In subsequent years the line reflects a decrease in special deposits to account for bond service payments from the bond proceeds. This procedure is primarily to simplify the financial analysis presentation.

Lines 60-61: Payment of Service on Bonds Sold. These two lines show the total interest and principal payments on bonds sold to date. Table 11 provides a summary of Water Bonds (Series A through V), Oroville Revenue Bonds, and Devil Canyon-Castaic Revenue Bonds. The last bonds sold were Series V Water Bonds in November 1977. Annual service on Series V is shown in Table 11 of this bulletin.

Annual interest and principal payments on individual series are shown in the following bulletins.

Water Bonds

Series A through R	Table 13, Bulletin 132-72
Series S	Table 10, Bulletin 132-73
Series T	Table 10, Bulletin 132-74
Series U	Table 11, Bulletin 132-76

Revenue Bonds

Oroville Series A and B	Table 12, Bulletin 132-72
Devil Canyon-Castaic	Table 10, Bulletin 132-73

The Oroville Revenue Bond service schedule shown in Table 11 is based on the initial bond maturity schedule. During 1978, Oroville Revenue Bonds totaling $4,050,250 were redeemed by the trustee prior to the fixed maturity date of April, 2018. These bonds were redeemed for $3,845,099. In effect, this will decrease the annual interest cost and the principal due in 2018. This action will increase the annual deposit to reserve (Line 59) which is held by the trustee and does not affect the basic validity of the financial analysis.

Line 60 also includes over $0.3 million in interest payments to the General Fund for the temporary loan of $46.8 million in 1970 -- repaid by proceeds from the sale of Series N Water Bonds.

Line 62-63: Assumed Payments of Service on Future Bonds Sales. These lines show the projected annual service on future Supplemental Water Revenue Bonds and Water Bonds (Series W and X) under the assumptions of this analysis.

Assumptions concerning the service on future Supplemental Water Revenue Bonds are as follows:

- The net interest cost would average 7.0 percent.
- The service pattern would provide for no maturities during the first 10 years after issuance, with a final maturity 40 years after issuance.
- The bonds issued after year 2000 would be fully matured by 2035.

Assumptions concerning the service on future Water Bonds are as follows:

- The net interest cost would average 5.5 percent.
- The service pattern would provide for no maturities during the first nine years after issuance, with a final maturity for Series W 20 years after issuance. The final sale of water bonds (Series X) for additional conservation facilities would have final maturity 40 years after issuance.

Lines 64-65: Assumed Payments of Service on Future Power Revenue Bonds Sales. These lines show the projected annual service for the supplemental

power revenues bonds discussed in Line 33. Assumptions concerning the service on these future bonds are as follows:

- The net interest cost for the power revenues bonds sold in 1979 would average 6-3/4 percent. The remaining bond issues would average 6-1/2 percent.

- The service pattern would provide for no maturities during the construction period of the facility being financed. Final maturity for the bonds sold in 1979 would be 50 years after issuance. (The actual issue scheduled for sale in October 1979, will mature 42 years after issuance.) Final maturity for the remaining issues would be 30 years after the respective facility being financed is completed.

Lines 66-67: Total Payments of Bond Service. The total of interest payments shown on Lines 60, 62 and 64 and the total of principal payments shown on Lines 61, 63 and 65 respectively.

Lines 68-69: Repayment of the California Water Fund. The Burns-Porter Act requires that, after operation and maintenance and bond service requirements have been satisfied, project revenues shall be transferred to the California Water Fund as reimbursement to the Fund for monies expended for construction of the State Water Resources Development System. For the financial analysis, the repayment amounts through 2008 (Line 68), together with the $25 million of tidelands revenue allocated each year to the California Water Fund are utilized for financing capital expenditures (Line 29). From 2009 through 2020 the repayment amounts shown in Line 68 are sufficient to finance the remaining capital expenditures. (The Burns-Porter Act provides a continuing appropriation of all money in the California Water Fund for this purpose.)

Line 69 indicates repayment to the Fund of monies not required to be appropriated for further construction. The Fund would be substantially repaid by 2018. Continuing annual repayments shown thereafter in Line 68 represent repayment of the continuing appropriation from the fund for annual principal and interest payments to the federal government for the additional conservation storage costs shown in Line 25.

The totals of Line 68 and Line 69 equal the total of Line 29 and indicate that all California Water Fund appropriations are repaid as required by the Burns-Porter Act.

Line 70: Application of Miscellaneous Receipts to Construction Expenditures. This line matches Line 38. All projected annual accruals of miscellaneous receipts would be totally applied to Water Bond service and construction expenditures through 2020 under the financial analysis. After 2020 annual receipts would be reserved for financing future construction -- shown in Line 72.

Line 71: Subtotal, Repayment of Capital Financing. This line is the subtotal of Lines 67, 68, 69 and 70. Under the assumptions of this analysis, Line 71 demonstrates the schedule by which the SWP would eventually repay, with SWP income, all funds required to finance capital expenditures as shown in Line 39.

Line 72: Reservation for Future Construction. In accordance with the Burns-Porter Act, all SWP revenues in excess of SWP operating costs, Water Bond service, and California Water Fund repayment shall be deposited in a reserve account for financing future construction of the State Water Resources Development System. Also included in the amounts shown in Line 72 are those miscellaneous receipts (reimbursements of capital costs allocated to recreation and fish and wildlife enhancement) which

accrue too late to be applied to construction expenditures under this analysis.

Within the constraints of timing, accruals to the reserve could be available for financing additional SWP costs in the event contingencies occur, such as referred to at the beginning of this chapter. However, if additional costs were to be incurred in annual amounts preceding or exceeding the annual amounts shown in Line 72, the required use of full appropriations to the California Water Fund could extend beyond 2018 (the last year of such full use as indicated in the analysis), and the eventual need for supplemental financing could exceed the amount projected in this analysis.

Line 73: Total Application of Miscellaneous Receipts and Project Operating Revenues. This summary of the application of revenues and receipts matches the total accruals of such money as shown in Line 56.

TABLE 11: ANNUAL SERVICE ON BONDS SOLD AS OF DECEMBER 31, 1978

(in thousands of dollars)

Calendar Year	Bonds Sold Through December 31, 1978									
	Series A through U Water Bonds		Oroville Revenue Bonds		Devil Canyon-Castaic Revenue Bonds		Series V Water Bond Sold 11/15/77		Total	
	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest
1964	0	3,333	0	0	0	0	0	0	0	3,333
1965	0	11,114	0	0	0	0	0	0	0	11,114
1966	0	16,742	0	0	0	0	0	0	0	16,742
1967	0	26,912	0	0	0	0	0	0	0	26,912
1968	0	37,760	0	3,876	0	0	0	0	0	41,636
1969	0	47,461	0	10,448	0	0	0	0	0	57,909
1970	0	53,291	0	13,145	0	0	0	0	0	66,436
1971	0	63,035	0	13,145	0	0	0	0	0	76,180
1972	0	69,148	1,260	13,112	0	0	0	0	1,260	82,260
1973	1,200	69,348	1,330	13,042	0	7,708	0	0	2,530	90,098
1974	3,000	69,533	1,400	12,969	0	7,708	0	0	4,400	90,210
1975	5,000	69,366	1,475	12,893	0	7,708	0	0	6,475	89,967
1976	7,000	69,408	1,555	12,811	0	7,708	0	0	8,555	89,927
1977	10,200	69,323	1,635	12,727	0	7,708	0	0	11,835	89,758
1978	12,700	68,835	1,725	12,637	0	7,708	0	477	14,425	89,657
1979	13,650	68,214	1,815	12,540	0	7,708	0	476	15,465	88,938
1980	16,050	67,491	1,915	12,441	0	7,708	0	477	17,965	88,117
1981	18,050	66,633	2,020	12,334	0	7,708	0	476	20,070	87,151
1982	19,250	65,685	2,130	12,221	0	7,708	0	477	21,380	86,091
1983	20,520	64,672	2,245	12,101	900	7,708	0	476	23,665	84,957
1984	21,785	63,591	2,365	11,982	955	7,647	0	477	25,105	83,697
1985	22,555	62,456	2,485	11,862	1,010	7,583	0	476	26,050	82,377
1986	23,830	61,265	2,605	11,737	1,070	7,515	0	477	27,505	80,994
1987	24,985	60,016	2,735	11,602	1,135	7,442	510	476	29,365	79,536
1988	26,180	58,712	2,870	11,464	1,205	7,366	590	453	30,845	77,995
1989	27,475	57,400	3,015	11,314	1,275	7,284	670	425	32,435	76,423
1990	28,635	56,080	3,175	11,152	1,355	7,198	750	393	33,915	74,823
1991	29,535	54,713	3,335	10,983	1,435	7,107	830	357	35,135	73,160
1992	30,385	53,322	3,510	10,806	1,520	7,010	910	318	36,325	71,456
1993	31,950	51,909	3,695	10,618	1,610	6,907	990	274	38,245	69,708
1994	33,455	50,432	3,885	10,421	1,705	6,799	1,070	228	40,115	67,880
1995	34,510	48,896	4,085	10,215	1,810	6,684	1,150	177	41,555	65,972
1996	35,670	47,315	4,300	9,996	1,920	6,561	1,230	121	43,120	63,993
1997	35,295	45,756	4,525	9,767	2,035	6,432	1,300	62	43,155	62,017
1998	36,675	44,226	4,760	9,524	2,155	6,295	0	0	43,590	60,045
1999	37,600	42,655	5,005	9,265	2,285	6,160	0	0	44,890	58,080
2000	38,890	41,033	5,280	8,987	2,420	6,040	0	0	46,590	56,060
2001	39,980	39,351	5,565	8,693	2,565	5,912	0	0	48,110	53,956
2002	41,120	37,620	5,865	8,384	2,720	5,773	0	0	49,705	51,777
2003	42,970	35,835	6,180	8,057	2,885	5,626	0	0	52,035	49,518
2004	45,160	33,957	6,520	7.714	3,055	5,470	0	0	54,735	47,141
2005	46,450	31,995	6,870	7,349	3,240	5,305	0	0	56,560	44,649
2006	47,740	29,971	7,245	6,968	3,435	5,130	0	0	58,420	42,069
2007	49,230	27,883	7,635	6,564	3,640	4,945	0	0	60,505	39,392
2008	51,220	25,727	8,050	6,138	3,860	4,749	0	0	63,130	36,614
2009	53,560	23,478	8,490	5,690	4,090	4,540	0	0	66,140	33,708
2010	55,250	21,134	8,950	5,216	4,335	4,319	0	0	68,535	30,669
2011	56,740	18,717	9,435	4,717	4,595	4,085	0	0	70,770	27,519
2012	58,530	16,216	9,945	4,192	4,875	3,837	0	0	73,350	24,245
2013	60,370	13,676	10,485	3,636	5,165	3,574	0	0	76,020	20,886
2014	57,900	11,244	11,055	3,051	5,475	3,303	0	0	74,430	17,598
2015	53,690	8,838	11,655	2,435	5,805	3,015	0	0	71,150	14,288
2016	46,130	6,626	12,290	1,782	6,150	2,710	0	0	64,570	11,118
2017	38,060	4,614	12,960	1,097	6,520	2,388	0	0	57,540	8,099
2018	25,350	2,980	13,665	371	6,910	2,045	0	0	45,925	5,396
2019	16,890	1,778	0	0	7,325	1,682	0	0	24,215	3,460
2020	17,320	934	0	0	7,765	1,298	0	0	25,085	2,232
2021	8,510	301	0	0	8,230	890	0	0	16,740	1,191
2022	1,800	48	0	0	8,725	458	0	0	10,525	506
TOTAL	1,560,000	2,370,004	244,995	466,191	139,165	283,872	10,000	7,573	1,954,160	3,127,640

TABLE 12: ANNUAL SERVICE ON ASSUMED FUTURE BOND SALES

(in thousands of dollars)

Calendar Year	Series W through X Water Bonds		Supplemental Water Revenue Bonds		Supplemental Power Revenue Bonds		Total Future Bond Sales	
	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest
1980	0	673	0	0	0	8,436	0	8,436
1981	0	673	0	0	0	27,997	0	28,670
1982	0	673	0	0	0	40,098	0	40,771
1983	0	673	0	0	3,054	52,757	3,054	53,430
1984	0	673	0	19,230	3,977	52,557	3,977	72,460
1985	0	673	0	19,230	5,023	84,081	5,023	103,984
1986	0	673	0	31,922	5,350	83,754	5,350	116,349
1987	0	673	0	44,230	9,676	108,107	9,676	153,010
1988	0	673	0	57,692	20,301	107,478	20,301	165,843
1989	0	673	0	57,692	21,621	106,158	21,621	164,523
1990	625	9,899	0	74,230	23,027	104,752	23,652	188,881
1991	723	9,865	0	74,230	24,525	103,254	25,248	187,349
1992	821	9,826	0	105,768	26,122	101,657	26,943	217,251
1993	919	9,780	0	133,635	27,822	99,957	28,741	243,372
1994	1,017	9,731	275	133,635	29,632	98,147	30,924	241,513
1995	1,115	9,673	549	133,617	31,559	96,220	33,223	239,510
1996	1,213	9,614	3,019	133,578	33,611	94,168	37,843	237,360
1997	1,310	9,548	5,563	133,367	35,798	91,981	42,671	234,896
1998	1,408	9,474	8,491	132,977	38,126	89,653	48,025	232,104
1999	3,673	9,398	9,477	132,382	40,608	113,819	53,758	255,599
2000	3,877	9,196	13,062	131,720	43,247	111,180	60,186	252,096
2001	2,412	8,981	14,354	130,806	46,062	108,365	62,828	248,152
2002	2,544	8,849	20,464	129,800	49,057	136,080	72,065	274,729
2003	2,684	8,709	26,402	128,368	52,235	158,716	81,321	295,793
2004	2,832	8,561	28,499	126,520	55,649	155,302	86,980	290,383
2005	2,988	8,405	30,765	124,526	74,082	151,683	107,835	284,614
2006	3,152	8,241	33,144	122,372	78,902	146,863	115,198	277,476
2007	3,325	8,068	35,644	141,027	84,032	141,733	123,001	290,828
2008	3,508	7,885	38,266	193,749	89,497	136,268	131,271	337,902
2009	3,701	7,692	41,025	260,432	95,318	130,447	140,044	398,571
2010	3,905	7,488	43,931	257,559	101,517	124,248	149,353	389,295
2011	4,119	7,274	46,991	254,484	108,123	117,642	159,233	379,400
2012	4,346	7,047	56,333	251,194	115,096	110,610	175,775	368,851
2013	4,585	6,808	76,260	247,252	102,468	103,122	183,313	357,182
2014	4,837	6,556	101,657	241,915	106,395	96,458	212,889	344,929
2015	5,103	6,290	108,566	234,799	110,034	89,537	223,703	330,626
2016	5,384	6,009	115,910	227,198	117,186	82,377	238,480	315,584
2017	5,680	5,713	123,721	219,084	98,591	74,754	227,992	299,551
2018	5,992	5,401	132,030	210,423	38,813	68,340	176,835	284,164
2019	6,322	5,071	140,872	201,181	41,343	65,810	188,537	272,062
2020	6,670	4,723	150,286	191,320	44,049	63,104	201,005	259,147
2021	7,036	4,357	160,311	180,799	44,117	60,244	211,464	245,400
2022	7,423	3,970	170,988	169,578	46,994	57,367	225,405	230,915
2023	7,832	3,561	182,368	157,610	50,057	54,304	240,257	215,475
2024	8,262	3,131	174,847	144,844	53,321	51,040	236,430	199,015
2025	8,717	2,676	187,077	132,604	56,797	47,564	252,591	182,844
2026	9,196	2,197	185,563	119,510	60,499	43,862	255,258	165,569
2027	9,702	1,691	184,435	106,519	64,445	39,916	258,582	148,126
2028	10,236	1,157	181,802	93,611	68,647	35,714	260,685	130,482
2029	10,806	594	194,496	80,882	73,123	31,238	278,425	112,714
2030	0	0	189,105	67,268	71,517	26,469	260,622	93,737
2031	0	0	202,345	54,031	76,165	21,821	278,510	75,852
2032	0	0	180,171	39,867	81,117	16,869	261,288	56,736
2033	0	0	160,737	27,254	86,389	11,597	247,126	38,851
2034	0	0	144,904	16,003	92,034	5,981	236,938	21,984
2035	0	0	83,720	5,860	0	0	83,720	5,860
TOTAL	180,000	279,166	3,988,425	6,839,384	2,956,750	4,541,656	7,125,175	11,660,206

Power Costs

Power costs are the major item of annual operating expense for the Project. On the basis of current estimates, payments for net power costs will constitute about 40 percent of the total charges for Project water service during the SWP repayment period.

Through March 31, 1983, power needs in excess of recovery generation (at San Luis, Devil Canyon, and Castaic) will continue to be obtained from Canadian Entitlement and Suppliers power under fixed purchase terms negotiated in 1966. (On March 31, 1978, the Suppliers, collectively and individually, notified the Department that the Suppliers Contract in its entirety will be cancelled effective April 1, 1983.) Hyatt-Thermalito power is being sold to electric utilities under a long-term contract (subject to cancellation upon five years' notice) with fixed payment terms also negotiated in about 1966. Since 1966, the costs and value of energy have increased several fold.

As pointed out in Chapter II, the Long Range Energy Program for the State Water Project envisions assured and economic sources of electric energy to supply SWP pumping operations after March 31, 1983 through:

- Continued use of recovery generation.
- Cancellation of the Power Sale Contract and retention of Hyatt-Thermalito generation for SWP use after March 31, 1983.
- Selection or development of additional energy sources for the balance of SWP energy requirements.
- Continued purchase of supplemental capacity and energy, as may be required, under new arrangements.
- Sales and/or exchanges of capacity and energy from all SWP sources which may, at times, be temporarily in excess of SWP requirements.

While the Department has made considerable progress to date, the Program may never be completely defined. Investigations, discussions, and negotiations will be required on a continuing basis and on a broad front in order to define the most economic sources of power supply.

The following sections describe a projection, as of January 1, 1979, of actual and assumed sources for supplying the estimated future pumping requirements of the SWP together with assumptions as to financing requirements.

Project Pumping Loads

Prior to Bulletin 132-78, projections of SWP pumping loads were based essentially on the need for entitlements as estimated by the contractors. In addition to such deliveries, operation studies basic to load projections have included estimated water amounts needed to (1) compensate for operational losses from the aqueduct system, (2) support SWP recreation development, and (3) generally, supply the ensuing six years of requested surplus water and construction repayment water deliveries. These operation studies have been based on a lower quartile Delta water supply condition until about the mid-1980s (i.e., a supply which could be expected to be exceeded three of every four years), thereafter changing to a median water supply condition. The objective of these studies was to determine, within available usable storage on the aqueduct system and operational criteria (regarding maximum water surface draw-down rates, maintenance, down-times, etc.), the minimum annual amounts of power capacity that must be purchased to support estimated water deliveries.

Under the Department's current plans, which encompass the facilities and operations envisioned in Bulletin 76, projected pumping loads would be significantly affected due to the following SWP changes:

- Estimated SWP water demands, particularly those in Southern California, would be significantly reduced due to increased emphasis on municipal and industrial waste water reclamation and local water conservation. (The estimated reduction would grow to about 740 000 cubic dekametres (600,000 acre-feet) by the year 2000 as compared with the total SWP demands basic to Bulletin 132-77 projections).

- Offstream storage operations (including conjunctive ground water operations) would provide a significant portion of the future SWP yield and would require additional pumping load.

In view of off-stream storage operations and surplus water deliveries contemplated in Bulletin 76, gross SWP pumping load would be largest during "wet" years of Delta supply. However, "median" water supply conditions would govern critical power supply conditions since a considerable portion of the SWP's power supply will be dervied from hydroelectric generation (namely, Hyatt-Thermalito power) which also would vary in amount with Delta supply. Pumping requirements during "dry" conditions would be reduced to an extent greater than the decrease of hydroelectric generation due to the elimination of surplus water deliveries, application of allowable deficiencies under Article 18 of the Water Supply Contract, and releases from off-aqueduct (including ground water) storage.

Projected Power Sources and Costs

All orders have been placed for power through March 31, 1983 under current power purchase arrangements. Analysis of contractor requests submitted in the Fall of 1978 for the delivery of annual entitlements through 1982 generally indicate that the Department's orders for Firm Capacity under the Suppliers Contract, placed six years in advance, are sufficient. The financial analysis assumes that any extra capacity and associated energy needed before April 1, 1983 can be purchased for $24 per kilowatt year for capacity and average system cost for energy. The future sources for supplying pumping requirements after March 31, 1983 for the remainder of the repayment period (through the year 2035) cannot be completely defined now. In addition to Hyatt-Thermalito and recovery power plants, assumed sources which the Department would own are shown on Line 19 of the financial analysis. Also, it is assumed that the Department would purchase power from the Kings River Conservation District and The Metropolitan Water District of Southern California under the arrangements described in Chapter II -- and that all remaining supplemental energy needs or temporary energy surplus would be purchased from or sold to electric utilities, respectively, under agreements now being discussed.

Financing Requirements

Project financial analyses to date have included only the actual and projected costs of power sources which are a physical part of basic SWP conservation and transportation facilities -- i.e., the Hyatt-Thermalito facilities and power recovery plants on the California Aqueduct or associated with future off-stream storage reservoirs. The costs of other power sources have been included only to the extent of annual operating costs in such analyses. While that

assumption fully accounted for the eventual repayment of financing costs within the water charge structure, it did not demonstrate the timing of charges needed to finance the acquisition of such other power sources.

For this analysis, it is assumed that the construction costs of future power sources would be financed by the sale of Central Valley Project Revenue Bonds. This has historically been the case, except for the State's share of San Luis Pumping Generating Plant which was financed with Burns-Porter funds. However, an exception to the above assumptions would be the financing for future power plants associated with Los Vaqueros and Glenn Reservoirs, and the replacement thermal plants assumed to be constructed between years 2010 and 2020. It is assumed for this analysis that these future plants would be financed similar to the San Luis plant --their construction costs would be financed by any available SWP funds, including Burns-Porter funds.

Project Sales

The Long Range Energy Program contemplates that there may, at times, be SWP resources in excess of SWP requirements and that such temporary excesses would be sold or exchanged. Such excesses would be the result of total SWP resources as a whole; therefore, any revenue or credit realized from the sale or exchange of excess power would be associated with all SWP-owned sources, and not with a particular plant. For purposes of this analysis, such estimated revenues are allocated among SWP-owned plants on the basis of installed generating capacity.

For the projections shown in this bulletin, varying amounts of power capacity would be available over and above required loads and reserves; however, committed energy resources generally would be deficient and would have to be supplemented by purchases from electric utilities. Arrangements may be possible whereby the excess capacity would be exchanged with electric utilities for supplemental energy. However, for purposes of this analysis, it is assumed that excess capacity would be sold.

APPENDIX B

DATA AND COMPUTATIONS USED IN

DETERMINING WATER CHARGES FOR 1980

APPENDIX B - DATA AND COMPUTATIONS USED IN DETERMINING WATER CHARGES FOR 1980

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APPENDIX B

DATA AND COMPUTATIONS USED IN DETERMINING WATER CHARGES

Statements of charges to be furnished by the State on or before July 1 of each year are described in Article 29(e) of the "Standard Provisions for Water Supply Contract", which provides that:

> "...All such statements shall be accompanied by the latest revised copies of the document amendatory to Article 22 and of Tables B, C, D, E, F, and G of this contract, together with such other data and computations used by the State in determining the amounts of the above charges as the State deems appropriate."

Compliance with Article 29(e) requires a comprehensive annual redetermination of all water supply aspects of the State Water Project for the entire project repayment period. This annual redetermination is specifically provided for in Article 22(f), concerning the Delta Water Rate per acre-foot of future entitlement, and in Article 28, with regard to the Annual Transportation Charges for the entire project repayment period.

This appendix documents the redetermination for water charges to be paid by contractors during calendar year 1980 and is based on aspects of the State Water Project known January 1, 1979. The computational procedure and relationships among tabulations of this redetermination are outlined on Figure B-1. All B-tables shown on Figure B-1 are found at the end of this appendix.

This appendix also documents payments, pursuant to amended Article 21 of the Standard Provisions, for the sale and service of surplus project water to contractors.

Character of Water Charges

Most of the facilities of the State Water Project are necessary either for the conservation and development of a project water supply in and above the Sacramento-San Joaquin Delta or for the conveyance of such a supply to project service areas throughout the State. The Standard Provisions classify these facilities, respectively, as "project conservation facilities" and "project transportation facilities".

Project Conservation Facilities

- Frenchman Dam and Lake
- Grizzly Valley Dam and Lake Davis
- Oroville Dam and Lake Oroville
- Oroville Power Facilities
- Delta Facilities
- Additional Conservation Facilities
- A portion of the California Aqueduct (all of San Luis Dam, Reservoir, and Pumping-Generating Plant, and a portion of the works from the Delta through O'Neill Forebay)

Project Transportation Facilities

- Grizzly Valley Pipeline

- North Bay Aqueduct
- South Bay Aqueduct (including Del Valle Dam and Lake Del Valle)
- The remaining portion of the California Aqueduct (the remaining portion of the works between the Delta Facilities and Dos Amigos Pumping Plant and all works south, including Dos Amigos Pumping Plant and the project dams and lakes in Southern California)

The Standard Provisions provide for two basic annual charges for project water:

- The Delta Water Charge, which will be paid by all contractors and which will return all reimbursable costs of the project conservation facilities to the State.
- The Transportation Charge, in addition to the Delta Water Charge, which will be paid by those contractors served by the project transportation facilities and which will return all reimbursable costs of such facilities to the State.

The Delta Water Charge is essentially a unit commodity assessment on each acre-foot of project water the contractors are entitled to receive under their contracts. The unit charge is calculated so that, if applied to each acre-foot of all such entitlements for the remainder of the project repayment period, all outstanding reimbursable costs of the project conservation facilities will be returned to the State, with appropriate interest, by the end of the period. Reimbursable costs include those allocated to water supply and power generation. Outstanding reimbursable costs exclude (a) those returned to the State through actual payments of the Delta Water Charge and (b) all those returned and to be returned to the State through sales of power generated in connection with the project conservation facilities.

Article 22(g) of the Standard Provisions as amended, requires that the Delta Water Charge be adjusted, when costs are incurred, to reimburse the costs of those supplemental conservation facilities constructed in the future to supply "supplemental water" in addition to the "minimum project yield", 5 217 705 cubic dekametres (4,230,000 acre-feet) annually. Article 22(g) further provides that the redetermined charge will be paid both by contractors for "supplemental water" and by contractors supplied by the present "minimum project yield". Thus, the Delta Water Charge is "open-ended".

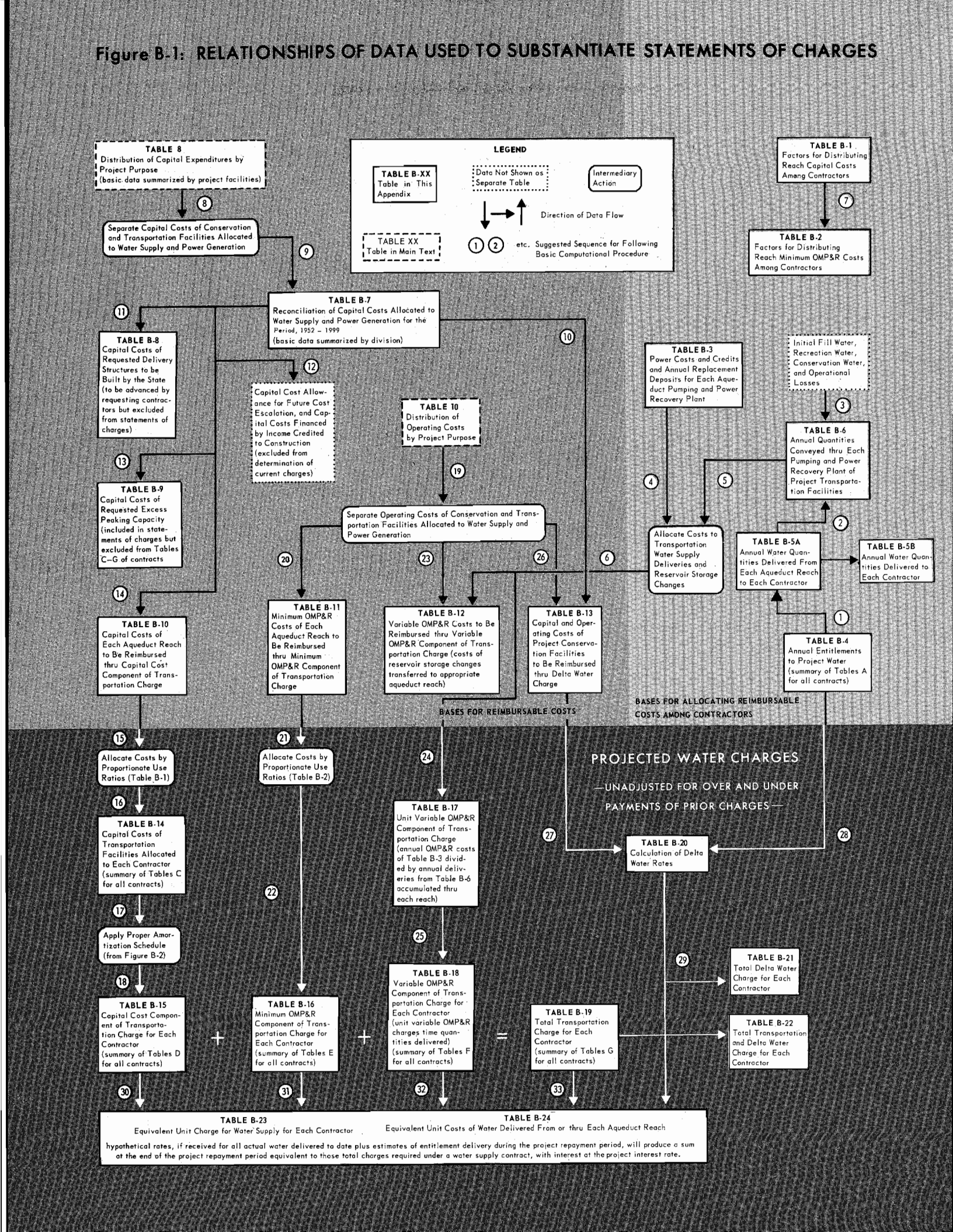
The Transportation Charge is essentially an assessment for that use of the project transportation facilities required to deliver water provided within the "minimum project yield" from points in and above the Sacramento-San Joaquin Delta to the vicinity of each contractor's turnout. Generally, the annual Charge represents each contractor's proportionate share of the reimbursable costs for constructing and operating the project transportation facilities. Certain variations are allowed in the method of amortizing each contractor's share of reimbursable capital costs. The contractor's share of reimbursable operating costs is repaid essentially in the year such costs are incurred by the State.

Composition of Water Charges

The Delta Water Charge and the Transportation Charge each consists of three components:

- A capital cost component, which will return to the State all reimbursable capital costs.

Figure B-1: RELATIONSHIPS OF DATA USED TO SUBSTANTIATE STATEMENTS OF CHARGES



- A minimum operation, maintenance, power, and replacement (OMP&R) component, which will return to the State all reimbursable operating costs that are incurred irrespective of water quantities actually delivered to the contractors.

- A variable OMP&R component, which will return to the State all reimbursable operating costs that are incurred in amounts that depend on, and vary with, water quantities actually delivered to the contractors.

The time and method of payment for corresponding components of the Delta Water Charge and the Transportation Charge are as follows:

- The capital cost components of the Delta Water Charge and the Transportation Charge are paid in two semiannual installments, due January 1 and July 1 of each year, on the basis of statements furnished by the State on or before July 1 of the preceding year.

- The minimum OMP&R component of the Transportation Charge and all reimbursable operating costs under the Delta Water Charge are paid in 12 equal installments, due the first of each month, also on the basis of statements furnished by the State on or before July 1 of the preceding year.

- The variable OMP&R component of the Transportation Charge is paid in varying monthly amounts, due the 15th of the second month following actual water delivery, on the basis of a unit charge per acre-foot established on or before July 1 of the preceding year and applied to actual monthly delivery quantities as determined by the State on or before the 15th of the month following actual delivery.

The Transportation Charges do not include certain credits from contractor payments under supplemental agreements including the following:

1. Payments for State construction of requested delivery structures which exceed actual construction costs of such structures.

2. Payments for State construction of requested excess capacity in project transportation facilities which exceed actual construction costs of such excess capacity.

3. Payments under the Devil Canyon-Castaic contract.

Transportation Charges for prior years, through 1978, do not equal those amounts actually paid by contractors under statements previously furnished by the State. Overpayments or underpayments of charges (difference between the redetermined amounts and those under statements previously furnished) are accumulated, with interest credits or debits, and are deducted from or added to the redetermined amounts of the Transportation Charge to be paid by respective contractors during 1980 (except for the capital cost component associated with agricultural use by Kern County Water Agency). These adjustment computations are shown in the attachments accompanying each contractor's statement of charges and are reflected in revised copies of Tables C through G of the contract, also furnished with the statement of charges.

The formula for computing the Delta Water Rate, Article 22(f) of the Standard Provisions, provides that all adjustments for prior overpayments or underpayments of the Charge are accounted for in a redetermination of the Rate. Since the redetermined Rate applies to all future entitlements, such adjustments are effectively amortized during the remainder of the project repayment period. This appendix includes a deter-

mination of the Delta Water Rate for 1980.

This redetermination excludes charges associated with project water service other than the Delta Water Charge and the Transportation Charge. Other charges (and the manner by which such charges are treated herein) are:

- Advances of funds pursuant to Article 24(d) of the Standard Provisions, for excess capacity constructed by the State at the request of contractors. (Information on required advances is included herein because these charges are covered in the July 1 statements. However, any advances which are projected to exceed the additional capital costs for such excess capacity in completed aqueduct reaches have not been credited to future capital cost components of the Transportation Charge. Application of these credits is shown in the copies of revised Tables D and G which are furnished with the statements of charges.)

- Advances of funds pursuant to Article 10(d) of the Standard Provisions, for delivery structures (turnouts) constructed by the State at the request of contractors. (Partial information is included herein concerning actual and projected capital costs of such delivery structures. Statements concerning these costs and data in support of such statements are furnished to the appropriate contractors at various times and are not part of the July 1 statements.)

- Payments for sale and service of surplus project water to entities other than contractors pursuant to Article 21 of the Standard Provisions. (Payments on such water are based on prices greater than the unit variable OMP&R costs involved. Net revenues resulting from "noncontractor" service are applied as described on page 24, Bulletin 132-71. Such prices are generally based on the unit rates shown in Table B-24.)

- Payments under the Devil Canyon-Castaic Contract for costs of the Devil Canyon and Castaic Facilities allocable to power generation. (Charges under the Contract are billed separately from those under the Water Supply Contract. The treatment of such charges in relation to redetermined Transportation Charges is shown in special attachments to the bills of the six affected contractors.)

The minimum and variable OMP&R costs and charges presented in this Bulletin include annual replacement deposits substantially increased over those in prior bulletins. Under the revised schedule, replacement deposits of about $5.7 million will be charged to contractors in 1980. Under the previous schedule about $.9 million was projected for 1980.

Bases for Allocating Reimbursable Costs Among Contractors

This section concerns how reimbursable costs of aqueduct reaches of the project transportation facilities are allocated among contractors for determining the Transportation Charge. Reimbursable costs of the project conservation facilities are not allocated directly among contractors. Conceptually, the Delta Water Charge is a unit commodity charge rather than a use-of-facilities charge.

Allocation of reimbursable costs of aqueduct reaches among contractors is based on two specific applications of the Proportionate Use of Facilities method:

- Allocations of reimbursable capital costs and minimum OMP&R costs of each reach are based on the proportionate maximum use of that reach by respective contractors under planned conditions of full project development.

- Allocations of reimbursable variable OMP&R costs of each reach are based on the proportionate actual annual use of that reach by the respective contractors.

Figure B-3, at the end of the text for this appendix, shows reaches in which reimbursable costs of project transportation facilities are allocated among contractors.

Proportionate Maximum Use of Facilities

The derivation of ratios that represent the proportionate maximum use of each aqueduct reach by the respective contractors was last described in Bulletin 132-70. (See pages 103-106 for a description of the computational procedure; pages 116-117 for a summary of aqueduct reaches, reach delivery quantities, and reach capacities; and pages 118-173 for a detailed derivation of factors for each contractor and for each aqueduct reach.) Such factors are still valid -- except for the first reach of the California Aqueduct and for reaches of the South Bay Aqueduct. Revised ratios for these reaches are described in Bulletin 132-72 (see pages 106-111) and account for certain contract amendments executed early in 1972 regarding South Bay Aqueduct use (see pages 33-35, Bulletin 132-73).

Table B-1 presents a summary of all reach ratios currently applicable to reimbursable capital costs.

Table B-2 presents a corresponding summary applicable to reimbursable minimum OMP&R costs. Requested excess capacity is ignored in B-1 (since the associated capital costs are paid for on an incremental-cost basis and not a proportionate-use basis) but is accounted for in B-2

Proportionate Annual Use of Facilities

Article 26(a) of the contract provides that the variable OMP&R component of the Transportation Charge shall return to the State those costs which are incurred in an amount which depends upon and varies with the amount of project water delivered to the contractor. (The minimum OMP&R component returns those operating costs which are incurred in an amount which does not vary with deliveries.) The Article explains that all such costs for a reach for a given year shall be allocated among contractors in proportion to the respective delivery quantities conveyed through the reach during the year.

Under the State's procedure, variable OMP&R costs originate with certain operating costs of project pumping and power recovery plants. These costs are incurred in amounts which generally vary with the total water conveyed through the plants -- not with just the portion for delivery to contractor turnouts. In addition to direct deliveries, conveyance may include the following:

(a) Water applied in down-aqueduct onshore recreation developments,

(b) Water stored in the initial fill of down-aqueduct reaches and reservoirs,

(c) Water lost through evaporation and seepage from down-aqueduct reaches and reservoirs, and

(d) Water stored during a year in excess of storage withdrawals, subsequent to initial fill, in down-aqueduct reservoirs.

Under the State's procedure, certain operating costs for a plant for a given

year are allocated among direct deliveries and (a) through (d) above in proportion to respective quantities conveyed through the plant during the year. Plant costs allocated to direct deliveries are designated as variable OMP&R costs to be repaid by contractors for the reach in which the plant is located. Remaining plant costs are allocated to the quantities (a) through (d) above and designated as follows:

(a) A portion of joint OMP&R costs of the reach containing the plant allocated to recreation,

(b) A portion of joint capital costs of respective down-aqueduct reaches and reservoirs,

(c) and (d) A portion of joint minimum OMP&R costs of respective down-aqueduct reaches and reservoirs,

Concerning (d) above, in years when storage in down-aqueduct reservoirs is decreased for the purpose of making deliveries, associated variable OMP&R costs are established for the respective reservoirs with an offsetting credit applied to the minimum OMP&R costs of each. Such variable OMP&R costs are calculated to be equivalent to the original plant costs of conveying the water placed in storage. Under current procedures, the unit cost of conveying water to storage is assumed to be equivalent to the unit cost of conveying water to the storage site in years when such storage is released.

Special Treatment of Certain Plant Costs. As indicated in the preceding section, the State's procedure requires an initial apportionment of certain plant costs among capital cost, minimum OMP&R, and variable OMP&R components. This is based on annual quantities conveyed through respective plants for various down-aqueduct functions. Plant costs which are apportioned are summarized in Table B-3 and include the following items:

- Costs of capacity and energy used, exclusive of associated power transmission and station service charges. (Transmission and station service costs are classified as minimum OMP&R costs.)

- Credits for capacity and energy produced at aqueduct power recovery plants (treated as negative costs).

- Annual payments to sinking fund reserves to finance periodic replacement of plant machinery components having economic lives shorter than the project repayment period.
  The annual sinking fund payments for years 1962 through 1979 are based on a schedule which was determined in 1970 and has been continued in bulletins and water contractor charges since that date. Sinking fund payments for 1980 and amounts projected from 1981 through 1991 in this bulletin are based on a revised schedule. Amounts in the revised schedule are substantially greater than those projected in the 1970 schedule. No sinking fund amounts are projected in these tables after 1991.

Table B-3 includes new projections of power costs and credits and plant unit rates for 1979 and 1980. Power costs for 1981 and after are projected at the same unit rates as in Bulletin 132-78.

Excluded from the above are costs for salaries of plant operations and maintenance personnel -- classified as minimum OMP&R costs.

Also excluded from B-3 are plant capacity and energy costs associated with surplus water service after May 1, 1973. Prior to May 1, 1973, surplus water service was charged the same unit variable OMP&R component as entitlement water service. Prior to that date, surplus water deliveries are included in the "Deliveries -- Water Supply" described in the following section.

Beginning May 1, 1973, the rate structure for surplus water service was significantly changed (see "Contract Amendments, Water Contracts Management", Chapter II). Capacity and energy costs of pumping plants are assigned directly to surplus water service in years of delivery. However, no surplus water was available in 1977 due to the severity of the drought.

Water Conveyance. Table B-4 summarizes the schedules of annual entitlements as set forth in Table A of each contract. Table B-5A presents a summary of the actual and projected annual water quantities delivered and to be delivered from each aqueduct reach to each contractor. These quantities include surplus water delivered prior to May 1, 1973, and actual and projected nonproject water delivered to contractors through SWP facilities. These water deliveries do not necessarily correspond with annual entitlements. (For a comparison of actual and projected deliveries to annual entitlements, see Table 1, Chapter II.) Table B-5B presents a summary of actual and projected annual water quantities delivered and to be delivered to each contractor.

Table B-6 summarizes the water quantities conveyed or to be conveyed through each aqueduct pumping plant or power plant for each year of the project repayment period and for each of the following functions:

- Made available to contractors at down-aqueduct delivery structures ("Deliveries -- Water Supply").
- Required to initially fill down-aqueduct reaches and reservoirs to operational levels or for repayment of preconsolidation water used during construction of project facilities ("Initial Fill Water").
- Consumed in down-aqueduct project-associated recreation developments ("Deliveries, Recreation").
- Lost through evaporation and seepage from all down-aqueduct reaches ("Operational Losses").
- Placed in down-aqueduct reservoir storage subsequent to the initial fill of such storage ("Reservoir Storage Changes"). Except at the Delta Pumping Plant, where it is included in "Conservation Water", "Reservoir Storage Changes" also includes project water placed into Southern California ground water storage in 1978 through 1983 (as plus amounts), and includes a projection for withdrawing a portion of the water from storage and delivery of the water to contractors, between 1979 and 1982 (as negative amounts).

In addition Table B-6 summarizes the net annual water amounts stored and to be stored in San Luis Reservoir (a project conservation facility with costs reimbursed through the Delta Water Charge) and lost and to be lost through evaporation and seepage from the Reservoir and from the water conservation portion of the Aqueduct (all such quantities are included under the heading "Conservation Water").

The Delta Pumping Plant is a joint transportation-conservation facility. Under the State's procedure, power and replacement costs of the Delta Pumping Plant which are apportioned to the conveyance of annual "conservation water" quantities are transferred to the capital costs of San Luis Reservoir (during initial fill) or to the minimum OMP&R costs of San Luis Reservoir (subsequent to initial fill).

In years when releases from San Luis Reservoir cause a net annual storage depletion in order to make deliveries to contractors down-aqueduct therefrom, a portion of the minimum OMP&R costs of the Reservoir is transferred to the transportation variable OMP&R costs of the Delta Pumping Plant. This transfer is in an amount equal to the variable OMP&R cost per acre-foot of delivery through the Delta Pumping Plant for that year, multiplied by the acre-feet of deliveries derived from San Luis Reservoir storage for that year.

Project Facilities	Water Supply and Power Generation		All Other Purposes (Nonreimbursable)	
	Capital Costs	Minimum OMP&R Costs	Capital Costs	Minimum OMP&R Costs
	(in percent)			
Project Conservation Facilities				
Frenchman Dam and Lake	21.5	0	78.5	100.0
Antelope Dam and Lake	0	0	100.0	100.0
Grizzly Valley Dam and Lake Davis	5.1	8.8	94.9	91.2
Oroville Division[a]	97.1	99.5	2.9	0.5
California Aqueduct, Delta to Dos Amigos Pumping Plant	96.6	96.7	3.4	3.3
Delta Facilities	86.0	86.0	14.0	14.0
Additional Conservation Facilities	95.0	95.0	5.0	5.0
Transportation Facilities				
California Aqueduct:				
California Aqueduct excluding Coastal Branch[b]	97.0	92.9	3.0	7.1
Coastal Branch	100.0	100.0	0	0
South Bay Aqueduct:				
Del Valle Dam and Lake Del Valle	25.2	22.0	74.8 [c]	78.0 [d]
Remainder of South Bay Aqueduct	100.0	100.0	0	0
North Bay Aqueduct	100.0	100.0	0	0

a) Percentages shown are applicable to the total costs of the Division excluding specific power costs of Edward Hyatt and Thermalito Powerplants and Switchyards. Federal reimbursements for flood control are treated as negative costs.

b) A final allocation of facilities from the Delta to Dos Amigos Pumping Plant has been made. 3.4 percent of these capital costs are allocated to recreation and fish and wildlife enhancement and are reported for reimbursement under AB12. However, until the remainder of the aqueduct is finally reported the percentage for billing purposes is as shown.

c) Percentage shown consists of 48.0% recreation and 26.8% flood control.

b) Percentage shown consists of 44.9% recreation and 33.1% flood control.

Bases for Reimbursable Costs

Tables 8 and 10 (Chapter III) summarize the capital and OMP&R costs of all project facilities, respectively, and the allocation of these costs among the various project purposes. Allocation percentages are shown for each project facility in the following tabulation. For the most part, these percentages are preliminary and subject to future revision and are applicable to the State's costs of the respective facilities. The redetermination in this appendix is concerned only with the costs of project facilities that are allocated to water supply and power generation.

Capital Costs

Table B-7 presents a reconciliation of estimated total capital costs of each project conservation facility and each aqueduct reach as estimated for (a) Chapter III and (b) current redetermination of water charges.

Costs of Delivery Structures. Costs of delivery structures constructed by the State are paid directly by each contractor requesting such structures (see pages 87 and 88, Bulletin 132-71 for a description of the method of payment for

Project Facility	Number of Delivery Structures					
	Requested by Agencies	Under Construction		Completed		Stub Only[a]
		by State	by Agencies	by State	by Agencies	
Oroville Area	6	0	0	0	6	0
North Bay Aqueduct (Phase I)	3	0	0	1	1	1
South Bay Aqueduct	20	0	0	8	9	3
California Aqueduct:						
North San Joaquin Division	5	0	1	0	4	0
San Luis Division (served by the federal Central Valley Project)						
South San Joaquin Division	49	0	2	9	29	9
Tehachapi Division	1	0	0	0	0	1
Mojave Division	24	0	0	0	13	11
Santa Ana Division	10	0	0	3	5	2
West Branch	5	0	0	1	1	3
Coastal Branch (Phase I)	3	0	0	1	2	0
TOTAL	**126**	**0**	**3**	**23**	**70**	**30**

a) Will be completed at a later date. Temporary facilities for delivery of water have been installed at several of the stubs.

the capital costs of a delivery structure constructed by the State). Capital costs of all delivery structures constructed and to be constructed by the State are shown for each contractor in Table B-8. However, these costs are incomplete in some respects and should not be construed as preliminary estimates or final invoices to be furnished by the State. The above tabulation indicates the general location and construction status of delivery structures requested as of the end of 1978.

Costs of Requested Excess Capacity. Amendments have been added to contracts of the following three agencies and provide for excess capacity in the project transportation facilities:

The Metropolitan Water District of Southern California, San Gabriel Valley Municipal Water District, and Antelope Valley-East Kern Water Agency. Listed in Table B-9 are estimates of the amounts for:

- Additional costs incurred by the State for requested excess capacity.
- Required advances, by water contractors, of funds for such costs.
- Any credits for advances estimated to be in excess of costs which will be applied to the respective contractor's accounts (generally, to the contractors' next installment of the capital cost component of the Transportation Charge).

Under Amendment 2 of Metropolitan's contract, 22.9 cubic metres per second (809 cubic feet per second) of excess capacity originally was constructed in reaches of the West Branch at the District's request. Under Amendment 7, such capacity was reclassified as basic capacity of the project transportation facilities. This aspect of Amendment 7 required a $16.3 million prepayment of the District's capital cost component of the Transportation Charge in lieu of advances of funds for the originally requested capacity.

Application of credits for contractor advances that are estimated to be in excess of actual costs and (concerning

Metropolitan's Amendment 7) for prepayments of the capital cost component is shown in attachments to the respective statements of charges.

Amendment 5 of Metropolitan's contract includes a provision whereby additional costs to be incurred because of modifications to the Santa Ana Valley Pipeline, required for enlargement of Lake Perris at the request of Metropolitan, are to be allocated to the District and returned to the State through payments of the Transportation Charge: The estimated additional costs to be repaid through the District's capital cost component for the aqueduct reach from Devil Canyon Powerplant to Barton Road total $6.7 million, as shown on page 98, Bulletin 132-72.

Annual Operating Costs

Estimated operating costs allocable to water supply and power generation shown in Table 10 (Chapter III) will be returned to the State through payments of the minimum and variable OMP&R components of Delta Water and Transportation Charges and through a portion of the revenues from electric power sales.

All reimbursable operating costs of conservation facilities are returned to the State through payments of the minimum OMP&R component of the Delta Water Charge.

Those operating costs to be reimbursed through payments of the variable OMP&R component of the Transportation Charge were previously described in the section entitled "Special treatment of Certain Plant Costs". The remainder of this section centers on those costs to be reimbursed through payments of the minimum OMP&R component of the Transportation Charges.

Minimum Operating Costs. The following types of operating costs are considered to be incurred in annual amounts that do not vary with the water quantities delivered to the contractors and are therefore classified as minimum OMP&R costs:

- All direct labor charges for field operations and maintenance personnel, including associated indirect costs.
- Electric power transmission and station service costs.
- For the first time, this year the projected minimum OMP&R amounts in Table B-11 are escalated at 7 percent per year through 1981. Projections of minimum OMP&R costs in previous bulletins did not include escalation and in some cased resulted in substantial underpayments by the water contractors.
- All costs for equipment, materials, and supplies and for replacement of works other than rotating machinery of pumping and power recovery plants. Minimum OMP&R costs in Table B-11, for 1980 through 1991 include replacement deposits based on a revised schedule, updating replacement requirements. This new schedule of replacement deposits requires substantially higher deposits than previous schedules.
- Portions of the power and replacement costs of all up-aqueduct pumping plants and power plants that are allocable to the annual conveyance of water (a) lost to evaporation and seepage from respective aqueduct reaches, or (b) placed into storage in respective reservoirs of the project transportation facilities (after initial fill).
- Credits, which offset those costs referred to in (b) above, for deliveries derived from reservoir storage.
- A distributed share of general and direct operating costs which cannot be identified solely with one facility or aqueduct reach.

Concerning the allocation of general operating costs among facilities and reaches, this redetermination follows the procedures described on pages 111-113, Bulletin 132-70.

Costs to be Returned to the State Through Payments Under the Transportation Charge and the Devil Canyon-Castaic Contract

Table B-10 presents the actual and projected annual capital costs of each aqueduct reach that will eventually be returned to the State, with interest, through contractor payments of the capital cost component under the Transportation Charge and of debt service under the Devil Canyon-Castaic Contract. The actual and projected costs to be reimbursed through payments of the minimum OMP&R component under the Transportation Charge and of allocated operating costs under the Devil Canyon-Castaic Contract are shown in Table B-11. Variable OMP&R costs, shown in Table B-12, are a portion of those costs shown in Table B-3 allocable to the water supply delivery quantities shown in Table B-6 and reimbursed through payments of the variable OMP&R component of the Transportation Charge.

Costs to be Returned through Payments Under the Delta Water Charge and the Oroville Power Sale Contract

Summarized in Table B-13 are actual and projected capital and operating costs of the initial project conservation facilities to be reimbursed through payments under (a) the Delta Water Charge, (b) Oroville power sales, and (c) San Luis power credits. Included in Table B-13 are credits applied to the reimbursable capital costs of the project conservation facilities pursuant to negotiated settlements concerning the magnitude of incurred planning costs for the period 1952 through 1976 (see section entitled "Negotiation of Water Charge Settlements", Chapter II).

Ground water storage costs shown in column (7) and (8) are subject to those costs being determined to be proper charges to conservation under the water supply contracts.

The Delta Water Rate for 1980 and after is increased over previous estimates to reflect new estimates of conservation capital costs, minimum OMP&R costs, replacement deposits, and power and energy costs for 1979 and 1980. Power and energy costs included in the Delta Water Rate for 1981 and after are the same as in Bulletin 132-78.

Project Water Charges

This section summarizes the redetermination of past and projected components of the Transportation Charge for annual revision of Tables C through G that are included in each water contract. This section also includes a derivation of the unit Delta Water Rates. Equivalent unit charges for each acre-foot of entitlement water service are also summarized herein for (a) each contractor and (b) each aqueduct reach.

Transportation Charges

The accumulation of allocated costs of each aqueduct reach to each contractor forms the basis for the annual components of the Transportation Charge.

Allocated Capital Costs. Table B-14 summarizes each contractor's share of the capital costs of aqueduct reaches presented in Table B-10, as determined by application of proportionate-use ratios set forth in Table B-1. The resulting allocated costs are set forth in Table C of the respective contracts.

Prepayments of the capital cost component, required under Metropolitan's Amendment 7, are shown as negative capital costs in Metropolitan's Table C and in Table B-14. Both Table B-14 and Tables C of the six contracts for service below the Devil Canyon and Castaic Facilities include the capital costs that are reimbursable under the Devil Canyon-Castaic Contract.

Capital Cost Components. Criteria as to the types of amortization schedules applicable to the allocated capital costs

for the respective contractors are summarized in Figure B-2. The accounting of interest charges included in the capital cost components of the Transportation Charge follows the procedure established in Settlement Letter No. 2.

Table B-15 summarizes the capital cost components of the Transportation Charge for each contractor for each year of the project repayment period. These estimated components, subsequently adjusted for prior overpayments or underpayments are set forth in Table D of the respective contracts. Credits for advance payment for excess capacity that exceeds actual costs of such capacity are aplied to reduce the payment amounts set forth in Table D, but are not included in Table B-15. Both Table B-15 and Table D of the six Devil Canyon-Castaic contracts include the debt service payments due under the Devil Canyon-Castaic Contract.

Minimum OMP&R Components. Table B-16 summarizes the minimum OMP&R components of the Transportation Charge for each year of the project repayment period. These estimated components subsequently adjusted for prior overpayments or underpayments, are set forth in Table E of the respective contracts. These components represent the accumulated share of the reach costs presented in Table B-11, as determined by application of the proportionate-use ratios shown for each reach and for each contractor in Table B-2.

Under operating agreements with Kern County Water Agency concerning the early installation of units by Berrenda Mesa Water District in Las Perillas and Badger Hill Pumping Plants (see page 7, Bulletin 132-71), the Agency is to be billed any additional operating costs caused by early installation of the units which would otherwise increase charges to downstream contractors. Under this requirement, the following minimum OMP&R costs of Reach 31A are assigned directly to the Agency with the remaining reach costs allocated by application of the proportionate-use ratios:

Year	Direct Charge	Year	Direct Charge
1969 . . .	$ 46,465	1978 . . .	$ 75,916
1970 . . .	46,342	1979 . . .	71,414
1971 . . .	139,695	1980 . . .	83,411
1972. . .	93,612	1981 . . .	91,478
1973 . . .	71,053	1982 . . .	95,545
1974 . . .	97,934	1983 . . .	90,867
1975 . . .	123,842	1984 . . .	96,399
1976 . . .	136,267	1985 . . .	97,675
1977 . . .	60,248	Total . . .	1,518,163

Both Table B-16 and Table E for the six Devil Canyon-Castaic contracts include the portion of operating costs payable under the Devil Canyon-Castaic Contract.

Variable OMP&R Components. Article 26(a) of the Standard Provisions specifies the following procedure for calculating the variable OMP&R component of the Transportation Charge:

- An annual charge per acre-foot of projected water deliveries to all contractors served from or through each reach is determined so as to return to the State the projected variable OMP&R costs to be incurred for each reach.

- The total annual variable OMP&R component for any contractor for a given reach is obtained by multiplying the unit charge associated with that reach by the quantity of water actually delivered from or through the reach to the contractor.

Table B-17 presents a summary of actual and projected total variable OMP&R costs for each acre-foot of conveyance through each aqueduct pumping plant and power

plant for each year of the project repayment period. The data summarized in Table B-17 have been derived by dividing the power costs (and credits) and replacement costs shown in Table B-3 by the total water quantities shown in Table B-6.

However, certain costs included in Table B-12 for "extra peaking service", which would otherwise constitute variable OMP&R costs, are assigned directly to contractors requesting this type of service (see page 21, Bulletin 132-71, and Water Service Contractors Council Memo No. 593, July 10, 1970). These costs are excluded from the unit charges shown in Table B-17. Extra peaking charges for additional power capacity are as shown below:

Year	Agency	Pumping Plant	
		Dos Amigos	Las Perillas and Badger Hill
			(dollars)
1972	Kern County W.A.	$9,553	$24,700
	Hacienda W.D.	10	0
1973	Kern County W.A.	0	6,016
1974	Kern County W.A.	0	7,140
1975	Kern County W.A.	494	6,397
1976	Kern County W.A.	0	1,981

FIGURE B-2: CRITERIA FOR AMORTIZATION SCHEDULES

Contractor	Amortization of Allocated Capital Costs in 50 Equal Annual Installments, With Initial Payment Due in:								
	1963	1964	1965	1966	1968	1970	1973	a	b
Alameda County FC&WCD, Zone 7	● c								
Alameda County WD	●								
Antelope Valley-East Kern WA	●								
Castaic Lake WA		●							
County of Butte									●
County of Kings					●				
City of Yuba City									●
Coachella Valley County WD		●							
Crestline-Lake Arrowhead WA		●							
Desert WA	● d								
Devil's Den WD								●	
Dudley Ridge WD								●	
Empire West Side ID								●	
Hacienda WD								●	
Kern County WA: Ag use								●	
M&I use			●						
Littlerock Creek ID		●							
Mojave WA		●							
Napa County FC&WCD				●					
Oak Flat WD								●	
Palmdale WD		●							
Plumas County FC&WCD						●			
San Bernardino Valley MWD	●								
San Gabriel Valley MWD	● d								
San Gorgonio Pass WA	● d								
San Luis Obispo County FC&WCD		● e							
Santa Barbara County FC&WCD		● e							
Santa Clara Valley WD	●								
Solano County FC&WCD							●		
The Metropolitan WD-SC	●								
Tulare Lake Basin WSD								●	
Ventura County FCD		●							

a Amortization of allocated capital costs on basis of equivalent unit rate applied to annual entitlements (Table B-4) within project repayment period.
b Payments on Delta Water Charge only.
c Principal payments on each annual capital cost prior to 1971 delayed until calendar year 1972, except payments for 1963.
d Deferred and added to 1964 payment with accrued interest.
e Exception: all principal and interest payments for costs of "Coastal Stub" are assumed deferred until 1976.

Table B-18 summarizes the variable OMP&R components of the Transportation Charge for each contractor and for each year of the project repayment period. Table B-18 is developed from the costs per acre-foot as shown in Table B-17 and the delivery quantities for each contractor from each reach as shown in Table B-5A, plus any costs for "extra peaking service". These estimated components, subsequently adjusted for prior overpayments or underpayments, are set forth in Table F of the respective contracts.

Total Transportation Charges. Annual Transportation Charges for each contractor are summarized in Table B-19. (The amounts shown in Table B-19 represent the sums of the corresponding amounts shown in Tables B-15, B-16, and B-18.) These estimated payments, subsequently adjusted for prior overpayments or underpayments, are set forth in Table G of the respective contracts. Both Table B-19 and Table G of the six Devil Canyon-Castaic contracts include debt service and operating cost payments due under the Devil Canyon-Castaic Contract.

Delta Water Rates per Acre-Foot of Entitlement

Calculation of the Delta Water Rate for the "initial" conservation facilities applicable after December 31, 1979, is shown in Table B-20 in accordance with the amended Articles 22(e) and 22(g) of 29 contracts. See discussion of "Costs to be reimbursed through payments under the Delta Water Charge and the Oroville Power Sales Contract" for Table B-13. Under the amended articles, future construction and operating costs of each additional and supplemental conservation facility will be included in the calculation of the Rate in years when the State first incurs major construction costs.

Ground water storage costs shown in column (7) and (8) of B-13 are subject to those costs being determined to be proper charges to Conservation under the water supply contracts.

The Delta Water Rate for 1980 and after is increased over previous estimates to reflect new estimates of Conservation Capital costs, minimum OMP&R costs, replacement deposits, and power and energy costs for 1979 and 80. Power and energy costs included in the Delta Water Rate for 1981 and after are the same as in Bulletin 132-78.

Two contracts have not as yet been amended (Yuba City and Solano County Flood Control and Water Conservation District). Future charges to these contractors projected in Table B-21, are based upon rates determined under original provisions of their respective contracts.

Delta Water Charges

Total Delta Water Charges. The annual Delta Water Charge for each contractor is summarized in Table B-21. Table B-21 is developed from the total rate per acre-foot as shown in Table B-20 and the entitlement water for each contractor as shown in Table B-4.

Total Transportation and Delta Water Charges

The total charge to each contractor consists of the sum of the Total Delta Water Charge and the Total Transportation Charge.

Total annual transportation and total Delta Water Charges are summarized in Table B-22. Table B-22 summarizes the total charge to each contractor by combining Table B-19 and Table B-21.

Equivalent Total Water Charges

A summary of total charges is shown in Table B-23 in terms of the equivalent charge for each acre-foot of project water now estimated to be delivered as entitlement water to the respective contractors. These equivalent charges would provide the same principal sum at the end of the project repayment period as annual payments to be made under the Delta Water Charge and Transportation

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Charge, plus interest at the project interest rate. The Table B-23 values account for the fact that current estimates of future entitlement water service are noticeably less than the amounts shown in Tables A for certain Southern California contractors.

Equivalent Water Costs, by Reach

Table B-24 presents a summary of the equivalent unit cost of conveying entitlement water through respective aqueduct reaches of the project transportation facilities. These unit costs provide the basis of charges assessed (a) for certain "extra service" (such as for delivery of entitlements down-aqueduct from a contractor's turnout) and, together with the Delta Water Charge per acre-foot, (b) for surplus water service to entities other than long-term water supply contractors. It should be noted that the cumulative unit conveyance costs shown for reaches in Table B-24 do not necessarily equal the equivalent unit Transportation Charges to contractors served from such reaches. This is because the unit charges of Table B-23 account for the rates of water demand buildup and cost allocation factors of the respective contractors, whereas the unit costs of Table B-24 meld together the effect of the respective buildups and allocation criteria of all contractors whose entitlements are conveyed through a given reach.

Surplus Water Service

Actual and Projected Deliveries. Surplus water has been delivered from project supplies during each of the years 1968 through 1978, except for 1977, when none was available because of the severity of the drought. In 1978 above-normal precipitation and the large quantities of Article 12(d) makeup water available to the usual surplus water users, resulted in surplus deliveries being the second lowest of record.

Table B-25 shows the quantities of surplus water delivered to long-term contractors during the period of May 1, 1973 through December 31, 1978. Table B-28 shows projected surplus water deliveries for each year of the six-year period of January 1, 1979 through December 31, 1984. Amounts during the years 1979 through 1981 are requested amounts. For the remaining years, requested amounts have been reduced, using contractual criteria so that each year's total projected delivery does not exceed the quantity of surplus water estimated to be available that year. Estimated availability is based on the assumption that a lower quartile water supply will be available each of the six years and that enough water will be held in storage at the end of each year so that delivery of all entitlement water can be made the following year even if the following year should have a water supply similar to that which would be available in a repeat of the year 1924 (1,651,000 acre-feet). It was further assumed that Delta water quality standards would be maintained through necessary releases of Federal and State water.

Surplus Water Costs. Table B-26 shows the costs for power which have been incurred by the State at each project pumping plant associated with surplus water deliveries shown in Table B-25. Estimated power costs at each pumping plant that will be incurred in making the projected surplus water deliveries shown in Table B-28 are tabulated in Table B-29.

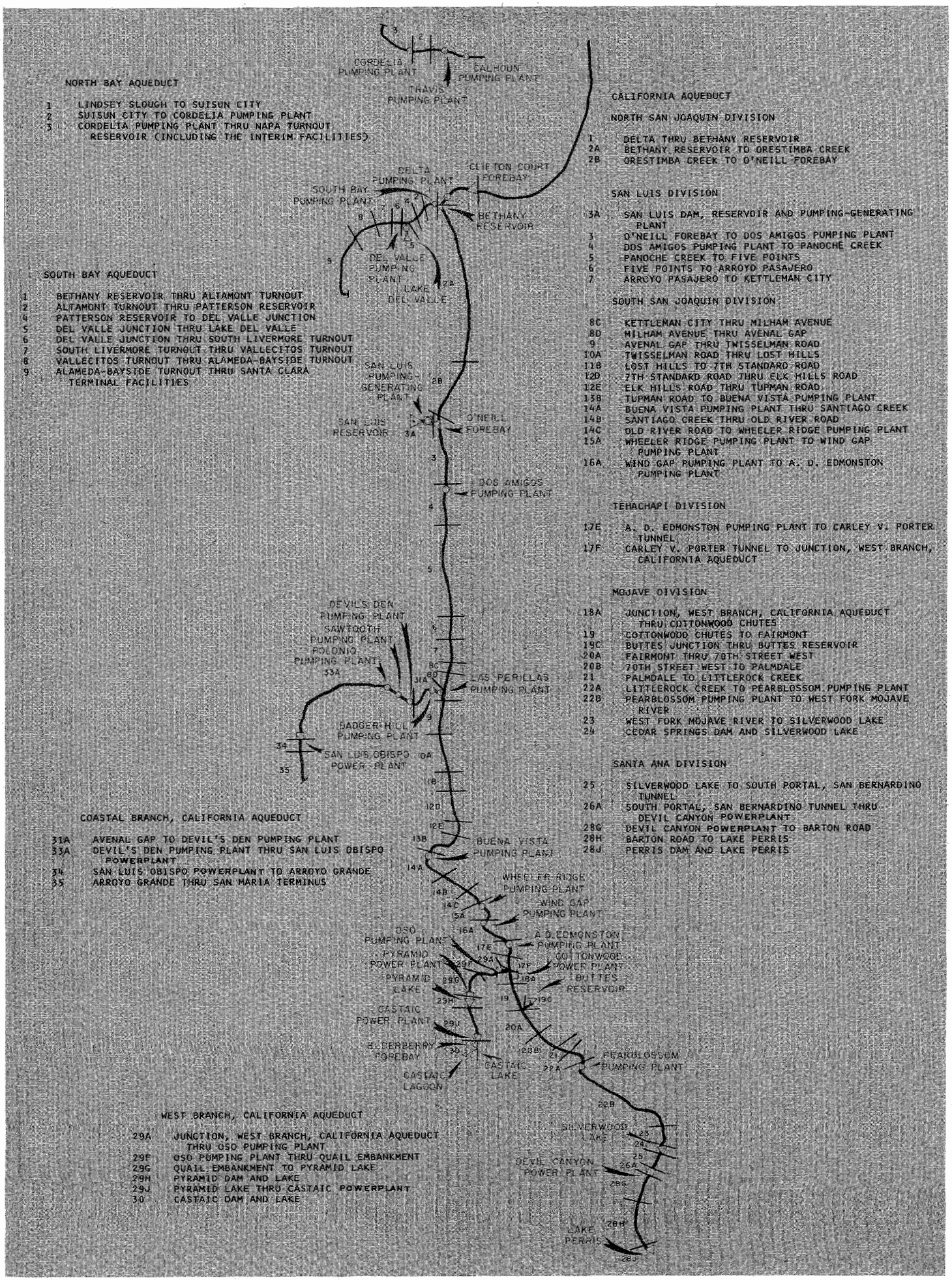
Surplus Water Charges. Table B-27 shows the actual charges to each contractor for delivery of the surplus water quantities shown in Table B-25. The method of determining these charges is discussed on Page 117 of Bulletin 132-77. Estimated unit power rates for pumping the projected surplus water delivery amounts shown in Table B-28 are shown in Table B-30.

Table B-31 shows the financial obligations incurred by contractors which have requested the State to order power for future surplus water pumping. Under amended Article 21(d) of the long-term water supply contracts, the contractors

have made written commitments which guarantee repayment of these costs even if the power cannot be utilized for the intended purpose or for other project uses. In each case the power ordered was an amount estimated by the State to be required to deliver the requested surplus water amounts shown on Table B-31. Based on the September 1978 monthly delivery requests and project operation studies reflecting those requests, some of the power ordered for surplus water pumping can not be used for project purposes. Commitments are made to be assured of the future availability of power for surplus water service at the lowest possible cost.

Figure B-3: REPAYMENT REACHES AND DESCRIPTIONS

PROJECT TRANSPORTATION FACILITIES



NORTH BAY AQUEDUCT

1 LINDSEY SLOUGH TO SUISUN CITY
2 SUISUN CITY TO CORDELIA PUMPING PLANT
3 CORDELIA PUMPING PLANT THRU NAPA TURNOUT RESERVOIR (INCLUDING THE INTERIM FACILITIES)

SOUTH BAY AQUEDUCT

1 BETHANY RESERVOIR THRU ALTAMONT TURNOUT
2 ALTAMONT TURNOUT THRU PATTERSON RESERVOIR
4 PATTERSON RESERVOIR TO DEL VALLE JUNCTION
5 DEL VALLE JUNCTION THRU LAKE DEL VALLE
6 DEL VALLE JUNCTION THRU SOUTH LIVERMORE TURNOUT
7 SOUTH LIVERMORE TURNOUT THRU VALLECITOS TURNOUT
8 VALLECITOS TURNOUT THRU ALAMEDA-BAYSIDE TURNOUT
9 ALAMEDA-BAYSIDE TURNOUT THRU SANTA CLARA TERMINAL FACILITIES

COASTAL BRANCH, CALIFORNIA AQUEDUCT

31A AVENAL GAP TO DEVIL'S DEN PUMPING PLANT
33A DEVIL'S DEN PUMPING PLANT THRU SAN LUIS OBISPO POWERPLANT
34 SAN LUIS OBISPO POWERPLANT TO ARROYO GRANDE
35 ARROYO GRANDE THRU SAN MARIA TERMINUS

WEST BRANCH, CALIFORNIA AQUEDUCT

29A JUNCTION, WEST BRANCH, CALIFORNIA AQUEDUCT THRU OSO PUMPING PLANT
29F OSO PUMPING PLANT THRU QUAIL EMBANKMENT
29G QUAIL EMBANKMENT TO PYRAMID LAKE
29H PYRAMID DAM AND LAKE
29J PYRAMID LAKE THRU CASTAIC POWERPLANT
30 CASTAIC DAM AND LAKE

CALIFORNIA AQUEDUCT

NORTH SAN JOAQUIN DIVISION

1 DELTA THRU BETHANY RESERVOIR
2A BETHANY RESERVOIR TO ORESTIMBA CREEK
2B ORESTIMBA CREEK TO O'NEILL FOREBAY

SAN LUIS DIVISION

3A SAN LUIS DAM, RESERVOIR AND PUMPING-GENERATING PLANT
3 O'NEILL FOREBAY TO DOS AMIGOS PUMPING PLANT
4 DOS AMIGOS PUMPING PLANT TO PANOCHE CREEK
5 PANOCHE CREEK TO FIVE POINTS
6 FIVE POINTS TO ARROYO PASAJERO
7 ARROYO PASAJERO TO KETTLEMAN CITY

SOUTH SAN JOAQUIN DIVISION

8C KETTLEMAN CITY THRU MILHAM AVENUE
8D MILHAM AVENUE THRU AVENAL GAP
9 AVENAL GAP THRU TWISSELMAN ROAD
10A TWISSELMAN ROAD THRU LOST HILLS
11B LOST HILLS TO 7TH STANDARD ROAD
12D 7TH STANDARD ROAD THRU ELK HILLS ROAD
12E ELK HILLS ROAD THRU TUPMAN ROAD
13B TUPMAN ROAD TO BUENA VISTA PUMPING PLANT
14A BUENA VISTA PUMPING PLANT THRU SANTIAGO CREEK
14B SANTIAGO CREEK THRU OLD RIVER ROAD
14C OLD RIVER ROAD TO WHEELER RIDGE PUMPING PLANT
15A WHEELER RIDGE PUMPING PLANT TO WIND GAP PUMPING PLANT
16A WIND GAP PUMPING PLANT TO A. D. EDMONSTON PUMPING PLANT

TEHACHAPI DIVISION

17E A. D. EDMONSTON PUMPING PLANT TO CARLEY V. PORTER TUNNEL
17F CARLEY V. PORTER TUNNEL TO JUNCTION, WEST BRANCH, CALIFORNIA AQUEDUCT

MOJAVE DIVISION

18A JUNCTION, WEST BRANCH, CALIFORNIA AQUEDUCT THRU COTTONWOOD CHUTES
19 COTTONWOOD CHUTES TO FAIRMONT
19C BUTTES JUNCTION THRU BUTTES RESERVOIR
20A FAIRMONT THRU 70TH STREET WEST
20B 70TH STREET WEST TO PALMDALE
21 PALMDALE TO LITTLEROCK CREEK
22A LITTLEROCK CREEK TO PEARBLOSSOM PUMPING PLANT
22B PEARBLOSSOM PUMPING PLANT TO WEST FORK MOJAVE RIVER
23 WEST FORK MOJAVE RIVER TO SILVERWOOD LAKE
24 CEDAR SPRINGS DAM AND SILVERWOOD LAKE

SANTA ANA DIVISION

25 SILVERWOOD LAKE TO SOUTH PORTAL, SAN BERNARDINO TUNNEL
26A SOUTH PORTAL, SAN BERNARDINO TUNNEL THRU DEVIL CANYON POWERPLANT
28G DEVIL CANYON POWERPLANT TO BARTON ROAD
28H BARTON ROAD TO LAKE PERRIS
28J PERRIS DAM AND LAKE PERRIS

TABLE B-1: FACTORS FOR DISTRIBUTING

Reach No.	Reach Description	NORTH BAY AREA		SOUTH BAY AREA				TOTAL
		Napa County FC&WCD	Solano County FC&WCD	Alameda County FC&WCD Zone 7	Alameda County Water District	Santa Clara Valley Water District	Future Contractor	
	North Bay Aqueduct							
1	Lindsey Slough to Suisun City	.39808876	.60191124					1.00000000
2	Suisun City to Cordelia Pumping Plant	.39808861	.60191139					1.00000000
3	Cordelia Pumping Plant thru Napa Turnout Reservoir (Including the interim facilities)	1.00000000						1.00000000
	South Bay Aqueduct							
1	Bethany Reservoir thru Altamont Turnout			.22599621	.20663014	.49237700	.07499665	1.00000000
2	Altamont Turnout thru Patterson Reservoir			.22599657	.20663057	.49237791	.07499495	1.00000000
4	Patterson Reservoir to Del Valle Junction			.19504791	.21450021	.51113252	.07931936	1.00000000
5	Del Valle Junction thru Lake Del Valle			.14436367	.12972254	.33715573	.38875806	1.00000000
6	Del Valle Junction thru South Livermore Turnout			.14599918	.21144710	.50574745	.13680627	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout				.25176680	.60218448	.14604872	1.00000000
8	Vallecitos Turnout thru Alameda-Bayside Turnout				.06294980	.72065355	.21639665	1.00000000
9	Alameda-Bayside Turnout thru Santa Clara Terminal Facilities					1.00000000		1.00000000
	California Aqueduct							
1	Delta Thru Bethany Reservoir			.00954802	.00872976	.02080260	.00342519	— — —

Reach No.	Reach Description	CENTRAL COASTAL AREA		SOUTHERN				
		San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley County Water District	Crestline Lake Arrowhead Water Agency	Desert Water Agency
	California Aqueduct							
1	Delta Thru Bethany Reservoir	.00531147	.01240007	.02939503	.00890866	.00528393	.00133630	.00871425
2A	Bethany Reservoir to Orestimba Creek	.00555266	.01296315	.03072975	.00931319	.00552151	.00139640	.00910607
2B	Orestimba Creek to O'Neill Forebay	.00555876	.01297741	.03076360	.00932344	.00552915	.00139833	.00911867
3	O'Neill Forebay to Dos Amigos Pumping Plant	.00555769	.01297494	.03075777	.00932168	.00552856	.00139818	.00911771
4	Dos Amigos Pumping Plant to Panoche Creek	.00555659	.01297235	.03075165	.00931982	.00552794	.00139801	.00911670
5	Panoche Creek to Five Points	.00555520	.01296912	.03074401	.00931751	.00552717	.00139780	.00911543
6	Five Points to Arroyo Pasajero	.00555311	.01296424	.03073244	.00931400	.00552602	.00139750	.00911351
7	Arroyo Pasajero to Kettleman City	.00555243	.01296267	.03072873	.00931287	.00552565	.00139740	.00911289
8C	Kettleman City thru Milham Avenue	.00555159	.01296069	.03072405	.00931145	.00552517	.00139729	.00911211
8D	Milham Avenue thru Avenal Gap	.00566628	.01322842	.03135878	.00950380	.00564073	.00142650	.00930269
9	Avenal Gap thru Twisselman Road			.03437577	.01041812	.00618845	.00156502	.01020599
10A	Twisselman Road thru Lost Hills			.03492681	.01058510	.00628966	.00159061	.01037292
11B	Lost Hills to 7th Standard Road			.03848657	.01166387	.00694140	.00175542	.01144773
12D	7th Standard Road thru Elk Hills Road			.04046660	.01226391	.00730484	.00184732	.01204709
12E	Elk Hills Road thru Tupman Road			.04052108	.01228042	.00731580	.00185010	.01206514
13B	Tupman Road to Buena Vista Pumping Plant			.04397523	.01332721	.00794772	.00200991	.01310729
14A	Buena Vista Pumping Plant thru Santiago Creek			.04618687	.01399742	.00835456	.00211281	.01377821
14B	Santiago Creek thru Old River Road			.04702647	.01425185	.00851020	.00215218	.01403490
14C	Old River Road to Wheeler Ridge Pumping Plant			.04846557	.01468794	.00877627	.00221947	.01447369
15A	Wheeler Ridge Pumping Plant to Wind Gap Pumping Plant			.04927653	.01493368	.00892667	.00225752	.01472172
16A	Wind Gap Pumping Plant to A.D. Edmonston Pumping Plant			.05113510	.01549688	.00927016	.00234437	.01528820
17E	A.D. Edmonston Pumping Plant to Carley V. Porter Tunnel			.05355379	.01622984	.00971819	.00245767	.01602709
17F	Carley V. Porter Tunnel to Junction, West Branch, Calif. Aqueduct			.05366827	.01626453	.00973908	.00246295	.01606154
18A	Junction, West Branch, Calif. Aqueduct thru Cottonwood Chutes			.13238112		.02399390	.00606794	.03957043
19	Cottonwood Chutes to Fairmont			.13237766		.02399451	.00606810	.03957141
19C	Buttes Junction thru Buttes Reservoir			1.00000000				
20A	Fairmont thru 70th Street West			.06847931		.02576424	.00651572	.04249001
20B	70th Street West to Palmdale			.02276024		.02702916	.00683554	.04457607
21	Palmdale to Littlerock Creek			.02318953		.02754716	.00696650	.04543034
22A	Littlerock Creek to Pearblossom Pumping Plant			.01181870		.02794143	.00706620	.04608043
22B	Pearblossom Pumping Plant to West Fork Mojave River					.02827552	.00715073	.04663153
23	West Fork Mojave River to Silverwood Lake					.00324449	.00818121	.00535117
24	Cedar Springs Dam and Silverwood Lake					.01024605	.01251569	.01690478
25	Silverwood Lake to South Portal, San Bernardino Tunnel							
26A	South Portal, San Bernardino Tunnel thru Devil Canyon Pwp.							
28G	Devil Canyon Powerplant to Barton Road							
28H	Barton Road to Lake Perris							
28J	Perris Dam and Lake Perris							
29A	Junction, West Branch, Calif. Aqueduct thru Oso Pumping Plant				.02736564			
29F	Oso Pumping Plant thru Quail Embankment				.02736563			
29G	Quail Embankment to Pyramid Lake				.02736564			
29H	Pyramid Dam and Lake				.02646380			
29J	Pyramid Lake thru Castaic Powerplant				.02736563			
30	Castaic Dam and Lake				.02637131			
31A	Avenal Gap to Devil's Den Pumping Plant	.10522767	.24566277					
33A	Devil's Den Pumping Plant thru San Luis Obispo Powerplant	.29988697	.70011303					
34	San Luis Obispo Powerplant to Arroyo Grande	.20553239	.79446761					
35	Arroyo Grande thru Santa Maria Terminal	.14771038	.85228962					

REACH CAPITAL COSTS AMONG CONTRACTORS

Reach No.	SAN JOAQUIN VALLEY AREA								
	Devil's Den Water District	Dudley Ridge Water District	Empire West Side Irrigation District	Hacienda Water District	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
					Municipal and Industrial	Agricultural			
California Aqueduct									
1	.00377824	.01707931	.00088687	.00251598	.02742075	.30633444	.00090702	.00167139	.03253706
2A	.00394038	.01781205	.00092491	.00262393	.02864590	.31948963	.00094755	.00174305	.03893294
2B	.00395099	.01786013	.00092740	.00263102	.02869073	.32034362	.00094904		.03402458
3	.00395208	.01786513	.00092766	.00263176	.02868919	.32043064	.00094900		.03403409
4	.00395323	.01787039	.00092794	.00263254	.02868758	.32052214	.00094893		.03404410
5	.00395466	.01787693	.00092828	.00263352	.02868559	.32063639	.00094886		.03405659
6	.00395684	.01788685	.00092879	.00263498	.02868255	.32080926	.00094875		.03407550
7	.00395753	.01789003	.00092896	.00263544	.02868158	.32086471	.00094872		.03408157
8C	.00395842	.01789405	.00092918	.00263603	.02868035	.32093468	.00094867		.03408923
8D	.00404591	.01828966		.00269431	.02928494	.32802221			.01551611
9					.03214521	.32838224			
10A					.03267760	.31755652			
11B					.03609912	.24768443			
12D					.03801001	.20879251			
12E					.03807068	.20769413			
13B					.01464596	.16664965			
14A					.00622935	.13374077			
14B					.00634719	.11790931			
14C					.00654829	.09078926			
15A					.00666217	.07549599			
16A					.00692172	.04047416			
17E					.00213551				
31A	.07364766					.57546190			

Reach No.	CALIFORNIA AREA								
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	TOTAL
1	.00049187	.01101303	.00369180	.02363192	.00650450	.00398446	.43940274	.00429334	1.00000000
2A	.00051421	.01151300	.00385943	.02469456	.00679800	.00416362	.45932582	.00448829	1.00000000
2B	.00051477	.01152575	.00386368	.02472869	.00680672	.00416938	.45985090	.00449324	1.00000000
3	.00051469	.01152359	.00386296	.02472604	.00680580	.00416893	.45976953	.00449238	1.00000000
4	.00051459	.01152131	.00386218	.02472327	.00680482	.00416846	.45968397	.00449149	1.00000000
5	.00051448	.01151846	.00386122	.02471980	.00680361	.00416788	.45957712	.00449037	1.00000000
6	.00051428	.01151416	.00385978	.02471455	.00680178	.00416698	.45941544	.00448869	1.00000000
7	.00051421	.01151278	.00385931	.02471286	.00680118	.00416671	.45936361	.00448816	1.00000000
8C	.00051414	.01151103	.00385874	.02471072	.00680044	.00416634	.45929816	.00448747	1.00000000
8D	.00052475	.01174889	.00393847	.02522753	.00694206	.00425349	.46880430	.00458017	1.00000000
9	.00057523	.01287942	.00431739	.02767698	.00761389	.00466647	.51396901	.00502081	1.00000000
10A	.00058444	.01308595	.00438661	.02812957	.00773752	.00474279	.52223261	.00510129	1.00000000
11B	.00064401	.01442004	.00483371	.03104405	.00853455	.00523416	.57558975	.00562119	1.00000000
12D	.00067713	.01516215	.00508241	.03266922	.00897860	.00550817	.60527969	.00591035	1.00000000
12E	.00067804	.01518261	.00508926	.03271816	.00899157	.00551643	.60610827	.00591831	1.00000000
13B	.00073586	.01647710	.00552311	.03554404	.00976456	.00599288	.65787670	.00642278	1.00000000
14A	.00077287	.01730602	.00580090	.03736328	.01026125	.00629961	.69105032	.00674576	1.00000000
14B	.00078692	.01762074	.00590636	.03805925	.01045073	.00641694	.70365858	.00686838	1.00000000
14C	.00081102	.01816015	.00608712	.03924903	.01077498	.00661754	.72526114	.00707853	1.00000000
15A	.00082461	.01846415	.00618901	.03992156	.01095807	.00673092	.73744044	.00719696	1.00000000
16A	.00085571	.01916080	.00642247	.04145755	.01137676	.00698987	.76533787	.00746838	1.00000000
17E	.00089617	.02006742	.00672629	.04346097	.01192239	.00732766	.80165539	.00782162	1.00000000
17F	.00089809	.02011032	.00674067	.04355438	.01194797	.00734341	.80337045	.00783834	1.00000000
18A	.00221525	.04960424	.01662681	.10730447	.02944861	.01809192	.57469531		1.00000000
19	.00221522	.04960300	.01662640	.10730706	.02944877	.01809230	.57469557		1.00000000
19C									1.00000000
20A	.00237800	.05324853	.01784830	.11522151	.03161800	.01942666	.61700972		1.00000000
20B	.00249470	.05586076	.01872390	.12087842	.03316988	.02038045	.64729088		1.00000000
21	.00254199	.05692052		.12319478	.03380326	.02077093	.65963499		1.00000000
22A		.05773081		.12495765	.03428607	.02106816	.66905055		1.00000000
22B		.05842136		.12645206	.03469615	.02132008	.67705257		1.00000000
23				.14467449	.03969012	.02439238	.77446614		1.00000000
24				.22243002	.04339444	.02843498	.66607404		1.00000000
25				.14947726	.03997502	.02520426	.78534346		1.00000000
26A				.14947726	.03997502	.02520426	.78534346		1.00000000
28G				.05126137			.94873863		1.00000000
28H							1.00000000		1.00000000
28J							1.00000000		1.00000000
29A							.95944607	.01318829	1.00000000
29F							.95944608	.01318829	1.00000000
29G							.95944609	.01318827	1.00000000
29H							.96446829	.00906791	1.00000000
29J							.95944608	.01318829	1.00000000
30							.96499830	.00863039	1.00000000
31A									1.00000000
33A									1.00000000
34									1.00000000
35									1.00000000

TABLE B-2: FACTORS FOR DISTRIBUTING REACH

Reach No.	Reach Description	NORTH BAY AREA		SOUTH BAY AREA				TOTAL
		Napa County FC&WCD	Solano County FC&WCD	Alameda County FC&WCD Zone 7	Alameda County Water District	Santa Clara Valley Water District	Future Contractor	
North Bay Aqueduct								
1	Lindsey Slough to Suisun City	.39808876	.60191124					1.00000000
2	Suisun City to Cordelia Pumping Plant	.39808861	.60191139					1.00000000
3	Cordelia Pumping Plant thru Napa Turnout Reservoir (Including the interim facilities)	1.00000000						1.00000000
South Bay Aqueduct								
1	Bethany Reservoir thru Altamont Turnout			.22599621	.20663014	.49237700	.07499665	1.00000000
2	Altamont Turnout thru Patterson Reservoir			.22599657	.20663057	.49237791	.07499495	1.00000000
4	Patterson Reservoir to Del Valle Junction			.19504791	.21450021	.51113252	.07931936	1.00000000
5	Del Valle Junction thru Lake Del Valle			.14436367	.12972254	.33715573	.38875806	1.00000000
6	Del Valle Junction thru South Livermore Turnout			.14599918	.21144710	.50574745	.13680627	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout				.25176680	.60218448	.14604872	1.00000000
8	Vallecitos Turnout thru Alameda-Bayside Turnout				.06294980	.72065355	.21639665	1.00000000
9	Alameda-Bayside Turnout thru Santa Clara Terminal Facilities					1.00000000		1.00000000
California Aqueduct								
1	Delta Thru Bethany Reservoir			.00954802	.00872976	.02080260	.00342519	— — —

Reach No.	Reach Description	CENTRAL COASTAL AREA		SOUTHERN				
		San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley County Water District	Crestline Lake Arrowhead Water Agency	Desert Water Agency
California Aqueduct								
1	Delta Thru Bethany Reservoir	.00531147	.01240007	.02939503	.00890866	.00528393	.00133630	.00871425
2A	Bethany Reservoir to Orestimba Creek	.00555266	.01296315	.03072975	.00931319	.00552151	.00139640	.00910607
2B	Orestimba Creek to O'Neill Forebay	.00555876	.01297741	.03076360	.00932344	.00552915	.00139833	.00911867
3	O'Neill Forebay to Dos Amigos Pumping Plant	.00555769	.01297494	.03075777	.00932168	.00552856	.00139818	.00911771
4	Dos Amigos Pumping Plant to Panoche Creek	.00555659	.01297235	.03075165	.00931982	.00552794	.00139801	.00911670
5	Panoche Creek to Five Points	.00555520	.01296912	.03074401	.00931751	.00552717	.00139780	.00911543
6	Five Points to Arroyo Pasajero	.00555311	.01296424	.03073244	.00931400	.00552602	.00139750	.00911351
7	Arroyo Pasajero to Kettleman City	.00555243	.01296267	.03072873	.00931287	.00552565	.00139740	.00911289
8C	Kettleman City thru Milham Avenue	.00549671	.01283255	.03042012	.00921937	.00546665	.00138249	.00901561
8D	Milham Avenue thru Avenal Gap	.00560860	.01309375	.03103938	.00940703	.00557923	.00141095	.00920128
9	Avenal Gap thru Twisselman Road			.03398205	.01029883	.00611262	.00154585	.01008094
10A	Twisselman Road thru Lost Hills			.03451663	.01046082	.00621064	.00157063	.01024262
11B	Lost Hills to 7th Standard Road			.03796305	.01150525	.00684053	.00172991	.01128139
12D	7th Standard Road thru Elk Hills Road			.03987187	.01208371	.00719023	.00181834	.01185809
12E	Elk Hills Road thru Tupman Road			.03992309	.01209924	.00720053	.00182095	.01187505
13B	Tupman Road to Buena Vista Pumping Plant			.04324825	.01310695	.00780756	.00197447	.01287616
14A	Buena Vista Pumping Plant thru Santiago Creek			.04536499	.01374841	.00819606	.00207273	.01351685
14B	Santiago Creek thru Old River Road			.04616419	.01399059	.00834387	.00211013	.01376063
14C	Old River Road to Wheeler Ridge Pumping Plant			.04753265	.01440528	.00859629	.00217396	.01417689
15A	Wheeler Ridge Pumping Plant to Wind Gap Pumping Plant			.04830162	.01463830	.00873855	.00220995	.01441151
16A	Wind Gap Pumping Plant to A.D. Edmonston Pumping Plant			.05006206	.01517177	.00906311	.00229201	.01494676
17E	A.D. Edmonston Pumping Plant to Carley V. Porter Tunnel			.05234459	.01586347	.00948480	.00239865	.01564222
17F	Carley V. Porter Tunnel to Junction, West Branch, Calif. Aqueduct			.05245356	.01589650	.00950462	.00240367	.01567491
18A	Junction, West Branch, Calif. Aqueduct thru Cottonwood Chutes			.13238112		.02399390	.00606794	.03957043
19	Cottonwood Chutes to Fairmont			.13237766		.02399451	.00606810	.03957141
19C	Buttes Junction thru Buttes Reservoir			1.00000000				
20A	Fairmont thru 70th Street West			.06847931		.02576424	.00651572	.04249001
20B	70th Street West to Palmdale			.02276024		.02702916	.00683554	.04457607
21	Palmdale to Littlerock Creek			.02318953		.02754716	.00696650	.04543034
22A	Littlerock Creek to Pearblossom Pumping Plant			.01181870		.02794143	.00706620	.04608043
22B	Pearblossom Pumping Plant to West Fork Mojave River					.02827552	.00715073	.04663153
23	West Fork Mojave River to Silverwood Lake					.00324449	.00818121	.00535117
24	Cedar Springs Dam and Silverwood Lake					.01024605	.01251569	.01690478
25	Silverwood Lake to South Portal, San Bernardino Tunnel							
26A	South Portal, San Bernardino Tunnel thru Devil Canyon Pwp.							
28G	Devil Canyon Powerplant to Barton Road							
28H	Barton Road to Lake Perris							
28J	Perris Dam and Lake Perris							
29A	Junction, West Branch, Calif. Aqueduct thru Oso Pumping Plant			.00304299	.02728237			
29F	Oso Pumping Plant thru Quail Embankment			.00304379	.02728234			
29G	Quail Embankment to Pyramid Lake				.02736564			
29H	Pyramid Dam and Lake				.02646380			
29J	Pyramid Lake thru Castaic Powerplant				.02736563			
30	Castaic Dam and Lake				.02637131			
31A	Avenal Gap to Devil's Den Pumping Plant	.10522767	.24566277					
33A	Devil's Den Pumping Plant thru San Luis Obispo Powerplant	.29988697	.70011303					
34	San Luis Obispo Powerplant to Arroyo Grande	.20553239	.79446761					
35	Arroyo Grande thru Santa Maria Terminal	.14771038	.85228962					

MINIMUM OMP&R COSTS AMONG CONTRACTORS

Reach No.	SAN JOAQUIN VALLEY AREA								
	Devil's Den Water District	Dudley Ridge Water District	Empire West Side Irrigation District	Hacienda Water District	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
					Municipal and Industrial	Agricultural			
California Aqueduct									
1	.00377824	.01707931	.00088687	.00251598	.02742075	.30633444	.00090702	.00167139	.03253706
2A	.00394038	.01781205	.00092491	.00262393	.02864590	.31948963	.00094755	.00174305	.03393294
2B	.00395099	.01786013	.00092740	.00263102	.02869073	.32034362	.00094904		.03402458
3	.00395208	.01786513	.00092766	.00263176	.02868919	.32043064	.00094900		.03403409
4	.00395323	.01787039	.00092794	.00263254	.02868758	.32052214	.00094893		.03404410
5	.00395466	.01787693	.00092828	.00263352	.02868559	.32063639	.00094886		.03405659
6	.00395684	.01788685	.00092879	.00263498	.02868255	.32080926	.00094875		.03407550
7	.00395753	.01789003	.00092896	.00263544	.02868158	.32086471	.00094872		.03408157
8C	.00390372	.01764649	.00091632	.00259956	.02836376	.31651560	.00093819		.03361753
8D	.00398843	.01802948		.00265599	.02895222	.32337797			.01529539
9					.03173493	.32315570			
10A					.03225002	.31237849			
11B					.03555316	.24304304			
12D					.03738966	.20458362			
12E					.03744664	.20348854			
13B					.01437747	.16288986			
14A					.00610657	.13050491			
14B					.00621833	.11497394			
14C					.00640883	.08842321			
15A					.00651639	.07347673			
16A					.00676126	.03933051			
17E					.00208231				
31A	.07364766					.57546190			

Reach No.	CALIFORNIA AREA								
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	TOTAL
1	.00049187	.01101303	.00369180	.02363192	.00650450	.00398446	.43940274	.00429334	1.00000000
2A	.00051421	.01151300	.00385943	.02469456	.00679800	.00416362	.45932582	.00448829	1.00000000
2B	.00051477	.01152575	.00386368	.02472869	.00680672	.00416938	.45985090	.00449324	1.00000000
3	.00051469	.01152359	.00386296	.02472604	.00680580	.00416893	.45976953	.00449238	1.00000000
4	.00051459	.01152131	.00386218	.02472327	.00680482	.00416846	.45968397	.00449149	1.00000000
5	.00051448	.01151846	.00386122	.02471980	.00680361	.00416788	.45957712	.00449037	1.00000000
6	.00051428	.01151416	.00385978	.02471455	.00680178	.00416698	.45941544	.00448869	1.00000000
7	.00051421	.01151278	.00385931	.02471286	.00680118	.00416671	.45936361	.00448816	1.00000000
8C	.00050905	.01139703	.00382056	.02444913	.00673013	.00412224	.46619410	.00444309	1.00000000
8D	.00051940	.01162908	.00389834	.02495260	.00686817	.00420714	.47575203	.00453354	1.00000000
9	.00056864	.01273174	.00426793	.02733801	.00752279	.00460932	.52108733	.00496332	1.00000000
10A	.00057757	.01293209	.00433508	.02777635	.00764260	.00468324	.52938182	.00504140	1.00000000
11B	.00063524	.01422367	.00476795	.03059311	.00841338	.00515814	.58274744	.00554474	1.00000000
12D	.00066717	.01493906	.00500769	.03215687	.00884093	.00542180	.61234745	.00582351	1.00000000
12E	.00066803	.01495830	.00501413	.03220286	.00885312	.00542956	.61318897	.00583099	1.00000000
13B	.00072369	.01620441	.00543178	.03491750	.00959625	.00588725	.66464178	.00631662	1.00000000
14A	.00075911	.01699773	.00569765	.03665478	.01007092	.00618017	.69750337	.00662575	1.00000000
14B	.00077249	.01729729	.00579803	.03731574	.01025102	.00629159	.70996969	.00674247	1.00000000
14C	.00079540	.01781020	.00596992	.03844447	.01055888	.00648190	.73127981	.00694231	1.00000000
15A	.00080829	.01809845	.00606653	.03908064	.01073222	.00658915	.74327706	.00705461	1.00000000
16A	.00083775	.01875830	.00628766	.04053195	.01112817	.00683383	.77068316	.00731170	1.00000000
17E	.00087593	.01961383	.00657438	.04241764	.01164221	.00715176	.80626315	.00764506	1.00000000
17F	.00087775	.01965466	.00658807	.04250630	.01166651	.00716671	.80794577	.00766097	1.00000000
18A	.00221525	.04960424	.01662681	.10730447	.02944861	.01809192	.57469531		1.00000000
19	.00221522	.04960300	.01662640	.10730706	.02944877	.01809230	.57469557		1.00000000
19C									1.00000000
20A	.00237800	.05324853	.01784830	.11522151	.03161800	.01942666	.61700972		1.00000000
20B	.00249470	.05586076	.01872390	.12087842	.03316988	.02038045	.64729088		1.00000000
21	.00254199	.05692052		.12319478	.03380326	.02077093	.65963499		1.00000000
22A		.05773081		.12495765	.03428607	.02106816	.66905055		1.00000000
22B		.05842136		.12645206	.03469615	.02132008	.67705257		1.00000000
23				.14467449	.03969012	.02439238	.77446614		1.00000000
24				.22243002	.04339444	.02843498	.66607404		1.00000000
25				.11825184	.03722720	.01993915	.82458181		1.00000000
26A				.14947726	.03997502	.02520426	.78534346		1.00000000
28G				.05126137			.94873863		1.00000000
28H							1.00000000		1.00000000
28J							1.00000000		1.00000000
29A							.95652648	.01314816	1.00000000
29F							.95652573	.01314814	1.00000000
29G							.95944609	.01318827	1.00000000
29H							.96446829	.00906791	1.00000000
29J							.95944608	.01318829	1.00000000
30							.96499830	.00863039	1.00000000
31A									1.00000000
33A									1.00000000
34									1.00000000
35									1.00000000

TABLE B-3: POWER COSTS AND CREDITS AND ANNUAL REPLACEMENT

(in

Calendar Year	NORTH BAY AQUEDUCT		SOUTH BAY AQUEDUCT	CALIFORNIA					
	Reach 1 Calhoun and Travis Pumping Plants	Reach 3 Cordelia Pumping Plant (b	Reach 1 South Bay and Del Valle Pumping Plants (c	Reach 1 Delta Pumping Plant	Reach 4 Dos Amigos Pumping Plant	Reach 14A Buena Vista Pumping Plant	Reach 15A Wheeler Ridge Pumping Plant	Reach 16A Wind Gap Pumping Plant	Reach 17E A. D. Edmonston (Tehachapi) Pumping Plant
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1962	0	0	38,130	0	0	0	0	0	0
1963	0	0	58,871	0	0	0	0	0	0
1964	0	0	75,239	0	0	0	0	0	0
1965	0	0	146,297	0	0	0	0	0	0
1966	0	0	198,643	0	0	0	0	0	0
1967	0	0	229,629	26,982	0	0	0	0	0
1968	0	7,128	342,761	1,324,777	239,505	0	0	0	0
1969	0	8,557	279,751	855,304	143,403	0	0	0	0
1970	0	13,666	448,383	368,508	217,820	2,940	0	0	0
1971	0	10,626	422,057	597,946	229,306	156,540	23,021	18,577	29,067
1972	0	14,430	623,564	1,110,833	575,291	348,668	187,825	385,935	1,263,087
1973	0	14,453	485,534	918,234	493,776	511,904	514,487	883,725	3,139,297
1974	0	17,508	510,873	997,269	560,461	556,968	595,585	1,048,196	3,700,573
1975	0	14,801	382,106	1,353,916	561,089	650,781	707,038	1,394,918	4,853,538
1976	0	20,867	589,007	916,728	596,426	701,061	687,677	1,414,902	4,917,776
1977	0	22,591	540,553	650,647	191,127	170,146	172,977	336,796	1,126,681
1978	0	20,661	543,615	3,424,252	869,229	1,005,551	944,364	2,011,238	7,046,653
1979	0	18,803	594,704	3,490,374	1,152,473	1,190,648	1,085,689	2,457,001	8,683,055
1980	0	22,818	652,442	2,646,524	1,973,935	1,616,225	1,552,768	3,069,941	10,405,384
1981	0	21,383	679,642	4,146,556	2,057,839	1,898,813	1,861,565	3,953,360	13,507,710
1982	0	21,391	669,772	3,076,968	2,190,148	1,959,078	1,925,015	4,074,247	13,861,526
1983	0	132,338	2,547,801	16,598,830	7,162,481	7,818,543	7,538,027	16,982,231	59,436,827
1984	167,932	154,266	2,961,823	19,694,242	9,050,518	10,181,532	9,829,645	22,279,331	78,670,029
1985	183,006	171,993	3,025,357	20,665,731	9,087,898	9,944,314	9,494,912	21,463,451	75,407,176
1986	212,001	183,997	3,176,062	20,658,351	9,878,372	10,713,580	10,195,081	23,054,465	80,833,376
1987	241,012	192,004	3,210,021	25,304,254	10,289,340	11,145,753	10,563,734	23,889,637	83,582,224
1988	313,990	208,004	3,407,561	24,868,355	11,145,513	12,077,969	11,406,121	25,821,414	90,188,934
1989	376,988	219,005	3,509,000	28,110,866	12,456,002	14,072,288	13,433,333	30,549,417	107,064,993
1990	439,995	225,000	3,617,231	28,348,644	13,344,018	15,280,599	14,635,259	33,343,631	116,881,874
1991	448,988	241,002	3,763,795	29,519,397	13,554,245	15,573,834	14,929,858	34,027,925	119,348,112
1992	454,020	256,200	3,894,215	29,033,861	12,559,932	15,522,553	14,871,904	34,270,409	121,413,503
1993	452,997	265,205	3,952,703	30,468,759	12,486,720	15,483,995	14,849,615	34,232,847	121,342,361
1994	478,001	290,197	4,224,850	31,178,545	13,179,659	16,416,349	15,767,177	36,367,083	128,985,902
1995	481,015	303,199	4,253,889	31,845,724	13,336,384	16,725,118	16,089,953	37,134,293	131,823,119
1996	484,020	317,196	4,257,975	30,835,987	13,280,680	16,667,431	16,042,069	37,027,198	131,460,985
1997	497,018	338,198	4,365,710	31,269,217	13,705,394	17,321,521	16,701,526	38,574,884	137,080,618
1998	501,988	352,208	4,344,774	33,359,990	13,498,643	16,969,312	16,340,883	37,732,498	134,003,088
1999	513,011	373,196	4,389,859	30,011,122	13,983,633	17,759,052	17,146,877	39,627,436	140,920,634
2000	515,022	384,203	4,347,106	34,385,854	13,842,109	17,555,898	16,949,804	39,168,091	139,277,640
2001	521,020	393,202	4,378,029	32,238,506	13,938,593	17,663,662	17,052,045	39,401,528	140,096,401
2002	526,994	400,192	4,413,822	33,780,997	14,322,500	18,292,798	17,692,035	40,914,952	145,614,555
2003	531,008	406,193	4,428,752	33,987,827	14,224,674	18,070,622	17,461,156	40,363,650	143,571,200
2004	534,982	413,193	4,450,764	33,596,153	14,671,673	18,846,070	18,254,581	42,236,867	150,430,878
2005	533,016	415,205	4,416,885	34,021,035	14,447,272	18,477,555	17,884,661	41,368,093	147,275,915
2006	533,025	420,203	4,393,510	34,095,663	14,583,284	18,766,983	18,189,548	42,099,806	149,984,957
2007	542,007	433,193	4,444,430	34,611,242	14,829,803	19,123,000	18,546,917	42,930,086	152,972,805
2008	543,975	440,202	4,428,350	34,565,148	14,809,195	19,116,824	18,541,825	42,920,238	152,959,032
2009	547,980	449,207	4,438,305	36,086,740	14,970,315	19,386,991	18,820,016	43,576,732	155,356,902
2010	549,012	455,194	4,416,482	34,552,934	14,982,263	19,448,658	18,887,757	43,747,272	156,000,969
2011	551,015	463,200	4,411,747	34,575,248	15,124,665	19,718,780	19,166,558	44,410,486	158,439,361
2012	561,014	477,204	4,464,573	36,706,115	15,262,858	19,872,299	19,313,663	44,742,371	159,604,595
2013	567,005	487,207	4,474,526	36,425,533	15,513,509	20,310,485	19,765,533	45,808,800	163,512,854
2014	564,972	491,191	4,434,715	37,121,757	15,240,218	19,883,353	19,332,745	44,800,072	159,843,434
2015	567,012	498,204	4,420,743	34,276,059	15,380,134	20,167,468	19,629,783	45,503,442	162,444,595
2016	577,992	514,199	4,479,970	36,541,213	15,574,514	20,415,793	19,872,359	46,060,716	164,430,397
2017	574,980	517,205	4,424,076	36,997,281	15,109,294	19,660,923	19,107,111	44,263,763	157,891,909
2018	577,972	526,207	4,422,162	35,832,166	15,416,636	20,243,958	19,708,400	45,689,934	163,124,110
2019	587,999	542,197	4,471,931	35,218,499	15,520,604	20,331,159	19,785,595	45,862,854	163,706,752
2020(d	592,605	551,264	4,474,036	38,046,106	15,601,038	20,475,192	19,935,442	46,210,913	164,986,440

a) Includes the costs of electric capacity and energy used by pumping plants, exclusive of associated power transmission and station service charges; the value of electric capacity and energy produced by power recovery plants (treated as negative costs); the payments to sinking fund reserves that will finance periodic replacement of electro-mechanical equipment; and the plant capacity and energy costs associated with surplus water service prior to May 1, 1973.

b) Power costs for the period 1968 through 1983 are for an interim facility.

DEPOSITS FOR EACH AQUEDUCT PUMPING AND POWER RECOVERY PLANT[a]

dollars)

AQUEDUCT									
Reach 18A Cottonwood Powerplant	Reach 22B Pear-blossom Pumping Plant	Reach 26A Devil Canyon Powerplant	Reach 29A Oso Pumping Plant	Reach 29G Pyramid Powerplant	Reach 29J Castaic Powerplant	Reach 31A Las Perillas and Badger Hill Pumping Plants	Reach 33A Devil's Den Sawtooth and Polonio PP's and San Luis Obispo Pwp.	GRAND TOTAL	Calendar Year
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
0	0	0	0	0	0	0	0	38,130	1962
0	0	0	0	0	0	0	0	58,871	1963
0	0	0	0	0	0	0	0	75,239	1964
0	0	0	0	0	0	0	0	146,297	1965
0	0	0	0	0	0	0	0	198,643	1966
0	0	0	0	0	0	6,517	0	263,128	1967
0	0	0	0	0	0	120,278	0	2,034,449	1968
0	0	0	0	0	0	79,620	0	1,366,635	1969
0	0	0	0	0	0	137,449	0	1,188,766	1970
0	64,807	0	1,696	0	0	171,389	0	1,725,032	1971
0	103,584	-3,112	180,005	0	-385,696	240,651	0	4,645,065	1972
0	615,309	-931,697	274,450	0	-1,193,216	128,730	0	5,854,986	1973
0	595,646	-939,072	322,440	0	-1,823,397	129,345	0	6,272,395	1974
0	616,327	-1,101,445	457,487	0	-2,904,939	101,109	0	7,086,726	1975
0	914,440	-1,520,412	314,669	0	-2,626,021	151,211	0	7,078,331	1976
0	317,416	-1,216,060	53,081	0	-1,347,043	85,147	0	1,104,059	1977
0	1,725,737	-3,339,795	251,329	0	-2,199,562	195,687	0	2,498,959	1978
0	2,202,291	-4,170,225	263,049	0	-3,092,441	186,577	0	14,061,998	1979
0	2,882,018	-4,729,508	419,925	0	-3,210,967	212,068	0	17,513,573	1980
0	3,026,014	-3,142,028	659,410	0	-2,568,567	220,007	0	26,321,704	1981
0	3,229,724	-4,488,290	651,423	-1,026,418	-2,674,349	217,677	0	23,687,912	1982
0	11,734,530	-19,151,523	2,254,876	-7,220,580	-10,013,600	725,900	0	96,546,681	1983
-2,027,220	14,690,052	-26,790,429	3,197,562	-12,182,630	-15,003,476	863,743	0	115,736,920	1984
-1,865,109	13,554,168	-23,683,382	3,194,010	-11,180,819	-13,903,523	867,670	0	116,426,853	1985
-2,174,198	14,517,966	-24,305,245	3,398,365	-11,515,873	-13,830,266	1,054,003	876,651	126,926,688	1986
-2,019,891	14,427,319	-23,889,683	3,740,977	-11,759,032	-15,226,442	1,061,976	918,810	135,672,013	1987
-2,466,593	15,361,116	-24,208,025	4,086,346	-12,343,305	-16,115,348	1,122,622	1,033,934	145,908,608	1988
-2,478,085	15,602,113	-24,238,697	6,094,550	-14,061,933	-20,822,735	1,138,693	1,099,761	172,125,559	1989
-2,295,573	15,966,311	-24,113,329	7,140,431	-14,747,326	-24,161,693	1,155,505	1,165,697	186,226,274	1990
-2,687,552	15,998,176	-23,932,054	7,375,555	-14,263,628	-23,356,267	1,181,521	1,287,666	193,010,573	1991
-2,379,970	15,957,008	-24,739,180	7,252,977	-14,941,591	-25,384,184	1,204,431	1,406,842	190,652,930	1992
-2,298,875	15,482,301	-22,600,351	7,442,884	-14,320,834	-25,147,587	1,202,829	1,527,027	194,822,596	1993
-2,422,605	15,987,860	-24,152,573	8,114,414	-21,573,103	-27,456,700	1,270,423	1,698,561	198,354,040	1994
-2,410,949	16,402,589	-24,443,557	8,291,185	-21,172,199	-26,599,253	1,281,812	1,800,781	205,143,103	1995
-2,239,557	16,075,182	-23,409,284	8,382,246	-21,125,540	-28,769,300	1,290,030	1,914,458	202,491,776	1996
-2,582,526	16,011,928	-23,159,923	9,067,284	-21,559,881	-30,779,958	1,327,361	2,070,415	210,248,786	1997
-2,461,716	16,152,967	-23,258,949	8,635,613	-20,348,945	-28,194,546	1,332,199	2,133,873	211,093,880	1998
-2,291,667	16,309,548	-23,734,676	9,396,276	-22,202,825	-29,722,763	1,364,256	2,282,065	216,125,034	1999
-2,450,303	16,103,556	-23,688,964	9,284,621	-22,025,961	-28,876,421	1,368,449	2,373,152	218,513,856	2000
-2,704,954	16,167,425	-23,098,016	9,344,455	-21,966,646	-32,114,016	1,391,858	2,469,760	215,172,852	2001
-2,667,565	16,586,285	-24,268,342	9,834,549	-22,025,938	-32,308,385	1,414,159	2,492,229	225,015,837	2002
-2,392,848	16,419,823	-23,578,213	9,641,536	-21,125,034	-31,628,800	1,431,557	2,641,858	224,454,961	2003
-2,251,846	16,337,335	-23,765,048	10,496,559	-22,725,791	-31,862,385	1,449,803	2,747,118	233,860,906	2004
-2,633,377	16,546,202	-23,559,812	10,034,319	-21,330,039	-31,265,939	1,452,079	2,767,884	230,850,954	2005
-2,273,356	16,281,858	-23,419,710	10,476,066	-22,017,426	-33,769,825	1,445,348	2,761,330	232,551,264	2006
-2,343,718	16,435,628	-23,687,792	10,764,016	-22,549,117	-36,129,007	1,464,694	2,818,739	235,206,926	2007
-2,320,611	16,440,590	-22,871,271	10,763,069	-21,109,741	-33,968,830	1,461,985	2,820,320	239,540,300	2008
-2,831,277	16,635,271	-23,936,039	10,974,846	-21,904,767	-34,766,158	1,467,347	2,857,724	242,130,135	2009
-2,313,490	16,303,415	-23,108,331	11,190,686	-22,221,606	-33,927,486	1,463,462	2,836,566	243,263,757	2010
-2,706,380	16,443,379	-22,900,198	11,432,894	-22,485,965	-36,092,064	1,461,534	2,836,566	244,850,826	2011
-2,665,338	16,561,674	-21,730,240	11,511,808	-21,777,775	-36,810,999	1,478,697	2,895,419	250,467,938	2012
-2,460,645	16,634,767	-23,276,951	11,955,504	-22,343,581	-37,107,597	1,483,515	2,893,887	254,644,351	2013
-2,638,470	16,594,791	-22,593,605	11,537,074	-20,911,493	-34,857,103	1,469,238	2,906,297	253,219,186	2014
-2,328,720	16,320,462	-23,313,558	11,967,168	-22,747,391	-36,564,776	1,465,186	2,849,398	250,535,209	2015
-2,393,131	16,735,672	-22,678,948	12,024,602	-22,681,292	-37,584,301	1,484,480	2,912,502	256,286,737	2016
-2,445,214	16,411,028	-23,387,393	11,374,924	-21,296,355	-34,552,136	1,465,186	2,866,958	248,983,540	2017
-2,335,768	16,428,520	-23,122,004	12,005,469	-22,683,115	-35,589,288	1,465,186	2,850,452	254,560,997	2018
-2,381,684	16,576,042	-22,834,698	12,002,785	-22,609,979	-37,467,091	1,481,393	2,906,297	253,700,655	2019
-2,411,086	16,596,796	-22,852,548	12,150,335	-22,428,972	-37,151,566	1,481,393	2,907,290	259,164,678	2020

c) The estimated costs of Del Valle Pumping Plant are combined with those of South Bay Pumping Plant to simplify the cost allocations.

d) And each year thereafter for the remainder of the project repayment period.

(in acre-feet)[b]

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA (c				CENTRAL COASTAL AREA		
	Napa County FC & WCD(d	Solano County FC & WCD	Total	Alameda County FC & WCD Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC & WCD	Santa Barbara County FC & WCD	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1967	0	0	0	507	5,248	5,783	11,538	0	0	0
1968	0	0	0	6,900	15,000	88,000	109,900	0	0	0
1969	0	0	0	8,200	15,500	75,000	98,700	0	0	0
1970	0	0	0	10,000	16,200	88,000	114,200	0	0	0
1971	0	0	0	11,200	17,000	88,000	116,200	0	0	0
1972	0	0	0	12,400	17,900	88,000	118,300	0	0	0
1973	0	0	0	13,600	18,800	88,000	120,400	0	0	0
1974	0	0	0	14,800	19,600	88,000	122,400	0	0	0
1975	0	0	0	16,000	20,500	88,000	124,500	0	0	0
1976	0	0	0	17,200	21,300	88,000	126,500	0	0	0
1977	0	0	0	18,400	22,200	88,000	128,600	0	0	0
1978	0	0	0	19,600	23,100	88,000	130,700	0	0	0
1979	0	0	0	20,800	23,900	88,000	132,700	0	0	0
1980	12,500	6,750	19,250	22,000	24,800	88,000	134,800	1,000	1,200	2,200
1981	13,750	8,000	21,750	23,000	26,000	88,000	137,000	1,000	2,300	3,300
1982	15,000	9,400	24,400	24,000	27,200	88,000	139,200	2,000	4,600	6,600
1983	16,250	10,800	27,050	25,000	28,400	88,000	141,400	3,000	6,900	9,900
1984	17,500	12,100	29,600	26,000	29,600	88,000	143,600	4,500	10,400	14,900
1985	18,750	14,000	32,750	27,000	30,800	88,000	145,800	7,500	17,300	24,800
1986	20,000	16,500	36,500	28,000	32,100	88,000	148,100	10,000	23,100	33,100
1987	21,250	20,000	41,250	29,000	33,300	88,000	150,300	12,500	28,800	41,300
1988	22,500	27,000	49,500	30,000	34,500	88,000	152,500	15,500	35,800	51,300
1989	23,750	34,500	58,250	31,000	35,700	90,000	156,700	20,000	46,100	66,100
1990	25,000	42,000	67,000	32,000	36,900	92,000	160,900	25,000	57,700	82,700
1991	25,000	42,000	67,000	34,000	38,400	94,000	166,400	25,000	57,700	82,700
1992	25,000	42,000	67,000	36,000	39,900	96,000	171,900	25,000	57,700	82,700
1993	25,000	42,000	67,000	38,000	41,400	98,000	177,400	25,000	57,700	82,700
1994	25,000	42,000	67,000	40,000	42,000	100,000	182,000	25,000	57,700	82,700
1995	25,000	42,000	67,000	42,000	42,000	100,000	184,000	25,000	57,700	82,700
1996	25,000	42,000	67,000	44,000	42,000	100,000	186,000	25,000	57,700	82,700
1997	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
1998	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
1999	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2000	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2001	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2002	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2003	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2004	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2005	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2006	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2007	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2008	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2009	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2010	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2011	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2012	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2013	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2014	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2015	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2016	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2017	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2018	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2019	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2020	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2021	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2022	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2023	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2024	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2025	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2026	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2027	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2028	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2029	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2030	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2031	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2032	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2033	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2034	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
2035	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	57,700	82,700
TOTAL	1,331,250	2,091,050	3,422,300	2,494,607	2,459,248	6,510,783	11,464,638	1,227,000	2,830,700	4,057,700

a) From Tables A and Articles 6(a) of water supply contracts as of December 31, 1978.

b) Metric conversion is acre-feet times 1.2335 equals cubic dekametres.

c) Entitlements for the South Bay Area were supplied by nonproject water for the period June 1962 through November 1967. Actual delivery quantities of project water are shown for 1967.

d) District's Table A quantities exclude those during the period 1968 through 1979 which are assumed to be supplied by nonproject water.

MENTS TO PROJECT WATER[a]

(in acre-feet)[b]

Calendar Year	SAN JOAQUIN VALLEY AREA								
	Devil's Den Water District	Dudley Ridge Water District	Empire West Side Irrigation District	Hacienda Water District	Kern County Water Agency	County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1967	0	0	0	0	0	0	0	0	0
1968	3,700	14,300	1,000	0	46,600	900	2,300	12,250	81,050
1969	5,000	14,325	3,000	2,400	95,700	1,200	2,500	43,950	168,075
1970	5,700	15,700	3,000	2,500	145,100	1,300	2,600	31,800	207,700
1971	6,700	17,900	3,000	2,300	190,300	1,300	2,800	34,200	258,500
1972	7,700	20,000	3,000	2,600	270,700	1,400	5,366	110,000	420,766
1973	8,700	22,000	3,000	2,900	310,500	1,500	3,100	40,652	392,352
1974	9,700	33,390	3,000	3,300	347,000	1,500	3,471	68,989	470,350
1975	10,700	40,555	3,000	3,758	410,820	1,600	3,576	82,500	556,509
1976	11,700	30,921	3,000	3,900	442,150	1,600	4,039	57,807	555,117
1977	12,700	30,400	3,000	4,200	483,600	1,700	3,700	54,800	594,100
1978	11,362	32,500	0	4,600	534,300	1,900	3,900	58,700	647,262
1979	12,700	34,600	3,000	4,900	583,900	2,000	4,000	62,600	707,700
1980	12,700	36,700	3,000	5,200	634,500	2,200	4,200	66,500	765,000
1981	12,700	38,800	3,000	5,600	691,400	2,300	4,300	70,400	828,500
1982	12,700	41,000	3,000	5,900	745,300	2,500	4,500	74,300	889,200
1983	12,700	42,900	3,000	6,200	805,100	2,800	4,600	78,200	955,500
1984	12,700	45,100	3,000	6,500	860,600	3,100	4,800	82,100	1,017,900
1985	12,700	47,200	3,000	6,900	915,000	3,400	4,900	86,000	1,079,100
1986	12,700	49,300	3,000	7,200	968,200	3,700	5,100	90,000	1,139,200
1987	12,700	51,400	3,000	7,500	1,023,500	4,000	5,200	93,900	1,201,200
1988	12,700	53,500	3,000	7,800	1,074,600	4,000	5,400	97,800	1,258,800
1989	12,700	55,600	3,000	8,200	1,112,300	4,000	5,600	101,700	1,303,100
1990	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1991	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1992	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1993	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1994	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1995	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1996	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1997	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1998	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1999	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2000	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2001	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2002	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2003	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2004	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2005	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2006	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2007	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2008	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2009	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2010	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2011	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2012	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2013	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2014	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2015	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2016	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2017	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2018	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2019	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2020	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2021	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2022	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2023	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2024	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2025	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2026	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2027	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2028	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2029	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2030	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2031	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2032	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2033	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2034	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2035	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
TOTAL	817,562	3,422,291	199,000	495,358	65,747,570	233,900	352,152	6,559,148	77,826,981

(in acre-feet)[b]

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley County Water District	Crestline Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)
1967	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0
1972	20,000	1,236	5,200	526	8,000	170	8,400	1,620	1,677	122
1973	25,000	3,700	5,800	870	9,000	290	10,700	2,940	48,000	11,500
1974	30,000	5,700	6,400	1,160	10,000	400	13,100	4,260	50,000	12,300
1975	35,000	7,500	7,000	1,450	11,000	520	15,400	5,580	52,500	13,100
1976	44,000	9,500	7,600	1,740	12,000	640	17,800	6,900	55,000	14,000
1977	50,000	11,400	8,421	2,030	13,000	730	20,200	8,220	57,500	14,800
1978	57,000	13,400	9,242	2,320	14,000	920	22,500	9,340	60,000	15,700
1979	63,000	15,300	10,063	2,610	15,000	1,040	24,900	10,260	62,500	16,600
1980	69,200	17,700	10,884	2,900	17,000	1,150	27,200	11,180	65,500	17,400
1981	75,000	20,100	12,105	3,190	19,000	1,270	29,600	11,700	68,500	18,300
1982	81,300	22,100	13,326	3,480	21,000	1,380	31,900	12,320	71,500	19,100
1983	87,700	24,600	14,547	3,770	23,000	1,500	34,300	12,940	74,500	19,900
1984	94,000	26,900	15,768	4,060	25,000	1,610	36,700	13,560	78,000	20,700
1985	100,400	29,100	16,989	4,350	27,000	1,730	39,000	14,180	81,500	21,800
1986	106,700	30,900	18,210	4,640	29,000	1,840	41,400	14,800	85,000	23,200
1987	113,000	32,900	19,431	4,930	31,500	1,960	43,700	15,420	89,000	24,600
1988	119,400	35,300	20,652	5,220	34,000	2,070	46,000	16,040	93,000	26,000
1989	125,700	37,400	21,873	5,510	36,500	2,190	48,500	16,660	97,000	27,400
1990	132,100	39,300	23,100	5,800	38,100	2,300	50,800	17,300	101,500	28,800
1991	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1992	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1993	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1994	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1995	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1996	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1997	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1998	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1999	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2000	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2001	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2002	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2003	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2004	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2005	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2006	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2007	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2008	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2009	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2010	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2011	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2012	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2013	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2014	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2015	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2016	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2017	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2018	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2019	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2020	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2021	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2022	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2023	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2024	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2025	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2026	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2027	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2028	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2029	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2030	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2031	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2032	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2033	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2034	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2035	138,400	41,500	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
TOTAL	7,656,500	2,251,536	1,286,111	321,556	2,107,600	127,210	2,848,100	983,720	5,909,177	1,641,322

MENTS TO PROJECT WATER[a]

(in acre-feet)[b]

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				TOTAL STATE WATER PROJECT
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC & WCD	Total	
	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)
1967	0	0	0	0	0	0	0	0	11,538
1968	0	0	0	0	0	300	250	550	191,500
1969	0	0	0	0	0	350	270	620	267,395
1970	0	0	0	0	0	400	300	700	322,600
1971	0	0	0	0	0	450	440	890	375,590
1972	0	154,772	0	201,723	0	500	470	970	741,759
1973	0	354,600	0	472,400	0	600	500	1,100	986,252
1974	0	454,900	0	588,220	0	700	530	1,230	1,182,200
1975	0	555,200	0	704,250	0	1,050	560	1,610	1,386,869
1976	0	655,600	0	824,780	0	1,400	590	1,990	1,508,387
1977	0	755,900	0	942,201	0	1,800	620	2,420	1,667,321
1978	0	856,300	0	1,060,722	0	1,200	650	1,850	1,840,534
1979	0	956,600	0	1,177,873	0	1,450	680	2,130	2,020,403
1980	6,800	1,057,000	1,000	1,304,914	0	1,600	710	2,310	2,228,474
1981	7,800	1,157,300	2,000	1,425,865	4,200	1,900	740	6,840	2,423,255
1982	8,800	1,257,600	3,000	1,546,806	4,600	2,100	770	7,470	2,613,676
1983	9,800	1,358,000	4,000	1,668,557	5,050	2,300	800	8,150	2,810,557
1984	10,800	1,458,300	5,000	1,790,398	5,500	2,500	830	8,830	3,005,228
1985	11,800	1,558,700	6,000	1,912,549	5,950	2,700	860	9,510	3,204,509
1986	12,900	1,659,300	8,000	2,035,890	6,600	2,900	890	10,390	3,403,180
1987	14,000	1,759,800	10,000	2,160,241	7,300	3,100	920	11,320	3,605,611
1988	15,100	1,860,400	13,000	2,286,182	8,000	3,300	960	12,260	3,810,542
1989	16,200	1,961,000	16,000	2,411,933	8,800	3,500	1,000	13,300	4,009,383
1990	17,300	2,011,500	20,000	2,487,900	9,600	3,700	1,040	14,340	4,167,840
1991	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,080	38,180	4,206,780
1992	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,120	38,220	4,212,320
1993	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,160	38,260	4,217,860
1994	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,200	38,300	4,222,500
1995	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,250	38,350	4,224,550
1996	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,300	38,400	4,226,600
1997	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,350	38,450	4,228,650
1998	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,400	38,500	4,228,700
1999	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,450	38,550	4,228,750
2000	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,510	38,610	4,228,810
2001	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,570	38,670	4,228,870
2002	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,630	38,730	4,228,930
2003	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,690	38,790	4,228,990
2004	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,750	38,850	4,229,050
2005	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,810	38,910	4,229,110
2006	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,880	38,980	4,229,180
2007	17,300	2,011,500	20,000	2,497,500	9,600	27,500	1,950	39,050	4,229,250
2008	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,020	39,120	4,229,320
2009	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,090	39,190	4,229,390
2010	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,160	39,260	4,229,460
2011	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,240	39,340	4,229,540
2012	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,320	39,420	4,229,620
2013	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,410	39,510	4,229,710
2014	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,500	39,600	4,229,800
2015	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,600	39,700	4,229,900
2016	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2017	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2018	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2019	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2020	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2021	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2022	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2023	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2024	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2025	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2026	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2027	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2028	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2029	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2030	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2031	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2032	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2033	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2034	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
2035	17,300	2,011,500	20,000	2,497,500	9,600	27,500	2,700	39,800	4,230,000
TOTAL	909,800	112,360,272	988,000	139,390,904	497,600	1,277,300	112,820	1,887,720	238,050,243

TABLE B-5A: ANNUAL WATER QUANTITIES DELIVERED

(in acre-feet)[b]

Calendar Year	Grizzly Valley Pipeline PC FC&WCD	NORTH BAY AQUEDUCT Reach 2 SC FC&WCD	NORTH BAY AQUEDUCT Reach 3 NC FC&WCD[c]	TOTAL NORTH BAY AQUEDUCT	SOUTH BAY AQUEDUCT Reach 1 ACWD	SOUTH BAY AQUEDUCT Reach 1 AC FC&WCD	SOUTH BAY AQUEDUCT Reach 2 AC FC&WCD	SOUTH BAY AQUEDUCT Reach 4 AC FC&WCD	SOUTH BAY AQUEDUCT Reach 5 ACWD	SOUTH BAY AQUEDUCT Reach 5 AC FC&WCD	SOUTH BAY AQUEDUCT Reach 6 AC FC&WCD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1962	0	0	0	0	8,412	141	353	0	0	0	0
1963	0	0	0	0	10,914	814	917	0	0	0	0
1964	0	0	0	0	19,238	248	1,425	0	0	0	0
1965	0	0	0	0	15,280	637	1,830	138	0	0	0
1966	0	0	0	0	0	2,475	2,537	499	0	0	0
1967	0	0	0	0	0	1,527	2,391	862	0	0	0
1968	0	0	1,214	1,214	0	1,608	3,799	721	0	5	0
1969	0	0	2,687	2,687	0	1,165	3,459	1,851	0	160	0
1970	70	0	3,618	3,618	0	1,345	4,558	3,182	0	164	0
1971	64	0	2,521	2,521	0	546	1,908	2,403	0	160	0
1972	505	0	3,647	3,647	0	1,066	4,605	2,041	1,489	2,777	0
1973	679	0	3,792	3,792	0	430	1,123	1,193	0	229	0
1974	648	0	4,870	4,870	0	177	0	975	0	162	0
1975	405	0	6,840	6,840	0	137	1,783	1,864	0	120	714
1976	382	0	7,122	7,122	0	265	7,204	3,384	0	817	5,461
1977	303	0	8,226	8,226	0	210	4,491	2,213	0	524	5,206
1978	278	0	6,034	6,034	0	422	2,426	3,754	0	2,034	2,348
1979	680	0	6,405	6,405	0	2,562	4,030	5,110	0	959	8,139
1980	710	0	6,600	6,600	0	2,143	4,569	5,110	0	959	9,219
1981	740	0	6,825	6,825	0	2,502	4,674	5,430	0	959	9,435
1982	770	0	6,945	6,945	0	2,571	4,756	5,910	0	1,159	9,604
1983	800	0	7,160	7,160	0	2,533	4,896	5,910	0	1,759	9,902
1984	830	12,100	7,485	19,585	0	2,283	5,046	5,910	0	2,559	10,202
1985	860	12,870	8,300	21,170	0	200	5,700	5,200	0	4,200	11,700
1986	890	15,240	8,600	23,840	0	200	5,800	5,700	0	4,500	11,800
1987	920	18,320	8,950	27,270	0	200	5,900	6,200	0	4,700	12,000
1988	960	24,900	9,300	34,200	0	200	6,000	6,700	0	4,800	12,300
1989	1,000	31,350	9,750	41,100	0	200	6,100	7,100	0	5,000	12,600
1990	1,040	37,800(d	10,000	47,800	0	300	6,200	7,400	0	5,200	12,900
1991	1,080	37,800	10,600	48,400	0	300	6,300	8,400	0	5,900	13,100
1992	1,120	37,800	11,200	49,000	0	300	6,400	9,400	0	6,600	13,300
1993	1,160	37,800	11,800	49,600	0	300	6,500	10,400	0	7,300	13,500
1994	1,200	37,800	12,400	50,200	0	300	6,600	11,400	0	7,900	13,800
1995	1,250	37,800	13,000	50,800	0	300	6,600	12,300	0	8,700	14,100
1996	1,300	37,800	13,700	51,500	0	400	6,700	13,200	0	9,400	14,300
1997	1,350	37,800	14,400	52,200	0	1,700	6,800	13,500	0	9,500	14,500
1998	1,400	37,800	15,100	52,900	0	1,300	6,900	13,500	0	9,500	14,800
1999	1,450	37,800	15,800	53,600	0	900	7,000	13,500	0	9,500	15,100
2000	1,510	37,800	16,500	54,300	0	500	7,100	13,500	0	9,500	15,400
2001	1,570	37,800	16,700	54,500	0	400	7,300	13,300	0	9,300	15,700
2002	1,630	37,800	16,900	54,700	0	400	7,400	13,100	0	9,100	16,000
2003	1,690	37,800	17,100	54,900	0	400	7,600	12,900	0	8,900	16,200
2004	1,750	37,800	17,300	55,100	0	400	7,700	12,600	0	8,700	16,600
2005	1,810	37,800	17,500	55,300	0	400	7,900	12,400	0	8,500	16,800
2006	1,880	37,800	17,840	55,640	0	400	8,000	12,200	0	8,200	17,200
2007	1,950	37,800	18,180	55,980	0	400	8,200	11,900	0	8,000	17,500
2008	2,020	37,800	18,520	56,320	0	400	8,400	11,700	0	7,700	17,800
2009	2,090	37,800	18,860	56,660	0	400	8,500	11,400	0	7,500	18,200
2010	2,160	37,800	19,200	57,000	0	400	8,700	11,200	0	7,200	18,500
2011	2,240	37,800	19,560	57,360	0	400	8,900	10,900	0	7,000	18,800
2012	2,320	37,800	19,920	57,720	0	400	9,100	10,600	0	6,700	19,200
2013	2,410	37,800	20,280	58,080	0	400	9,200	10,400	0	6,400	19,600
2014	2,500	37,800	20,640	58,440	0	400	9,400	10,100	0	6,100	20,000
2015	2,600	37,800	21,000	58,800	0	400	9,600	9,800	0	5,800	20,400
2016	2,700	37,800	21,400	59,200	0	400	9,800	9,500	0	5,600	20,700
2017	2,700	37,800	21,800	59,600	0	400	10,000	9,200	0	5,300	21,100
2018	2,700	37,800	22,200	60,000	0	400	10,200	8,900	0	5,000	21,500
2019	2,700	37,800	22,600	60,400	0	400	10,400	8,600	0	4,700	21,900
2020 (f	2,700	37,800	23,000	60,800	0	400	10,600	8,300	0	4,400	22,300

a) Includes entitlement water, surplus water (delivered prior to May 1, 1973), and nonproject water.

b) Metric conversion is acre-feet times 1.2335 equals cubic dekametres.

c) For the period 1968 through 1983 annual quantities delivered are nonproject water pumped through an interim facility.

d) Solano County Flood Control and Water Conservation District (SCFC&WCD) has contracted for 42,000 acre-feet maximum annually, of which 4,200 acre-feet will be delivered from the Delta through the District's facilities in 1990 and each year thereafter.

e) For the period June 1962 through November 1967, deliveries were supplied by nonproject water.

f) And thereafter for the remainder of the project repayment period.

FROM EACH AQUEDUCT REACH TO EACH CONTRACTOR[a]

(in acre-feet)[b]

Calendar Year	SOUTH BAY AQUEDUCT[e] (continued)			TOTAL SOUTH BAY AQUEDUCT	CALIFORNIA AQUEDUCT							
					NORTH SAN JOAQUIN DIVISION	SOUTH SAN JOAQUIN DIVISION						
						Reach 8C				Reach 8D		
	Reach 7	Reach 8	Reach 9		Reach 2A							
	ACWD	ACWD	SCVWD		OFWD	HWD	TLBWSD	EWSID	CK	KCWA (Ag.)	DRWD	HWD
	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
1962	0	0	0	8,906	0	0	0	0	0	0	0	0
1963	0	0	0	12,645	0	0	0	0	0	0	0	0
1964	0	0	0	20,911	0	0	0	0	0	0	0	0
1965	1,127	0	15,014	34,026	0	0	0	0	0	0	0	0
1966	14,864	0	34,538	54,913	0	0	0	0	0	0	0	0
1967	12,882	0	39,101	56,763	0	0	0	0	0	0	0	0
1968	24,817	0	70,105	101,055	3,084	0	25,100	1,978	900	0	26,360	0
1969	813	0	62,264	69,712	3,016	0	7,081	56	100	0	31,375	0
1970	0	0	80,311	89,560	5,911	0	0	3,942	0	0	40,407	3,408
1971	5,961	0	87,606	98,584	7,212	0	80,906	5,990	3,700	0	41,053	6,659
1972	26,182	0	100,266	138,426	8,166	0	144,843	5,795	1,400	0	42,443	5,851
1973	2,521	0	88,582	94,078	3,214	140	26,177	3,000	1,500	1,500	22,057	2,760
1974	0	4	88,000	89,318	3,471	0	32,603	3,000	1,500	0	33,390	3,300
1975	393	593	88,000	93,604	3,576	0	41,536	3,000	1,600	0	40,555	3,758
1976	13,774	7,526	88,000	126,431	4,112	0	26,595	3,000	1,600	0	41,421	3,900
1977	11,284	7,556	76,220	107,704	1,472	0	12,984(g	738	1,530	0	11,153	1,680
1978	854	5,009	95,727	112,574	3,906	0	3,934	454	2,070	0	51,747	2,520
1979	17,326	8,774	91,300	138,200	4,780	0	47,840	4,800	2,000	0	34,600	9,500
1980	16,026	8,774	88,000	134,800	4,200	0	33,400	3,000	2,200	0	36,700	5,200
1981	17,226	8,774	88,000	137,000	4,300	0	35,300	3,000	2,300	0	38,800	5,600
1982	18,426	8,774	88,000	139,200	4,500	0	37,300	3,000	2,500	0	41,000	5,900
1983	19,626	8,774	88,000	141,400	4,600	0	39,300	3,000	2,800	0	42,900	6,200
1984	20,826	8,774	88,000	143,600	4,800	0	41,300	3,000	3,100	0	45,100	6,500
1985	22,026	8,774	88,000	145,800	4,900	0	43,100	3,000	3,400	0	47,200	6,900
1986	23,326	8,774	88,000	148,100	5,100	0	45,100	3,000	3,700	0	49,300	7,200
1987	24,526	8,774	88,000	150,300	5,200	0	47,000	3,000	4,000	0	51,400	7,500
1988	25,726	8,774	88,000	152,500	5,400	0	49,000	3,000	4,000	0	53,500	7,800
1989	26,926	8,774	90,000	156,700	5,600	0	50,900	3,000	4,000	0	55,600	8,200
1990	28,126	8,774	92,000	160,900	5,700	0	55,100	3,000	4,000	0	57,700	8,500
1991	29,626	8,774	94,000	166,400	5,700	0	55,100	3,000	4,000	0	57,700	8,500
1992	31,126	8,774	96,000	171,900	5,700	0	55,100	3,000	4,000	0	57,700	8,500
1993	32,626	8,774	98,000	177,400	5,700	0	55,100	3,000	4,000	0	57,700	8,500
1994	33,226	8,774	100,000	182,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500
1995	33,226	8,774	100,000	184,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500
1996	33,226	8,774	100,000	186,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500
1997	33,226	8,774	100,000	188,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500
1998	33,226	8,774	100,000	188,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500
1999	33,226	8,774	100,000	188,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500
2000	33,226	8,774	100,000	188,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500
2001	33,226	8,774	100,000	188,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500
2002	33,226	8,774	100,000	188,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500
2003	33,226	8,774	100,000	188,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500
2004	33,226	8,774	100,000	188,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500
2005	33,226	8,774	100,000	188,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500
2006	33,226	8,774	100,000	188,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500
2007	33,226	8,774	100,000	188,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500
2008	33,226	8,774	100,000	188,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500
2009	33,226	8,774	100,000	188,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500
2010(f	33,226	8,774	100,000	188,000	5,700	0	55,100	3,000	4,000	0	57,700	8,500

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	SOUTH SAN JOAQUIN DIVISION (continued)											
	Reach 8 D (continued)	Reach 9		Reach 10 A			Reach 11 B		Reach 12 E		Reach 13 B	
	TLBWSD	KCWA (Ag.)	HWD	KCWA (M&I)	KCWA (Ag.)	HWD	KCWA (M&I)	KCWA (Ag.)	KCWA (M&I)	KCWA (Ag.)	KCWA (M&I)	KCWA (Ag.)
	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)
1968	0	30,951	0	0	0	0	0	24,776	0	0	0	0
1969	0	24,489	0	0	0	2,842	0	64,682	0	0	0	0
1970	0	46,114	1,855	0	158	4,315	0	72,279	0	9,279	0	4,891
1971	34,920	58,356	0	0	9,973	0	0	63,773	0	28,056	0	0
1972	107,699	75,464	0	0	5,876	0	0	72,358	0	62,342	0	17,388
1973	21,387	54,583	0	0	22,948	0	0	67,544	0	13,082	0	9,297
1974	36,386	63,814	0	10,019	22,719	0	0	87,476	2,651	4,248	8,038	4,246
1975	40,964	50,021	0	2,791	72,121	0	0	85,675	0	10,787	8,538	7,059
1976	28,316	53,465	0	74	50,444	0	0	85,067	37,519	20,555	5,626	8,855
1977	3,417	24,668	0	201	34,451	0	3,981	29,603	20,280	1,737	0	5,024
1978	5,599	72,231	0	0	161,889	0	0	88,753	47,133	15,011	21,773	7,601
1979	47,640	71,741	0	3,400	140,970	0	0	111,316	31,570	69,499	3,900	18,490
1980	33,100	65,930	0	3,750	120,191	0	0	112,420	32,210	55,154	3,200	13,875
1981	35,100	69,760	0	4,100	134,100	0	0	118,534	32,860	63,068	3,500	15,938
1982	37,000	73,090	0	4,500	147,514	0	0	124,100	33,735	71,413	3,800	17,938
1983	38,900	75,880	0	4,900	163,024	0	0	128,480	34,755	80,178	4,200	20,563
1984	40,800	79,000	0	7,250	177,975	0	0	132,757	33,735	88,695	4,900	22,688
1985	42,900	84,400	0	7,250	192,200	0	0	138,100	34,000	95,900	5,450	24,000
1986	44,900	90,000	0	7,250	206,300	0	0	142,800	34,000	105,500	5,950	25,200
1987	46,900	95,600	0	7,250	219,500	0	0	147,900	34,000	116,200	6,450	25,900
1988	48,800	101,300	0	7,250	232,600	0	0	153,300	34,000	124,900	6,950	26,400
1989	50,800	107,000	0	7,250	241,500	0	0	156,100	34,000	133,000	7,350	26,700
1990(f	54,900	112,800	0	7,250	250,560	0	0	160,200	34,000	141,840	7,750	26,900

g) Includes 258 acre-feet delivered from Reach 6.

TABLE B-5A: ANNUAL WATER QUANTITIES DELIVERED

(in acre-feet)[b]

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	SOUTH SAN JOAQUIN DIVISION (continued)							TEHACHAPI DIVISION	MOJAVE DIVISION		
	Reach 14 A		Reach 14 B	Reach 14 C	Reach 15 A	Reach 16 A		Reach 17 E	Reach 18 A	Reach 19	Reach 19 C
	KCWA (M&I)	KCWA (Ag.)	KCWA (Ag.)	KCWA (Ag.)	KCWA (Ag.)	KCWA (M&I)	KCWA (Ag.)	KCWA (M&I)	AVEKWA	AVEKWA	AVEKWA
	(36)	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)
1970	0	0	3	0	0	0	0	0	0	0	0
1971	0	23,844	49,929	24,187	3,552	0	0	0	0	0	0
1972	0	26,621	77,034	35,016	6,064	0	4,768	0	0	0	0
1973	0	15,328	47,040	19,043	19,916	0	1,961	0	0	0	0
1974	0	7,794	32,356	12,601	18,000	3,000	1,564	0	0	1,223	0
1975	0	10,306	27,736	12,783	35,420	3,200	9,867	0	0	7,622	0
1976	0	268	35,296	9,005	39,551	3,500	11,667	0	3,808	23,063	0
1977	0	8,299	13,539	3,757	6,158	3,420	685	0	1,231	8,927	0
1978	0	34,029	72,351	24,542	31,148	7,989	1,655	0	1,321	36,333	0
1979	10,000	19,309	38,990	15,825	38,132	1,500	21,842	0	2,675	76,109	0
1980	10,000	17,600	31,500	10,600	38,000	1,600	22,400	1,100	4,193	48,226	0
1981	10,000	18,900	35,700	16,200	40,000	1,700	24,600	1,200	4,193	52,576	0
1982	10,000	21,800	39,900	17,000	42,000	1,900	28,800	1,300	4,193	58,583	0
1983	10,000	25,700	46,100	20,500	44,000	2,100	31,000	1,400	2,145	67,236	0
1984	10,000	27,600	50,200	21,200	46,000	2,300	37,200	1,500	2,330	72,543	0
1985	10,000	30,500	58,300	23,100	48,000	4,400	40,200	1,600	3,025	74,674	0
1986	10,000	32,500	64,700	25,000	50,000	6,500	43,200	1,700	3,225	31,475	45,783
1987	10,000	34,400	73,200	26,900	52,000	8,600	46,200	1,800	3,425	31,575	48,267
1988	10,000	36,300	80,400	28,800	53,000	10,700	49,200	1,900	3,625	31,675	50,850
1989	10,000	38,200	82,000	30,600	54,000	12,800	52,200	2,000	3,825	31,775	53,233
1990	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,025	31,875	55,717
1991	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
1992	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
1993	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
1994	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
1995	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
1996	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
1997	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
1998	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
1999	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2000	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2001	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2002	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2003	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2004	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2005	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2006	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2007	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2008	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2009	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2010	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2011	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2012	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2013	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2014	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2015	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2016	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2017	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2018	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2019	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100
2020 (f	10,000	40,100	84,800	32,400	55,000	15,000	55,200	2,000	4,225	31,975	58,100

FROM EACH AQUEDUCT REACH TO EACH CONTRACTOR[a]

(in acre-feet)[b]

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	MOJAVE DIVISION (continued)											
	Reach 20 A	Reach 20 B		Reach 21		Reach 22 A	Reach 22 B				Reach 23	Reach 24
	AVEKWA	PWD	AVEKWA	LCID	AVEKWA	AVEKWA	MWD-SC(h	CVCWD(h	DWA (h	MWA	MWA	CLAWA
	(47)	(48)	(49)	(50)	(51)	(52)	(53)	(54)	(55)	(56)	(57)	(58)
1972	0	0	0	338	0	0	0	0	0	55	0	464
1973	0	0	0	290	0	0	14,800-	5,800	9,000	0	0	389
1974	0	0	0	400	0	0	16,400-	6,400	10,000	0	14	627
1975	420	0	0	520	0	0	18,000-	7,000	11,000	0	0	825
1976	471	0	416	589	0	0	19,600-	7,600	12,000	0	0	1,002
1977	773	0	271	111	0	0	0	0	0	22	58	1,109
1978	5,549	0	934	208	0	0	25,384-	10,084	15,300	0	0	1,209
1979	13,821	0	0	1,205	1,767	0	25,063-	10,063	15,000	4,200	0	1,405
1980	14,183	0	0	1,315	1,767	831	27,884-	10,884	17,000	4,500	0	1,725
1981	14,735	0	0	1,378	2,250	1,246	31,105-	12,105	19,000	15,500	0	2,136
1982	14,945	100	0	1,380	2,312	1,267	34,326-	13,326	21,000	22,000	0	2,665
1983	15,319	300	0	1,500	1,502	1,298	37,547-	14,547	23,000	34,300	0	3,405
1984	15,938	600	0	1,610	1,614	1,325	40,768-	15,768	25,000	36,700	0	4,060
1985	18,947	1,500	0	1,730	1,879	1,550	43,989-	16,989	27,000	39,000	0	4,350
1986	21,956	2,200	0	1,840	2,136	1,750	47,210-	18,210	29,000	41,400	0	4,640
1987	24,964	2,900	0	1,960	2,394	1,950	50,931-	19,431	31,500	43,700	0	4,930
1988	27,973	3,600	0	2,070	2,652	2,150	54,652-	20,652	34,000	46,000	0	5,220
1989	30,982	4,300	0	2,190	2,910	2,450	58,373-	21,873	36,500	48,500	0	5,510
1990	33,991	5,000	0	2,300	3,167	2,750	61,200-	23,100	38,100	50,800	0	5,800
1991	37,000	6,000	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
1992	37,000	7,000	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
1993	37,000	8,000	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
1994	37,000	9,000	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
1995	37,000	10,000	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
1996	37,000	10,800	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
1997	37,000	11,600	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
1998	37,000	12,400	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
1999	37,000	13,200	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
2000	37,000	14,000	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
2001	37,000	14,600	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
2002	37,000	15,200	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
2003	37,000	15,900	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
2004	37,000	16,600	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
2005	37,000	17,300	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
2006	37,000	17,300	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
2007	37,000	17,300	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
2008	37,000	17,300	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
2009	37,000	17,300	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
2010	37,000	17,300	0	2,300	3,425	3,050	61,200-	23,100	38,100	50,800	0	5,800
2011	37,000	17,300	0	2,300	3,425	3,050	0	23,100	38,100	50,800	0	5,800
2012	37,000	17,300	0	2,300	3,425	3,050	0	23,100	38,100	50,800	0	5,800
2013	37,000	17,300	0	2,300	3,425	3,050	0	23,100	38,100	50,800	0	5,800
2014	37,000	17,300	0	2,300	3,425	3,050	0	23,100	38,100	50,800	0	5,800
2015	37,000	17,300	0	2,300	3,425	3,050	0	23,100	38,100	50,800	0	5,800
2016	37,000	17,300	0	2,300	3,425	3,050	0	23,100	38,100	50,800	0	5,800
2017	37,000	17,300	0	2,300	3,425	3,050	0	23,100	38,100	50,800	0	5,800
2018	37,000	17,300	0	2,300	3,425	3,050	0	23,100	38,100	50,800	0	5,800
2019	37,000	17,300	0	2,300	3,425	3,050	0	23,100	38,100	50,800	0	5,800
2020 (f	37,000	17,300	0	2,300	3,425	3,050	0	23,100	38,100	50,800	0	5,800

h) In accordance with the Exchange Agreement between the noted agencies, Metropolitan Water District assumed responsibility for payment of variable OMP&R costs on the exchange water in reaches beyond Reach 22B, and Desert Water Agency and Coachella Valley County Water District for such costs from the Delta through Reach 22B. The adjustment in deliveries shown in Column 53 provides for compliance with the repayment of the Agreement.

TABLE B-5A: ANNUAL WATER QUANTITIES DELIVERED

(in acre-feet)[b]

Calendar Year	CALIFORNIA AQUEDUCT (continued)							
	SANTA ANA DIVISION							
	Reach 26 A				Reach 28 G		Reach 28 H	Reach 28 J
	MWD-SC	SBVMWD	SGVMWD	SGPWA	MWD-SC	SBVMWD	MWD-SC	MWD-SC
	(59)	(60)	(61)	(62)	(63)	(64)	(65)	(66)
1972	0	1,275	0	0	0	0	0	0
1973	444	32,426	0	0	18,942	0	0	0
1974	84,981	16,605	612	0	0	0	0	0
1975	169,960	13,865	5,450	0	0	0	0	251
1976	215,312	12,273	6,071	0	0	0	55	2,000
1977	64,823	24,833	8,996	0	0	0	43	2,442
1978	297,708	4,055	7,771	0	0	0	48	64,054
1979	434,063	20,000	10,000	0	0	0	5,800	172,100
1980	465,184	55,500	12,000	0	0	0	8,400	186,200
1981	479,905	58,500	14,400	0	0	0	8,500	195,400
1982	476,626	61,500	16,800	0	0	0	8,500	201,300
1983	477,047	72,500	18,600	0	0	0	8,600	207,300
1984	456,868	78,000	20,700	0	0	0	8,800	213,100
1985	385,700	78,500	21,800	11,800	0	3,000	9,000	223,000
1986	375,100	80,600	23,200	12,900	0	4,400	9,600	233,000
1987	364,400	83,200	24,600	14,000	0	5,800	10,300	243,000
1988	353,200	85,800	26,000	15,100	0	7,200	11,500	253,000
1989	341,900	88,400	27,400	16,200	0	8,600	12,800	263,000
1990	323,600	91,500	28,800	17,300	0	10,000	14,100	280,000
1991	318,600	92,600	28,800	17,300	0	10,000	15,100	284,000
1992	313,600	92,600	28,800	17,300	0	10,000	16,100	288,000
1993	308,600	92,600	28,800	17,300	0	10,000	17,100	292,000
1994	303,600	92,600	28,800	17,300	0	10,000	18,100	296,000
1995	298,700	92,600	28,800	17,300	0	10,000	19,000	300,000
1996	293,500	92,600	28,800	17,300	0	10,000	20,200	304,000
1997	288,300	92,600	28,800	17,300	0	10,000	21,400	308,000
1998	283,100	92,600	28,800	17,300	0	10,000	22,600	312,000
1999	277,900	92,600	28,800	17,300	0	10,000	23,800	316,000
2000	272,700	92,600	28,800	17,300	0	10,000	25,000	320,000
2001	267,500	92,600	28,800	17,300	0	10,000	26,200	324,000
2002	262,300	92,600	28,800	17,300	0	10,000	27,400	328,000
2003	257,100	92,600	28,800	17,300	0	10,000	28,600	332,000
2004	251,900	92,600	28,800	17,300	0	10,000	29,800	336,000
2005	246,700	92,600	28,800	17,300	0	10,000	31,000	340,000
2006	243,500	92,600	28,800	17,300	0	10,000	32,200	342,000
2007	240,300	92,600	28,800	17,300	0	10,000	33,400	344,000
2008	237,100	92,600	28,800	17,300	0	10,000	34,600	346,000
2009	233,900	92,600	28,800	17,300	0	10,000	35,800	348,000
2010	230,700	92,600	28,800	17,300	0	10,000	37,000	350,000
2011	169,500	92,600	28,800	17,300	0	10,000	37,000	350,000
2012	169,500	92,600	28,800	17,300	0	10,000	37,000	350,000
2013	169,500	92,600	28,800	17,300	0	10,000	37,000	350,000
2014	169,500	92,600	28,800	17,300	0	10,000	37,000	350,000
2015	169,500	92,600	28,800	17,300	0	10,000	37,000	350,000
2016	169,500	92,600	28,800	17,300	0	10,000	37,000	350,000
2017	169,500	92,600	28,800	17,300	0	10,000	37,000	350,000
2018	169,500	92,600	28,800	17,300	0	10,000	37,000	350,000
2019	169,500	92,600	28,800	17,300	0	10,000	37,000	350,000
2020(f	169,500	92,600	28,800	17,300	0	10,000	37,000	350,000

FROM EACH AQUEDUCT REACH TO EACH CONTRACTOR[a]

(in acre-feet)[b]

Calendar Year	CALIFORNIA AQUEDUCT (continued)										Total California Aqueduct
	WEST BRANCH, CALIFORNIA AQUEDUCT				COASTAL BRANCH, CALIFORNIA AQUEDUCT						
	Reach 29 F	Reach 30			Reach 31 A		Reach 33 A	Reach 34	Reach 35		
	AVEKWA	MWD-SC	VCFCD	CLWA	KCWA (Ag.)	DDWD	SLOC FC&WCD	SLOC FC&WCD	SLOC FC&WCD	SBC FC&WCD	
	(67)	(68)	(69)	(70)	(71)	(72)	(73)	(74)	(75)	(76)	(77)
1968	0	0	0	0	71,657	7,382	0	0	0	0	192,188
1969	0	0	0	0	52,094	9,970	0	0	0	0	195,705
1970	0	0	0	0	71,910	11,739	0	0	0	0	276,211
1971	0	0	0	0	98,481	12,490	0	0	0	0	553,081
1972	53	71,938	0	0	107,850	13,905	0	0	0	0	895,006
1973	20	155,297	0	0	69,227	9,418	0	0	0	0	638,930
1974	36	209,136	0	0	68,474	9,700	0	0	0	0	783,984
1975	26	374,280	0	0	74,516	10,700	0	0	0	0	1,129,728
1976	24	420,684	0	0	78,358	11,700	0	0	0	0	1,245,662
1977	0	122,447	0	0	35,504	5,075	0	0	0	0	465,442
1978	0	171,139	0	0	81,242	11,362	0	0	0	0	1,339,268
1979	0	282,100	0	120	97,416	16,000	0	0	0	0	1,886,425
1980	0	286,900	750	7,000	94,970	16,000	0	0	0	0	1,866,974
1981	0	292,300	1,500	8,200	101,240	13,720	0	0	0	0	1,982,239
1982	0	355,600	2,250	9,400	106,510	12,700	0	0	0	0	2,128,621
1983	200	362,800	3,000	10,600	112,320	12,700	0	0	0	0	2,243,152
1984	250	370,600	3,750	11,800	117,600	12,700	0	0	0	0	2,318,488
1985	325	392,300	6,000	13,000	117,600	12,700	0	0	0	0	2,370,180
1986	375	407,300	8,000	13,600	117,600	12,700	2,224	1,112	2,224	16,600	2,485,840
1987	425	457,300	10,000	14,200	117,600	12,700	2,506	1,253	2,506	17,600	2,618,355
1988	475	487,300	13,000	14,800	117,600	12,700	2,788	1,394	2,788	18,600	2,727,560
1989	525	732,300	16,000	15,400	117,600	12,700	3,070	1,535	3,080	19,600	3,038,585
1990	575	842,300	20,000	16,000	117,600	12,700	3,352	1,676	3,352	20,600	3,223,580
1991	625	882,300	20,000	16,600	117,600	12,700	3,762	1,880	3,762	21,900	3,274,904
1992	625	922,300	20,000	17,200	117,600	12,700	4,172	2,084	4,172	23,100	3,318,728
1993	625	962,300	20,000	17,800	117,600	12,700	4,581	2,290	4,581	24,400	3,362,652
1994	625	1,002,300	20,000	18,400	117,600	12,700	4,990	2,496	4,990	25,700	3,406,576
1995	625	1,042,300	20,000	19,000	117,600	12,700	5,400	2,700	5,400	27,000	3,450,500
1996	625	1,064,300	20,000	19,400	117,600	12,700	5,880	2,940	5,880	28,300	3,476,200
1997	625	1,086,300	20,000	19,800	117,600	12,700	6,360	3,180	6,360	29,500	3,501,800
1998	625	1,108,300	20,000	20,200	117,600	12,700	6,440	3,220	6,440	30,800	3,526,500
1999	625	1,130,300	20,000	20,600	117,600	12,700	6,920	3,460	6,920	32,100	3,552,200
2000	625	1,152,300	20,000	21,000	117,600	12,700	7,400	3,700	7,400	33,400	3,577,900
2001	625	1,174,300	20,000	21,600	117,600	12,700	7,920	3,960	7,920	33,700	3,602,700
2002	625	1,196,300	20,000	22,200	117,600	12,700	8,440	4,220	8,440	34,000	3,627,500
2003	625	1,218,300	20,000	22,800	117,600	12,700	8,960	4,480	8,960	34,300	3,652,400
2004	625	1,240,300	20,000	23,400	117,600	12,700	9,480	4,740	9,480	34,600	3,677,300
2005	625	1,262,300	20,000	24,000	117,600	12,700	10,000	5,000	10,000	34,900	3,702,200
2006	625	1,286,300	20,000	24,400	117,600	12,700	10,000	5,000	10,000	35,200	3,726,900
2007	625	1,310,300	20,000	24,800	117,600	12,700	10,000	5,000	10,000	35,500	3,751,600
2008	625	1,334,300	20,000	25,200	117,600	12,700	10,000	5,000	10,000	35,800	3,776,300
2009	625	1,358,300	20,000	25,600	117,600	12,700	10,000	5,000	10,000	36,100	3,801,000
2010	625	1,382,300	20,000	26,000	117,600	12,700	10,000	5,000	10,000	36,400	3,825,700
2011	625	1,406,300	20,000	26,600	117,600	12,700	10,000	5,000	10,000	36,400	3,850,300
2012	625	1,430,300	20,000	27,200	117,600	12,700	10,000	5,000	10,000	36,400	3,874,900
2013	625	1,454,300	20,000	27,800	117,600	12,700	10,000	5,000	10,000	36,500	3,899,600
2014	625	1,455,000	20,000	28,400	117,600	12,700	10,000	5,000	10,000	36,500	3,900,900
2015	625	1,455,000	20,000	29,000	117,600	12,700	10,000	5,000	10,000	36,500	3,901,500
2016	625	1,455,000	20,000	29,600	117,600	12,700	10,000	5,000	10,000	36,500	3,902,100
2017	625	1,455,000	20,000	30,200	117,600	12,700	10,000	5,000	10,000	36,500	3,902,700
2018	625	1,455,000	20,000	30,800	117,600	12,700	10,000	5,000	10,000	36,500	3,903,300
2019	625	1,455,000	20,000	31,400	117,600	12,700	10,000	5,000	10,000	36,500	3,903,900
2020 (f	625	1,455,000	20,000	32,000	117,600	12,700	10,000	5,000	10,000	36,500	3,904,500

TABLE B-5B: ANNUAL WATER QUANTITIES

(in acre-feet)[b]

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA [d]				CENTRAL COASTAL AREA		
	Napa County[c] FC & WCD	Solano County FC & WCD	Total	Alameda County FC & WCD Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC & WCD	Santa Barbara County FC & WCD	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1962	0	0	0	494	8,412	0	8,906	0	0	0
1963	0	0	0	1,731	10,914	0	12,645	0	0	0
1964	0	0	0	1,673	19,238	0	20,911	0	0	0
1965	0	0	0	2,605	16,407	15,014	34,026	0	0	0
1966	0	0	0	5,511	14,864	34,538	54,913	0	0	0
1967	0	0	0	4,780	12,882	39,101	56,763	0	0	0
1968	1,214	0	1,214	6,133	24,817	70,105	101,055	0	0	0
1969	2,687	0	2,687	6,635	813	62,264	69,712	0	0	0
1970	3,618	0	3,618	9,249	0	80,311	89,560	0	0	0
1971	2,521	0	2,521	5,017	5,961	87,606	98,584	0	0	0
1972	3,647	0	3,647	10,489	27,671	100,266	138,426	0	0	0
1973	3,792	0	3,792	2,975	2,521	88,582	94,078	0	0	0
1974	4,870	0	4,870	1,314	4	88,000	89,318	0	0	0
1975	6,840	0	6,840	4,618	986	88,000	93,604	0	0	0
1976	7,122	0	7,122	17,131	21,300	88,000	126,431	0	0	0
1977	8,226	0	8,226	12,644	18,840	76,220	107,704	0	0	0
1978	6,034	0	6,034	10,984	5,863	95,727	112,574	0	0	0
1979	6,405	0	6,405	20,800	26,100	91,300	138,200	0	0	0
1980	6,600	0	6,600	22,000	24,800	88,000	134,800	0	0	0
1981	6,825	0	6,825	23,000	26,000	88,000	137,000	0	0	0
1982	6,945	0	6,945	24,000	27,200	88,000	139,200	0	0	0
1983	7,160	0	7,160	25,000	28,400	88,000	141,400	0	0	0
1984	7,485	12,100	19,585	26,000	29,600	88,000	143,600	0	0	0
1985	8,300	12,870	21,170	27,000	30,800	88,000	145,800	0	0	0
1986	8,600	15,240	23,840	28,000	32,100	88,000	148,100	5,560	16,600	22,160
1987	8,950	18,320	27,270	29,000	33,300	88,000	150,300	6,265	17,600	23,865
1988	9,300	24,900	34,200	30,000	34,500	88,000	152,500	6,970	18,600	25,570
1989	9,750	31,350	41,100	31,000	35,700	90,000	156,700	7,685	19,600	27,285
1990	10,000	37,800	47,800	32,000	36,900	92,000	160,900	8,380	20,600	28,980
1991	10,600	37,800	48,400	34,000	38,400	94,000	166,400	9,404	21,900	31,304
1992	11,200	37,800	49,000	36,000	39,900	96,000	171,900	10,428	23,100	33,528
1993	11,800	37,800	49,600	38,000	41,400	98,000	177,400	11,452	24,400	35,852
1994	12,400	37,800	50,200	40,000	42,000	100,000	182,000	12,476	25,700	38,176
1995	13,000	37,800	50,800	42,000	42,000	100,000	184,000	13,500	27,000	40,500
1996	13,700	37,800	51,500	44,000	42,000	100,000	186,000	14,700	28,300	43,000
1997	14,400	37,800	52,200	46,000	42,000	100,000	188,000	15,900	29,500	45,400
1998	15,100	37,800	52,900	46,000	42,000	100,000	188,000	16,100	30,800	46,900
1999	15,800	37,800	53,600	46,000	42,000	100,000	188,000	17,300	32,100	49,400
2000	16,500	37,800	54,300	46,000	42,000	100,000	188,000	18,500	33,400	51,900
2001	16,700	37,800	54,500	46,000	42,000	100,000	188,000	19,800	33,700	53,500
2002	16,900	37,800	54,700	46,000	42,000	100,000	188,000	21,100	34,000	55,100
2003	17,100	37,800	54,900	46,000	42,000	100,000	188,000	22,400	34,300	56,700
2004	17,300	37,800	55,100	46,000	42,000	100,000	188,000	23,700	34,600	58,300
2005	17,500	37,800	55,300	46,000	42,000	100,000	188,000	25,000	34,900	59,900
2006	17,840	37,800	55,640	46,000	42,000	100,000	188,000	25,000	35,200	60,200
2007	18,180	37,800	55,980	46,000	42,000	100,000	188,000	25,000	35,500	60,500
2008	18,520	37,800	56,320	46,000	42,000	100,000	188,000	25,000	35,800	60,800
2009	18,860	37,800	56,660	46,000	42,000	100,000	188,000	25,000	36,100	61,100
2010	19,200	37,800	57,000	46,000	42,000	100,000	188,000	25,000	36,400	61,400
2011	19,560	37,800	57,360	46,000	42,000	100,000	188,000	25,000	36,400	61,400
2012	19,920	37,800	57,720	46,000	42,000	100,000	188,000	25,000	36,400	61,400
2013	20,280	37,800	58,080	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2014	20,640	37,800	58,440	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2015	21,000	37,800	58,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2016	21,400	37,800	59,200	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2017	21,800	37,800	59,600	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2018	22,200	37,800	60,000	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2019	22,600	37,800	60,400	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2020	23,000	37,800	60,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2021	23,000	37,800	60,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2022	23,000	37,800	60,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2023	23,000	37,800	60,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2024	23,000	37,800	60,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2025	23,000	37,800	60,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2026	23,000	37,800	60,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2027	23,000	37,800	60,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2028	23,000	37,800	60,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2029	23,000	37,800	60,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2030	23,000	37,800	60,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2031	23,000	37,800	60,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2032	23,000	37,800	60,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2033	23,000	37,800	60,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2034	23,000	37,800	60,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
2035	23,000	37,800	60,800	46,000	42,000	100,000	188,000	25,000	36,500	61,500
TOTAL	1,016,891	1,853,580	2,870,471	2,449,783	2,440,593	6,567,034	11,457,410	1,036,620	1,632,000	2,668,620

a) Includes entitlement water, surplus water (delivered prior to May 1, 1973), and nonproject water.

b) Metric conversion is acre-feet times 1.2335 equals cubic dekametres.

c) For the period 1968 through 1983 annual quantities delivered are nonproject water pumped through an interim facility.

d) For the period June 1962 through November 1967, deliveries were supplied by nonproject water.

DELIVERED TO EACH CONTRACTOR[a]

(in acre-feet)[b]

Calendar Year	SAN JOAQUIN VALLEY AREA								
	Devil's Den Water District	Dudley Ridge Water District	Empire West Side Irrigation District	Hacienda Water District	Kern County Water Agency	County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	7,382	26,360	1,978	0	127,384	900	3,084	25,100	192,188
1969	9,970	31,375	56	2,842	141,265	100	3,016	7,081	195,705
1970	11,739	40,407	3,942	9,578	204,634	0	5,911	0	276,211
1971	12,490	41,053	5,990	6,659	360,151	3,700	7,212	115,826	553,081
1972	13,905	42,443	5,795	5,851	490,781	1,400	8,166	252,542	820,883
1973	9,418	22,057	3,000	2,900	341,469	1,500	3,214	47,564	431,122
1974	9,700	33,390	3,000	3,300	347,000	1,500	3,471	68,989	470,350
1975	10,700	40,555	3,000	3,758	410,820	1,600	3,576	82,500	556,509
1976	11,700	41,421	3,000	3,900	439,250	1,600	4,112	54,911	559,894
1977	5,075	11,153	738	1,680	191,307	1,530	1,472	16,401	229,356
1978	11,362	51,747	454	2,520	667,347	2,070	3,906	9,533	748,939
1979	16,000	34,600	4,800	9,500	693,900	2,000	4,780	95,480	861,060
1980	16,000	36,700	3,000	5,200	634,500	2,200	4,200	66,500	768,300
1981	13,720	38,800	3,000	5,600	691,400	2,300	4,300	70,400	829,520
1982	12,700	41,000	3,000	5,900	745,300	2,500	4,500	74,300	889,200
1983	12,700	42,900	3,000	6,200	805,100	2,800	4,600	78,200	955,500
1984	12,700	45,100	3,000	6,500	860,600	3,100	4,800	82,100	1,017,900
1985	12,700	47,200	3,000	6,900	915,000	3,400	4,900	86,000	1,079,100
1986	12,700	49,300	3,000	7,200	968,200	3,700	5,100	90,000	1,139,200
1987	12,700	51,400	3,000	7,500	1,023,500	4,000	5,200	93,900	1,201,200
1988	12,700	53,500	3,000	7,800	1,074,600	4,000	5,400	97,800	1,258,800
1989	12,700	55,600	3,000	8,200	1,112,300	4,000	5,600	101,700	1,303,100
1990	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1991	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1992	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1993	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1994	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1995	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1996	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1997	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1998	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
1999	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2000	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2001	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2002	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2003	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2004	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2005	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2006	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2007	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2008	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2009	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2010	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2011	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2012	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2013	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2014	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2015	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2016	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2017	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2018	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2019	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2020	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2021	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2022	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2023	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2024	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2025	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2026	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2027	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2028	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2029	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2030	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2031	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2032	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2033	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2034	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
2035	12,700	57,700	3,000	8,500	1,153,400	4,000	5,700	110,000	1,355,000
TOTAL	844,961	3,532,261	203,753	510,488	66,302,208	233,900	362,720	6,676,827	78,667,118

TABLE B-5B: ANNUAL WATER QUANTITIES

(in acre-feet) [b]

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley County Water District	Crestline Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0
1972	53	0	0	464	0	338	55	0	1,275	0
1973	20	0	5,800	389	9,000	290	0	0	32,426	0
1974	1,259	0	6,400	627	10,000	400	14	0	16,605	612
1975	8,068	0	7,000	825	11,000	520	0	0	13,865	5,450
1976	27,782	0	7,600	1,002	12,000	589	0	0	12,273	6,071
1977	11,202	0	0	1,109	0	111	80	0	24,833	8,996
1978	44,137	0	10,084	1,209	15,300	208	0	0	4,055	7,771
1979	94,372	120	10,063	1,405	15,000	1,205	4,200	0	20,000	10,000
1980	69,200	7,000	10,884	1,725	17,000	1,315	4,500	0	55,500	12,000
1981	75,000	8,200	12,105	2,136	19,000	1,378	15,500	0	58,500	14,400
1982	81,300	9,400	13,326	2,665	21,000	1,380	22,000	100	61,500	16,800
1983	87,700	10,600	14,547	3,405	23,000	1,500	34,300	300	72,500	18,600
1984	94,000	11,800	15,768	4,060	25,000	1,610	36,700	600	78,000	20,700
1985	100,400	13,000	16,989	4,350	27,000	1,730	39,000	1,500	81,500	21,800
1986	106,700	13,600	18,210	4,640	29,000	1,840	41,400	2,200	85,000	23,200
1987	113,000	14,200	19,431	4,930	31,500	1,960	43,700	2,900	89,000	24,600
1988	119,400	14,800	20,652	5,220	34,000	2,070	46,000	3,600	93,000	26,000
1989	125,700	15,400	21,873	5,510	36,500	2,190	48,500	4,300	97,000	27,400
1990	132,100	16,000	23,100	5,800	38,100	2,300	50,800	5,000	101,500	28,800
1991	138,400	16,600	23,100	5,800	38,100	2,300	50,800	6,000	102,600	28,800
1992	138,400	17,200	23,100	5,800	38,100	2,300	50,800	7,000	102,600	28,800
1993	138,400	17,800	23,100	5,800	38,100	2,300	50,800	8,000	102,600	28,800
1994	138,400	18,400	23,100	5,800	38,100	2,300	50,800	9,000	102,600	28,800
1995	138,400	19,000	23,100	5,800	38,100	2,300	50,800	10,000	102,600	28,800
1996	138,400	19,400	23,100	5,800	38,100	2,300	50,800	10,800	102,600	28,800
1997	138,400	19,800	23,100	5,800	38,100	2,300	50,800	11,600	102,600	28,800
1998	138,400	20,200	23,100	5,800	38,100	2,300	50,800	12,400	102,600	28,800
1999	138,400	20,600	23,100	5,800	38,100	2,300	50,800	13,200	102,600	28,800
2000	138,400	21,000	23,100	5,800	38,100	2,300	50,800	14,000	102,600	28,800
2001	138,400	21,600	23,100	5,800	38,100	2,300	50,800	14,600	102,600	28,800
2002	138,400	22,200	23,100	5,800	38,100	2,300	50,800	15,200	102,600	28,800
2003	138,400	22,800	23,100	5,800	38,100	2,300	50,800	15,900	102,600	28,800
2004	138,400	23,400	23,100	5,800	38,100	2,300	50,800	16,600	102,600	28,800
2005	138,400	24,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2006	138,400	24,400	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2007	138,400	24,800	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2008	138,400	25,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2009	138,400	25,600	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2010	138,400	26,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2011	138,400	26,600	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2012	138,400	27,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2013	138,400	27,800	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2014	138,400	28,400	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2015	138,400	29,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2016	138,400	29,600	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2017	138,400	30,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2018	138,400	30,800	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2019	138,400	31,400	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2020	138,400	32,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2021	138,400	32,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2022	138,400	32,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2023	138,400	32,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2024	138,400	32,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2025	138,400	32,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2026	138,400	32,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2027	138,400	32,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2028	138,400	32,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2029	138,400	32,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2030	138,400	32,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2031	138,400	32,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2032	138,400	32,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2033	138,400	32,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2034	138,400	32,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2035	138,400	32,000	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
TOTAL	7,519,393	1,337,120	1,273,332	312,471	2,087,900	126,434	2,672,749	721,100	5,615,332	1,569,200

DELIVERED TO EACH CONTRACTOR[a]

(in acre-feet)[b]

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				TOTAL STATE WATER PROJECT
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC & WCD	Total	
	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)
1962	0	0	0	0	0	0	0	0	8,906
1963	0	0	0	0	0	0	0	0	12,645
1964	0	0	0	0	0	0	0	0	20,911
1965	0	0	0	0	0	0	0	0	34,026
1966	0	0	0	0	0	0	0	0	54,913
1967	0	0	0	0	0	0	0	0	56,763
1968	0	0	0	0	0	0	0	0	294,457
1969	0	0	0	0	0	0	0	0	268,104
1970	0	0	0	0	0	0	70	70	369,459
1971	0	0	0	0	0	192	64	256	654,442
1972	0	71,938	0	74,123	0	186	505	691	1,037,770
1973	0	159,883	0	207,808	0	53	679	732	737,532
1974	0	277,717	0	313,634	0	127	648	775	878,947
1975	0	526,491	0	573,219	0	253	405	658	1,230,830
1976	0	618,451	0	685,768	0	527	382	909	1,380,124
1977	0	189,755	0	236,086	0	706	303	1,009	582,381
1978	0	507,565	0	590,329	0	579	278	857	1,458,733
1979	0	869,000	0	1,025,365	0	1,450	680	2,130	2,033,160
1980	0	918,800	750	1,098,674	0	1,600	710	2,310	2,010,684
1981	0	945,000	1,500	1,152,719	4,200	1,900	740	6,840	2,132,904
1982	0	1,007,700	2,250	1,239,421	4,600	2,100	770	7,470	2,282,236
1983	0	1,018,200	3,000	1,287,652	5,050	2,300	800	8,150	2,399,862
1984	0	1,008,600	3,750	1,300,588	5,500	2,500	830	8,830	2,490,503
1985	11,800	966,011	6,000	1,291,080	5,950	2,700	860	9,510	2,546,660
1986	12,900	977,790	8,000	1,324,480	6,600	2,900	890	10,390	2,668,170
1987	14,000	1,024,069	10,000	1,393,290	7,300	3,100	920	11,320	2,807,245
1988	15,100	1,050,348	13,000	1,443,190	8,000	3,300	960	12,260	2,926,520
1989	16,200	1,291,627	16,000	1,708,200	8,800	3,500	1,000	13,300	3,249,685
1990	17,300	1,398,800	20,000	1,839,600	9,600	3,700	1,040	14,340	3,446,620
1991	17,300	1,438,800	20,000	1,888,600	9,600	27,500	1,080	38,180	3,527,884
1992	17,300	1,478,800	20,000	1,930,200	9,600	27,500	1,120	38,220	3,577,848
1993	17,300	1,518,800	20,000	1,971,800	9,600	27,500	1,160	38,260	3,627,912
1994	17,300	1,558,800	20,000	2,013,400	9,600	27,500	1,200	38,300	3,677,076
1995	17,300	1,598,800	20,000	2,055,000	9,600	27,500	1,250	38,350	3,723,650
1996	17,300	1,620,800	20,000	2,078,200	9,600	27,500	1,300	38,400	3,752,100
1997	17,300	1,642,800	20,000	2,101,400	9,600	27,500	1,350	38,450	3,780,450
1998	17,300	1,664,800	20,000	2,124,600	9,600	27,500	1,400	38,500	3,805,900
1999	17,300	1,686,800	20,000	2,147,800	9,600	27,500	1,450	38,550	3,832,350
2000	17,300	1,708,800	20,000	2,171,000	9,600	27,500	1,510	38,610	3,858,810
2001	17,300	1,730,800	20,000	2,194,200	9,600	27,500	1,570	38,670	3,883,870
2002	17,300	1,752,800	20,000	2,217,400	9,600	27,500	1,630	38,730	3,908,930
2003	17,300	1,774,800	20,000	2,240,700	9,600	27,500	1,690	38,790	3,934,090
2004	17,300	1,796,800	20,000	2,264,000	9,600	27,500	1,750	38,850	3,959,250
2005	17,300	1,818,800	20,000	2,287,300	9,600	27,500	1,810	38,910	3,984,410
2006	17,300	1,842,800	20,000	2,311,700	9,600	27,500	1,880	38,980	4,009,520
2007	17,300	1,866,800	20,000	2,336,100	9,600	27,500	1,950	39,050	4,034,630
2008	17,300	1,890,800	20,000	2,360,500	9,600	27,500	2,020	39,120	4,059,740
2009	17,300	1,914,800	20,000	2,384,900	9,600	27,500	2,090	39,190	4,084,850
2010	17,300	1,938,800	20,000	2,409,300	9,600	27,500	2,160	39,260	4,109,960
2011	17,300	1,962,800	20,000	2,433,900	9,600	27,500	2,240	39,340	4,135,000
2012	17,300	1,986,800	20,000	2,458,500	9,600	27,500	2,320	39,420	4,160,040
2013	17,300	2,010,800	20,000	2,483,100	9,600	27,500	2,410	39,510	4,185,190
2014	17,300	2,011,500	20,000	2,484,400	9,600	27,500	2,500	39,600	4,186,940
2015	17,300	2,011,500	20,000	2,485,000	9,600	27,500	2,600	39,700	4,188,000
2016	17,300	2,011,500	20,000	2,485,600	9,600	27,500	2,700	39,800	4,189,100
2017	17,300	2,011,500	20,000	2,486,200	9,600	27,500	2,700	39,800	4,190,100
2018	17,300	2,011,500	20,000	2,486,800	9,600	27,500	2,700	39,800	4,191,100
2019	17,300	2,011,500	20,000	2,487,400	9,600	27,500	2,700	39,800	4,192,100
2020	17,300	2,011,500	20,000	2,488,000	9,600	27,500	2,700	39,800	4,193,100
2021	17,300	2,011,500	20,000	2,488,000	9,600	27,500	2,700	39,800	4,193,100
2022	17,300	2,011,500	20,000	2,488,000	9,600	27,500	2,700	39,800	4,193,100
2023	17,300	2,011,500	20,000	2,488,000	9,600	27,500	2,700	39,800	4,193,100
2024	17,300	2,011,500	20,000	2,488,000	9,600	27,500	2,700	39,800	4,193,100
2025	17,300	2,011,500	20,000	2,488,000	9,600	27,500	2,700	39,800	4,193,100
2026	17,300	2,011,500	20,000	2,488,000	9,600	27,500	2,700	39,800	4,193,100
2027	17,300	2,011,500	20,000	2,488,000	9,600	27,500	2,700	39,800	4,193,100
2028	17,300	2,011,500	20,000	2,488,000	9,600	27,500	2,700	39,800	4,193,100
2029	17,300	2,011,500	20,000	2,488,000	9,600	27,500	2,700	39,800	4,193,100
2030	17,300	2,011,500	20,000	2,488,000	9,600	27,500	2,700	39,800	4,193,100
2031	17,300	2,011,500	20,000	2,488,000	9,600	27,500	2,700	39,800	4,193,100
2032	17,300	2,011,500	20,000	2,488,000	9,600	27,500	2,700	39,800	4,193,100
2033	17,300	2,011,500	20,000	2,488,000	9,600	27,500	2,700	39,800	4,193,100
2034	17,300	2,011,500	20,000	2,488,000	9,600	27,500	2,700	39,800	4,193,100
2035	17,300	2,011,500	20,000	2,488,000	9,600	27,500	2,700	39,800	4,193,100
TOTAL	865,800	99,287,145	984,250	124,372,226	497,600	1,271,173	110,974	1,879,747	221,915,592

TABLE B-6: ANNUAL WATER QUANTITIES CONVEYED THRU EACH PUMPING

(in acre-feet) [b]

Calendar Year	NORTH BAY AQUEDUCT							SOUTH BAY AQUEDUCT					
	CALHOUN AND TRAVIS PUMPING PLANTS			CORDELIA PUMPING PLANT				SOUTH BAY PUMPING PLANT					
											Deliveries		
	Operational Losses	Water Supply Delivery	Total	Initial Fill Water	Operational Losses	Water Supply Delivery (c	Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Water Supply (d	Recreation	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1962	0	0	0	0	0	0	0	9	272	0	8,906	0	9,187
1963	0	0	0	0	0	0	0	71	185	0	12,645	0	12,901
1964	0	0	0	0	0	0	0	171	152	0	20,911	0	21,234
1965	0	0	0	0	0	0	0	93	729	0	34,026	0	34,848
1966	0	0	0	0	0	0	0	0	1,746	0	54,913	0	56,659
1967	0	0	0	0	0	0	0	0	1,677	0	56,763	0	58,440
1968	0	0	0	24	-10	1,214	1,228	0	1,847	0	101,055	0	102,902
1969	0	0	0	0	2	2,687	2,689	3,449	2,668	0	69,712	0	75,829
1970	0	0	0	0	18	3,618	3,636	16,279	1,086	-5,355	89,560	0	101,570
1971	0	0	0	0	4	2,521	2,525	0	1,815	8,854	98,584	0	109,253
1972	0	0	0	0	-10	3,647	3,637	0	3,557	2,273	138,426	0	144,256
1973	0	0	0	0	1	3,792	3,793	0	-33	-1,510	94,078	0	92,535
1974	0	0	0	0	10	4,870	4,880	0	1,287	-10,056	89,318	0	80,549
1975	0	0	0	0	10	6,840	6,850	0	320	8,550	93,604	0	102,474
1976	0	0	0	0	4	7,122	7,126	0	2,431	1,391	126,431	141	130,394
1977	0	0	0	0	2	8,226	8,228	0	2,866	2,685	107,704	112	113,367
1978	0	0	0	0	-6	6,034	6,028	0	2,165	-11,249	112,574	126	103,616
1979	0	0	0	0	0	6,405	6,405	0	3,185	0	138,200	2,140	143,525
1980	0	0	0	0	0	6,600	6,600	0	3,185	0	134,800	140	138,125
1981	0	0	0	0	0	6,825	6,825	0	3,185	0	137,000	150	140,335
1982	0	0	0	0	0	6,945	6,945	0	3,185	0	139,200	150	142,535
1983	0	0	0	0	0	7,160	7,160	0	3,185	0	141,400	160	144,745
1984	350	19,585	19,935	0	0	7,485	7,485	0	3,185	0	143,600	160	146,945
1985	350	21,170	21,520	0	0	8,300	8,300	0	3,172	0	145,800	200	149,172
1986	350	23,840	24,190	0	0	8,600	8,600	0	3,168	0	148,100	240	151,508
1987	350	27,270	27,620	0	0	8,950	8,950	0	3,164	0	150,300	280	153,744
1988	350	34,200	34,550	0	0	9,300	9,300	0	3,161	0	152,500	320	155,981
1989	350	41,100	41,450	0	0	9,750	9,750	0	3,161	0	156,700	360	160,221
1990	350	47,800	48,150	0	0	10,000	10,000	0	3,142	0	160,900	400	164,442
1991	350	48,400	48,750	0	0	10,600	10,600	0	3,077	0	166,400	400	169,877
1992	350	49,000	49,350	0	0	11,200	11,200	0	3,044	0	171,900	400	175,344
1993	350	49,600	49,950	0	0	11,800	11,800	0	3,019	0	177,400	400	180,819
1994	350	50,200	50,550	0	0	12,400	12,400	0	2,998	0	182,000	400	185,398
1995	350	50,800	51,150	0	0	13,000	13,000	0	2,996	0	184,000	400	187,396
1996	350	51,500	51,850	0	0	13,700	13,700	0	2,978	0	186,000	400	189,378
1997	350	52,200	52,550	0	0	14,400	14,400	0	2,961	0	188,000	400	191,361
1998	350	52,900	53,250	0	0	15,100	15,100	0	2,966	0	188,000	400	191,366
1999	350	53,600	53,950	0	0	15,800	15,800	0	2,971	0	188,000	400	191,371
2000	350	54,300	54,650	0	0	16,500	16,500	0	2,976	0	188,000	400	191,376
2001	350	54,500	54,850	0	0	16,700	16,700	0	3,006	0	188,000	400	191,406
2002	350	54,700	55,050	0	0	16,900	16,900	0	3,006	0	188,000	400	191,406
2003	350	54,900	55,250	0	0	17,100	17,100	0	3,006	0	188,000	400	191,406
2004	350	55,100	55,450	0	0	17,300	17,300	0	3,006	0	188,000	400	191,406
2005	350	55,300	55,650	0	0	17,500	17,500	0	3,006	0	188,000	400	191,406
2006	350	55,640	55,990	0	0	17,840	17,840	0	3,030	0	188,000	400	191,430
2007	350	55,980	56,330	0	0	18,180	18,180	0	3,030	0	188,000	400	191,430
2008	350	56,320	56,670	0	0	18,520	18,520	0	3,030	0	188,000	400	191,430
2009	350	56,660	57,010	0	0	18,860	18,860	0	3,030	0	188,000	400	191,430
2010	350	57,000	57,350	0	0	19,200	19,200	0	3,030	0	188,000	400	191,430
2011	350	57,360	57,710	0	0	19,560	19,560	0	2,999	0	188,000	400	191,399
2012	350	57,720	58,070	0	0	19,920	19,920	0	2,999	0	188,000	400	191,399
2013	350	58,080	58,430	0	0	20,280	20,280	0	2,999	0	188,000	400	191,399
2014	350	58,440	58,790	0	0	20,640	20,640	0	2,999	0	188,000	400	191,399
2015	350	58,800	59,150	0	0	21,000	21,000	0	2,999	0	188,000	400	191,399
2016	350	59,200	59,550	0	0	21,400	21,400	0	3,019	0	188,000	400	191,419
2017	350	59,600	59,950	0	0	21,800	21,800	0	3,019	0	188,000	400	191,419
2018	350	60,000	60,350	0	0	22,200	22,200	0	3,019	0	188,000	400	191,419
2019	350	60,400	60,750	0	0	22,600	22,600	0	3,019	0	188,000	400	191,419
2020 (e	350	60,800	61,150	0	0	23,000	23,000	0	3,019	0	188,000	400	191,419

Note: "Reservoir Storage Changes" include projected net annual storage accretions (positive values) and withdrawals (negative values) for all down-aqueduct reservoirs of the project transportation facilities. Those variable OMP&R costs (Table B-12) that are allocable to storage accretions are assigned to the minimum OMP&R costs of the respective reservoirs.

"Water Supply Delivery" or "Deliveries, Water Supply", include certain hypothetical quantities to facilitate cost allocations for those years when deliveries are made from net annual storage withdrawals. The net annual amounts of storage withdrawals are hypothetically added to the actual amounts conveyed from the Delta to the reservoirs -- since deliveries made from storage withdrawals bear the same variable OMP&R costs per acre-foot as if the deliveries were actually conveyed, that year, from the Delta. The hypothetical increases in the amounts conveyed are compensated for by proportionate hypothetical increases in the actual variable OMP&R costs (Table B-3) of the up-aqueduct plants. The hypothetical increases in variable OMP&R costs for deliveries made from reservoir storage withdrawals are offset by equal credits to the minimum OMP&R costs of the respective reservoirs. Thus, the variable OMP&R components per acre-foot (Table B-17) may be applied to the total annual quantities delivered either from aqueduct reservoir storage or from the Delta.

"Conservation Water" includes the initial fill water, operational losses, and net annual storage changes associated with San Luis Reservoir (and the portion of the aqueduct that is allocated to conservation). The same allocation procedure outlined above for transportation facilities applies also to conservation facilities -- except that the hypothetical cost increases are added to the variable OMP&R costs to be reimbursed through the Transportation Charge, and deducted from the minimum OMP&R costs to be reimbursed through the Delta Water Charge.

a) Includes entitlement water, surplus water (delivered prior to May 1, 1973), and nonproject water.
b) Metric conversion is acre-feet times 1.2335 equals cubic dekametres.
c) For the period 1968 through 1983 deliveries are from nonproject water.
d) For the period June 1962 through November 1967, deliveries were nonproject water.
e) And each year thereafter for the remainder of the project repayment period.

AND POWER RECOVERY PLANT OF PROJECT TRANSPORTATION FACILITIES[a]

(in acre-feet)[b]

Calendar Year	CALIFORNIA AQUEDUCT													
	NORTH SAN JOAQUIN DIVISION								SAN LUIS DIVISION					
	DELTA PUMPING PLANT								DOS AMIGOS PUMPING PLANT					
	Transportation Water						Conservation Water	Total						
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total			Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total
	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
1967	5,746	1,183	0	11,538	0	18,467	2,957	21,424	0	0	0	0	0	0
1968	11,079	74,464	0	293,243	0	378,786	531,275	910,061	11,079	25,126	0	189,104	0	225,309
1969	7,336	44,287	0	265,417	0	317,040	531,185	848,225	3,887	9,922	0	192,689	0	206,498
1970	23,947	20,767	-5,355	365,771	0	405,130	-12,995	392,135	7,668	1,901	0	270,300	0	279,869
1971	23,207	-10,754	8,854	651,665	8	672,980	7,708	680,688	23,207	-12,030	0	545,869	0	557,046
1972	145,066	9,057	-4,285	1,033,432	6,489	1,189,759	48,300	1,238,059	145,066	-6,635	-6,558	886,840	6,481	1,025,194
1973	214,941	-4,951	2,902	733,008	1,155	947,055	55,846	1,002,901	214,941	-6,778	1,329	635,716	1,147	846,355
1974	247,894	-11,526	-32,510	873,302	2,118	1,079,278	54,683	1,133,961	247,894	-16,765	-15,295	780,513	2,108	998,455
1975	110,149	-8,092	16,101	1,223,332	3,377	1,344,867	-102,625	1,242,242	110,149	-12,144	-693	1,126,152	3,358	1,226,822
1976	67,834	5,443	-244,124	1,372,093	1,745	1,202,991	-442,348	760,643	67,834	-456	-152,171	1,241,550	1,581	1,158,338
1977	0	-4,112	-113,534	573,146	1,111	456,611	-13,507	443,104	0	26,359	-116,219	463,970	737	374,847
1978	67,457	-36,898	35,129	1,451,842	1,177	1,518,707	752,075	2,270,782	67,457	1,905	79,308	1,335,362	680	1,484,712
1979	12,302	93,320	-44,345	2,024,625	6,320	2,092,222	-171,676	1,920,546	12,302	77,073	-38,345	1,881,645	3,980	1,936,655
1980	0	93,492	-10,844	2,001,774	5,220	2,089,642	65,964	2,155,606	0	77,245	15,156	1,862,774	4,780	1,959,955
1981	0	91,133	7,965	2,119,239	10,480	2,228,817	67,234	2,296,051	0	74,886	38,965	1,977,939	9,780	2,101,570
1982	0	92,394	48,963	2,267,821	12,930	2,422,108	-177,704	2,244,404	0	76,147	73,463	2,124,121	11,980	2,285,711
1983	0	90,970	-35,793	2,384,552	15,290	2,455,019	207,204	2,662,223	0	74,723	-8,793	2,238,552	14,080	2,318,562
1984	0	93,337	48,960	2,462,088	15,640	2,620,025	-55,988	2,564,037	0	77,090	48,960	2,313,688	14,180	2,453,918
1985	0	93,213	-10,097	2,515,980	20,680	2,619,776	54,032	2,673,808	0	76,979	-10,097	2,365,280	17,280	2,449,442
1986	0	94,107	6,155	2,633,940	21,370	2,755,572	-167,439	2,588,133	0	77,877	6,155	2,480,740	17,680	2,582,452
1987	0	94,094	-10,041	2,768,655	22,060	2,874,768	306,976	3,181,744	0	77,868	-10,041	2,613,155	18,080	2,699,062
1988	0	93,903	-14,552	2,880,060	22,750	2,982,161	8,639	2,990,800	0	77,680	-14,552	2,722,160	18,480	2,803,768
1989	0	93,746	-4,700	3,195,285	23,540	3,307,871	137,531	3,445,402	0	77,523	-4,700	3,032,985	18,980	3,124,788
1990	0	93,977	17,280	3,384,480	24,430	3,520,167	-57,082	3,463,085	0	77,773	17,280	3,217,880	19,580	3,332,513
1991	0	93,953	-6,756	3,441,304	24,430	3,552,931	18,273	3,571,204	0	77,814	-6,756	3,269,204	19,580	3,359,842
1992	0	93,959	2,564	3,490,628	24,430	3,611,581	-22,723	3,588,858	0	77,853	2,564	3,313,028	19,580	3,413,025
1993	0	93,836	-8,724	3,540,052	24,430	3,649,594	177,178	3,826,772	0	77,755	-8,724	3,356,952	19,580	3,445,563
1994	0	93,707	-10,498	3,588,576	24,430	3,696,215	52,558	3,748,773	0	77,647	-10,498	3,400,876	19,580	3,487,605
1995	0	93,644	3,059	3,634,500	24,430	3,755,633	77,968	3,833,601	0	77,586	3,059	3,444,800	19,580	3,545,025
1996	0	93,749	-9,193	3,662,200	24,430	3,771,186	-14,365	3,756,821	0	77,709	-9,193	3,470,500	19,580	3,558,596
1997	0	93,662	28,614	3,689,800	24,430	3,836,506	-76,831	3,759,675	0	77,639	28,614	3,496,100	19,580	3,621,933
1998	0	93,624	-33,631	3,714,500	24,430	3,798,923	226,658	4,025,581	0	77,596	-33,631	3,520,800	19,580	3,584,345
1999	0	93,575	31,446	3,740,200	24,430	3,889,651	-309,226	3,580,425	0	77,542	31,446	3,546,500	19,580	3,675,068
2000	0	93,670	4,184	3,765,900	24,430	3,888,184	257,687	4,145,871	0	77,632	4,184	3,572,200	19,580	3,673,596
2001	0	93,610	-23,173	3,790,700	24,430	3,885,567	-28,825	3,856,742	0	77,542	-23,173	3,597,000	19,580	3,670,949
2002	0	93,581	24,573	3,815,500	24,430	3,958,084	52,482	4,010,566	0	77,513	24,573	3,621,800	19,580	3,743,466
2003	0	93,357	-38,262	3,840,400	24,430	3,919,925	102,303	4,022,228	0	77,289	-38,262	3,646,700	19,580	3,705,307
2004	0	93,474	35,322	3,865,300	24,430	4,018,526	-63,711	3,954,815	0	77,406	35,322	3,671,600	19,580	3,803,908
2005	0	93,500	-20,393	3,890,200	24,430	3,987,737	47,973	4,035,710	0	77,432	-20,393	3,696,500	19,580	3,773,119
2006	0	93,395	11,561	3,914,900	24,430	4,044,286	21,013	4,065,299	0	77,303	11,561	3,721,200	19,580	3,829,644
2007	0	93,470	7,039	3,939,600	24,430	4,064,539	15,532	4,080,071	0	77,378	7,039	3,745,900	19,580	3,849,897
2008	0	93,328	-8,845	3,964,300	24,430	4,073,213	14,918	4,088,131	0	77,236	-8,845	3,770,600	19,580	3,858,571
2009	0	93,339	-701	3,989,000	24,430	4,106,068	153,965	4,260,033	0	77,247	-701	3,795,300	19,580	3,891,426
2010	0	93,265	-2,891	4,013,700	24,430	4,128,504	-31,642	4,096,862	0	77,173	-2,891	3,820,000	19,580	3,913,862
2011	0	93,173	13,903	4,038,300	24,430	4,169,806	-66,406	4,103,400	0	77,112	13,903	3,844,600	19,580	3,955,195
2012	0	93,110	-21,938	4,062,900	24,430	4,158,502	145,686	4,304,188	0	77,049	-21,938	3,869,200	19,580	3,943,891
2013	0	93,130	8,809	4,087,600	24,430	4,213,969	45,829	4,259,798	0	77,069	8,809	3,893,900	19,580	3,999,358
2014	0	93,196	-27,238	4,088,900	24,430	4,179,288	203,446	4,382,734	0	77,135	-27,238	3,895,200	19,580	3,964,677
2015	0	92,999	21,287	4,089,500	24,430	4,228,216	-169,476	4,058,740	0	76,938	21,287	3,895,800	19,580	4,013,605
2016	0	93,251	17,799	4,090,100	24,430	4,225,580	45,249	4,270,829	0	77,170	17,799	3,896,400	19,580	4,010,949
2017	0	93,125	-53,782	4,090,700	24,430	4,154,473	224,940	4,379,413	0	77,044	-53,782	3,897,000	19,580	3,939,842
2018	0	92,791	29,791	4,091,300	22,830	4,236,712	2,276	4,238,988	0	76,710	29,791	3,897,600	17,980	4,022,081
2019	0	93,181	9,404	4,091,900	24,430	4,218,915	-94,486	4,124,429	0	77,100	9,404	3,898,200	19,580	4,004,284
2020 (e	0	93,292	0	4,092,500	24,430	4,210,222	39,258	4,249,480	0	77,211	0	3,898,800	19,580	3,995,591

TABLE B-6: ANNUAL WATER QUANTITIES CONVEYED THRU EACH PUMPING

(in acre-feet) [b]

Calendar Year	CALIFORNIA AQUEDUCT (Continued)											
	SOUTH SAN JOAQUIN DIVISION											
	BUENA VISTA PUMPING PLANT						WHEELER RIDGE PUMPING PLANT					
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total
	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)
1970	4,779	1,012	0	3	0	5,794	198	2	0	0	0	200
1971	7,853	8,399	0	101,512	0	117,764	7,533	-112	0	3,552	0	10,973
1972	100,274	20,044	-6,558	223,626	6,481	343,867	100,274	12,765	-6,558	84,955	6,481	197,917
1973	204,638	35,695	1,329	311,096	1,147	553,905	204,638	21,543	1,329	229,685	1,147	458,342
1974	237,554	19,672	-15,295	388,949	2,108	632,988	237,554	11,843	-15,295	336,198	2,108	572,408
1975	103,352	26,342	-693	672,531	3,358	804,890	103,352	19,763	-693	621,706	3,358	747,486
1976	61,122	29,428	-152,171	785,055	1,581	725,015	61,122	18,552	-152,171	740,486	1,581	669,570
1977	0	25,173	-116,219	271,944	560	181,458	0	16,415	-116,219	246,349	560	147,105
1978	65,027	17,751	121,904	762,043	674	967,399	65,027	28,820	121,904	631,121	674	847,546
1979	12,302	55,386	-38,345	1,170,963	3,780	1,204,086	12,302	51,756	-38,345	1,086,839	3,780	1,116,332
1980	0	55,558	15,156	1,231,474	4,580	1,306,768	0	51,928	15,156	1,161,774	4,580	1,233,438
1981	0	53,199	38,965	1,301,019	9,580	1,402,763	0	49,569	38,965	1,220,219	9,580	1,318,333
1982	0	54,460	73,463	1,402,121	11,780	1,541,824	0	50,830	73,463	1,313,421	11,780	1,449,494
1983	0	53,036	-8,793	1,468,452	13,880	1,526,575	0	49,406	-8,793	1,366,152	13,880	1,420,645
1984	0	55,403	48,960	1,496,588	13,980	1,614,931	0	51,773	48,960	1,387,588	13,980	1,502,301
1985	0	55,292	-10,097	1,507,180	15,480	1,567,855	0	51,662	-10,097	1,385,280	15,480	1,442,325
1986	0	55,640	6,155	1,558,080	15,880	1,635,755	0	52,010	6,155	1,425,880	15,880	1,499,925
1987	0	55,631	-10,041	1,646,390	16,280	1,708,260	0	52,001	-10,041	1,501,890	16,280	1,560,130
1988	0	55,443	-14,552	1,713,490	16,680	1,771,061	0	51,813	-14,552	1,557,990	16,680	1,611,931
1989	0	55,286	-4,700	1,990,000	17,180	2,057,766	0	51,656	-4,700	1,829,200	17,180	1,893,336
1990	0	55,536	17,280	2,134,100	17,780	2,224,696	0	51,906	17,280	1,966,800	17,780	2,053,766
1991	0	55,577	-6,756	2,183,100	17,780	2,249,701	0	51,947	-6,756	2,015,800	17,780	2,078,771
1992	0	55,616	2,564	2,224,700	17,780	2,300,660	0	51,986	2,564	2,057,400	17,780	2,129,730
1993	0	55,518	-8,724	2,266,300	17,780	2,330,874	0	51,888	-8,724	2,099,000	17,780	2,159,944
1994	0	55,410	-10,498	2,307,900	17,780	2,370,592	0	51,780	-10,498	2,140,600	17,780	2,199,662
1995	0	55,349	3,059	2,349,500	17,780	2,425,688	0	51,719	3,059	2,182,200	17,780	2,254,758
1996	0	55,472	-9,193	2,372,700	17,780	2,436,759	0	51,842	-9,193	2,205,400	17,780	2,265,829
1997	0	55,402	28,614	2,395,900	17,780	2,497,696	0	51,772	28,614	2,228,600	17,780	2,326,766
1998	0	55,359	-33,631	2,419,100	17,780	2,458,608	0	51,729	-33,631	2,251,800	17,780	2,287,678
1999	0	55,305	31,446	2,442,300	17,780	2,546,831	0	51,675	31,446	2,275,000	17,780	2,375,901
2000	0	55,395	4,184	2,465,500	17,780	2,542,859	0	51,765	4,184	2,298,200	17,780	2,371,929
2001	0	55,305	-23,173	2,488,700	17,780	2,538,612	0	51,675	-23,173	2,321,400	17,780	2,367,682
2002	0	55,276	24,573	2,511,900	17,780	2,609,529	0	51,646	24,573	2,344,600	17,780	2,438,599
2003	0	55,052	-38,262	2,535,200	17,780	2,569,770	0	51,422	-38,262	2,367,900	17,780	2,398,840
2004	0	55,169	35,322	2,558,500	17,780	2,666,771	0	51,539	35,322	2,391,200	17,780	2,495,841
2005	0	55,195	-20,393	2,581,800	17,780	2,634,382	0	51,565	-20,393	2,414,500	17,780	2,463,452
2006	0	55,066	11,561	2,606,200	17,780	2,690,607	0	51,436	11,561	2,438,900	17,780	2,519,677
2007	0	55,141	7,039	2,630,600	17,780	2,710,560	0	51,511	7,039	2,463,300	17,780	2,539,630
2008	0	54,999	-8,845	2,655,000	17,780	2,718,934	0	51,369	-8,845	2,487,700	17,780	2,548,004
2009	0	55,010	-701	2,679,400	17,780	2,751,489	0	51,380	-701	2,512,100	17,780	2,580,559
2010	0	54,936	-2,891	2,703,800	17,780	2,773,625	0	51,306	-2,891	2,536,500	17,780	2,602,695
2011	0	54,875	13,903	2,728,400	17,780	2,814,958	0	51,245	13,903	2,561,100	17,780	2,644,028
2012	0	54,812	-21,938	2,753,000	17,780	2,803,654	0	51,182	-21,938	2,585,700	17,780	2,632,724
2013	0	54,832	8,809	2,777,600	17,780	2,859,021	0	51,202	8,809	2,610,300	17,780	2,688,091
2014	0	54,898	-27,238	2,778,900	17,780	2,824,340	0	51,268	-27,238	2,611,600	17,780	2,653,410
2015	0	54,701	21,287	2,779,500	17,780	2,873,268	0	51,071	21,287	2,612,200	17,780	2,702,338
2016	0	54,933	17,799	2,780,100	17,780	2,870,612	0	51,303	17,799	2,612,800	17,780	2,699,682
2017	0	54,807	-53,782	2,780,700	17,780	2,799,505	0	51,177	-53,782	2,613,400	17,780	2,628,575
2018	0	54,473	29,791	2,781,300	17,780	2,883,344	0	50,843	29,791	2,614,000	17,780	2,712,414
2019	0	54,863	9,404	2,781,900	17,780	2,863,947	0	51,233	9,404	2,614,600	17,780	2,693,017
2020 (e	0	54,974	0	2,782,500	17,780	2,855,254	0	51,344	0	2,615,200	17,780	2,684,324

AND POWER RECOVERY PLANT OF PROJECT TRANSPORTATION FACILITIES[a]

(in acre-feet)[b]

Calendar Year	CALIFORNIA AQUEDUCT (Continued)											
	SOUTH SAN JOAQUIN DIVISION (Continued)						TEHACHAPI DIVISION					
	WIND GAP PUMPING PLANT						A. D. EDMONSTON (TEHACHAPI) PUMPING PLANT					
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total
	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	48)	(49)	(50)	(51)
1971	7,366	-159	0	0	0	7,207	5,446	8	0	0	0	5,454
1972	100,274	13,160	-6,558	78,891	6,481	192,248	100,274	16,067	-6,558	74,123	6,481	190,387
1973	204,638	32,414	1,329	209,769	1,147	449,297	204,638	34,051	1,329	207,808	1,147	448,973
1974	237,554	17,655	-15,295	318,198	2,108	560,220	237,554	18,181	-15,295	313,634	2,108	556,182
1975	103,352	25,326	-693	586,286	3,358	717,629	103,352	20,183	-693	573,219	3,358	699,419
1976	61,122	21,468	-152,171	700,935	1,581	632,935	61,122	21,096	-152,171	685,768	1,581	617,396
1977	0	15,698	-116,219	240,191	560	140,230	0	18,424	-116,219	236,086	560	138,851
1978	65,027	26,705	121,904	599,973	674	814,283	65,027	20,887	121,904	590,329	674	798,821
1979	12,302	51,506	-38,345	1,048,707	3,780	1,077,950	12,302	49,956	-38,345	1,025,365	3,780	1,053,058
1980	0	51,678	15,156	1,123,774	4,580	1,195,188	0	50,128	15,156	1,099,774	4,580	1,169,638
1981	0	49,319	38,965	1,180,219	9,580	1,278,083	0	47,769	38,965	1,153,919	9,580	1,250,233
1982	0	50,580	73,463	1,271,421	11,780	1,407,244	0	49,030	73,463	1,240,721	11,780	1,374,994
1983	0	49,156	-8,793	1,322,152	13,880	1,376,395	0	47,606	-8,793	1,289,052	13,880	1,341,745
1984	0	51,523	48,960	1,341,588	13,980	1,456,051	0	49,973	48,960	1,302,088	13,980	1,415,001
1985	0	51,412	-10,097	1,337,280	15,480	1,394,075	0	49,862	-10,097	1,292,680	15,480	1,347,925
1986	0	51,760	6,155	1,375,880	15,880	1,449,675	0	50,210	6,155	1,326,180	15,880	1,398,425
1987	0	51,751	-10,041	1,449,890	16,280	1,507,880	0	50,201	-10,041	1,395,090	16,280	1,451,530
1988	0	51,563	-14,552	1,504,990	16,680	1,558,681	0	50,013	-14,552	1,445,090	16,680	1,497,231
1989	0	51,406	-4,700	1,775,200	17,180	1,839,086	0	49,856	-4,700	1,710,200	17,180	1,772,536
1990	0	51,656	17,280	1,911,800	17,780	1,998,516	0	50,106	17,280	1,841,600	17,780	1,926,766
1991	0	51,697	-6,756	1,960,800	17,780	2,023,521	0	50,147	-6,756	1,890,600	17,780	1,951,771
1992	0	51,736	2,564	2,002,400	17,780	2,074,480	0	50,186	2,564	1,932,200	17,780	2,002,730
1993	0	51,638	-8,724	2,044,000	17,780	2,104,694	0	50,088	-8,724	1,973,800	17,780	2,032,944
1994	0	51,530	-10,498	2,085,600	17,780	2,144,412	0	49,980	-10,498	2,015,400	17,780	2,072,662
1995	0	51,469	3,059	2,127,200	17,780	2,199,508	0	49,919	3,059	2,057,000	17,780	2,127,758
1996	0	51,592	-9,193	2,150,400	17,780	2,210,579	0	50,042	-9,193	2,080,200	17,780	2,138,829
1997	0	51,522	28,614	2,173,600	17,780	2,271,516	0	49,972	28,614	2,103,400	17,780	2,199,766
1998	0	51,479	-33,631	2,196,800	17,780	2,232,428	0	49,929	-33,631	2,126,600	17,780	2,160,678
1999	0	51,425	31,446	2,220,000	17,780	2,320,651	0	49,875	31,446	2,149,800	17,780	2,248,901
2000	0	51,515	4,184	2,243,200	17,780	2,316,679	0	49,965	4,184	2,173,000	17,780	2,244,929
2001	0	51,425	-23,173	2,266,400	17,780	2,312,432	0	49,875	-23,173	2,196,200	17,780	2,240,682
2002	0	51,396	24,573	2,289,600	17,780	2,383,349	0	49,846	24,573	2,219,400	17,780	2,311,599
2003	0	51,172	-38,262	2,312,900	17,780	2,343,590	0	49,622	-38,262	2,242,700	17,780	2,271,840
2004	0	51,289	35,322	2,336,200	17,780	2,440,591	0	49,739	35,322	2,266,000	17,780	2,368,841
2005	0	51,315	-20,393	2,359,500	17,780	2,408,202	0	49,765	-20,393	2,289,300	17,780	2,336,452
2006	0	51,186	11,561	2,383,900	17,780	2,464,427	0	49,636	11,561	2,313,700	17,780	2,392,677
2007	0	51,261	7,039	2,408,300	17,780	2,484,380	0	49,711	7,039	2,338,100	17,780	2,412,630
2008	0	51,119	-8,845	2,432,700	17,780	2,492,754	0	49,569	-8,845	2,362,500	17,780	2,421,004
2009	0	51,130	-701	2,457,100	17,780	2,525,309	0	49,580	-701	2,386,900	17,780	2,453,559
2010	0	51,056	-2,891	2,481,500	17,780	2,547,445	0	49,506	-2,891	2,411,300	17,780	2,475,695
2011	0	50,995	13,903	2,506,100	17,780	2,588,778	0	49,445	13,903	2,435,900	17,780	2,517,028
2012	0	50,932	-21,938	2,530,700	17,780	2,577,474	0	49,382	-21,938	2,460,500	17,780	2,505,724
2013	0	50,952	8,809	2,555,300	17,780	2,632,841	0	49,402	8,809	2,485,100	17,780	2,561,091
2014	0	51,018	-27,238	2,556,600	17,780	2,598,160	0	49,468	-27,238	2,486,400	17,780	2,526,410
2015	0	50,821	21,287	2,557,200	17,780	2,647,088	0	49,271	21,287	2,487,000	17,780	2,575,338
2016	0	51,053	17,799	2,557,800	17,780	2,644,432	0	49,503	17,799	2,487,600	17,780	2,572,682
2017	0	50,927	-53,782	2,558,400	17,780	2,573,325	0	49,377	-53,782	2,488,200	17,780	2,501,575
2018	0	50,593	29,791	2,559,000	17,780	2,657,164	0	49,043	29,791	2,488,800	17,780	2,585,414
2019	0	50,983	9,404	2,559,600	17,780	2,637,767	0	49,433	9,404	2,489,400	17,780	2,566,017
2020 (e	0	51,094	0	2,560,200	17,780	2,629,074	0	49,544	0	2,490,000	17,780	2,557,324

TABLE B-6: ANNUAL WATER QUANTITIES CONVEYED THRU EACH PUMPING

(in acre-feet) [b]

Calendar Year	CALIFORNIA AQUEDUCT (Continued)											
	MOJAVE DIVISION											
	COTTONWOOD POWERPLANT						PEARBLOSSOM PUMPING PLANT					
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total
	(52)	(53)	(54)	(55)	(56)	(57)	(58)	(59)	(60)	(61)	(62)	(63)
1971	0	0	0	0	0	0	21	0	0	0	0	21
1972	0	0	0	0	0	0	35,243	5,282	-153	1,794	0	42,166
1973	0	0	0	0	0	0	80,177	21,522	-2,700	52,201	72	151,272
1974	0	0	0	0	0	0	76,694	10,847	-11,149	102,839	44	179,275
1975	0	0	0	0	0	0	10,000	2,364	-8,397	190,351	70	194,388
1976	0	0	0	0	0	0	4,168	7,040	-16,055	236,713	152	232,018
1977	0	0	0	0	0	0	0	11,398	-17,534	102,326	580	96,770
1978	0	0	0	0	0	0	19,922	5,696	69,130	374,845	498	470,091
1979	0	0	0	0	0	0	12,302	22,279	-10,991	647,568	580	671,738
1980	0	0	0	0	0	0	0	22,319	17,689	733,509	680	774,197
1981	0	0	0	0	0	0	0	19,900	-55,690	774,341	2,780	741,331
1982	0	0	0	0	0	0	0	20,802	58,429	789,391	4,780	873,402
1983	0	0	0	0	0	0	0	20,804	-17,153	821,752	5,780	831,183
1984	0	27,152	16,289	914,188	10,480	968,109	0	21,802	16,289	818,228	5,780	862,099
1985	0	27,111	-13,670	879,455	11,180	904,076	0	21,761	-13,670	776,150	6,280	790,521
1986	0	27,395	6,317	895,205	11,480	940,397	0	22,045	6,317	784,840	6,380	819,582
1987	0	27,510	-5,013	911,365	11,780	945,642	0	22,160	-5,013	793,930	6,480	817,557
1988	0	27,357	619	927,615	12,080	967,671	0	22,007	619	803,020	6,580	832,226
1989	0	27,135	2,224	943,975	12,380	985,714	0	21,785	2,224	812,310	6,680	842,999
1990	0	27,567	7,971	960,725	12,780	1,009,043	0	22,217	7,971	821,900	6,830	858,918
1991	0	27,628	1,635	969,075	12,780	1,011,118	0	22,278	1,635	823,000	6,830	853,743
1992	0	27,700	8,268	970,075	12,780	1,018,823	0	22,350	8,268	823,000	6,830	860,448
1993	0	27,544	-4,004	971,075	12,780	1,007,395	0	22,194	-4,004	823,000	6,830	848,020
1994	0	27,511	-12,116	972,075	12,780	1,000,250	0	22,161	-12,116	823,000	6,830	839,875
1995	0	27,494	13,461	973,075	12,780	1,026,810	0	22,144	13,461	823,000	6,830	865,435
1996	0	27,557	2,844	973,875	12,780	1,017,056	0	22,207	2,844	823,000	6,830	854,881
1997	0	27,470	-12,002	974,675	12,780	1,002,923	0	22,120	-12,002	823,000	6,830	839,948
1998	0	27,472	-586	975,475	12,780	1,015,141	0	22,122	-586	823,000	6,830	851,366
1999	0	27,481	-1,176	976,275	12,780	1,015,360	0	22,131	-1,176	823,000	6,830	850,785
2000	0	27,416	-3,492	977,075	12,780	1,013,779	0	22,066	-3,492	823,000	6,830	848,404
2001	0	27,442	-6,699	977,675	12,780	1,011,198	0	22,092	-6,699	823,000	6,830	845,223
2002	0	27,340	8,777	978,275	12,780	1,027,172	0	21,990	8,777	823,000	6,830	860,597
2003	0	27,203	-2,455	978,975	12,780	1,016,503	0	21,853	-2,455	823,000	6,830	849,228
2004	0	27,286	-10,849	979,675	12,780	1,008,892	0	21,936	-10,849	823,000	6,830	840,917
2005	0	27,247	6,256	980,375	12,780	1,026,658	0	21,897	6,256	823,000	6,830	857,983
2006	0	27,145	-2,683	980,375	12,780	1,017,617	0	21,795	-2,683	823,000	6,830	848,942
2007	0	27,196	-4,435	980,375	12,780	1,015,916	0	21,846	-4,435	823,000	6,830	847,241
2008	0	27,093	-1,095	980,375	12,780	1,019,153	0	21,743	-1,095	823,000	6,830	850,478
2009	0	27,142	7,017	980,375	12,780	1,027,314	0	21,792	7,017	823,000	6,830	858,639
2010	0	27,106	-6,017	980,375	12,780	1,014,244	0	21,756	-6,017	823,000	6,830	845,569
2011	0	27,092	2,186	980,375	12,780	1,022,433	0	21,742	2,186	823,000	6,830	853,758
2012	0	27,077	-1,761	980,375	12,780	1,018,471	0	21,727	-1,761	823,000	6,830	849,796
2013	0	27,071	-58	980,375	12,780	1,020,168	0	21,721	-58	823,000	6,830	851,493
2014	0	27,095	5,594	980,375	12,780	1,025,844	0	21,745	5,594	823,000	6,830	857,169
2015	0	26,985	-5,889	980,375	12,780	1,014,251	0	21,635	-5,889	823,000	6,830	845,576
2016	0	27,099	4,203	980,375	12,780	1,024,457	0	21,749	4,203	823,000	6,830	855,782
2017	0	27,065	-1,805	980,375	12,780	1,018,415	0	21,715	-1,805	823,000	6,830	849,740
2018	0	26,916	-530	980,375	12,780	1,019,541	0	21,566	-530	823,000	6,830	850,866
2019	0	27,074	-2,415	980,375	12,780	1,017,814	0	21,724	-2,415	823,000	6,830	849,139
2020 (e	0	27,141	0	980,375	12,780	1,020,296	0	21,791	0	823,000	6,830	851,621

AND POWER RECOVERY PLANT OF PROJECT TRANSPORTATION FACILITIES[a]

(in acre-feet)[b]

Calendar Year	CALIFORNIA AQUEDUCT (Continued)											
	SANTA ANA DIVISION						WEST BRANCH, CALIFORNIA AQUEDUCT					
	DEVIL CANYON POWERPLANT						OSO PUMPING PLANT					
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total
	(64)	(65)	(66)	(67)	(68)	(69)	(70)	(71)	(72)	(73)	(74)	(75)
1971	0	0	0	0	0	0	2,444	133	0	0	0	2,577
1972	37	0	0	1,275	0	1,312	63,883	6,557	-6,405	71,991	6,481	142,507
1973	40,848	14,745	0	51,812	0	107,405	124,461	16,995	4,029	155,317	1,075	301,877
1974	74,666	8,367	-4,925	102,198	0	180,306	160,860	12,702	-4,146	209,172	2,064	380,652
1975	10,000	1,995	-6,719	189,526	0	194,802	93,352	23,008	7,704	374,306	3,288	501,658
1976	4,168	5,180	-9,182	235,711	23	235,900	56,954	15,845	-136,116	420,708	1,429	358,820
1977	0	8,082	-5,235	101,137	469	104,453	0	4,407	-98,685	122,447	-20	28,149
1978	14,820	3,754	21,686	373,636	481	414,377	45,105	9,061	52,774	171,139	176	278,255
1979	12,302	13,279	3,302	641,693	400	670,976	0	22,277	-27,354	282,220	2,300	279,443
1980	0	13,267	16,161	727,284	500	757,212	0	22,391	-2,533	294,650	3,000	317,508
1981	0	11,086	-53,033	756,705	2,600	717,358	0	22,669	94,655	302,000	3,100	422,424
1982	0	11,871	66,610	764,726	4,600	847,807	0	22,828	15,034	367,250	3,300	408,412
1983	0	12,064	-16,909	784,047	5,600	784,802	0	21,393	8,360	376,600	3,400	409,753
1984	0	13,060	20,504	777,468	5,600	816,632	0	22,771	32,671	386,400	3,500	445,342
1985	0	12,685	-13,040	732,800	5,700	738,145	0	22,701	3,573	411,625	4,300	442,199
1986	0	12,995	4,110	738,800	5,800	761,705	0	22,765	-162	429,275	4,400	456,278
1987	0	13,093	-4,298	745,300	5,900	759,995	0	22,641	-5,028	481,925	4,500	504,038
1988	0	12,911	-221	751,800	6,000	770,490	0	22,606	-15,171	515,575	4,600	527,610
1989	0	12,712	-2,490	758,300	6,100	774,622	0	22,671	-6,924	764,225	4,800	784,772
1990	0	13,071	13,675	765,300	6,250	798,296	0	22,489	9,309	878,875	5,000	915,673
1991	0	13,158	1,120	766,400	6,250	786,928	0	22,469	-8,391	919,525	5,000	938,603
1992	0	13,195	6,798	766,400	6,250	792,643	0	22,436	-5,704	960,125	5,000	981,857
1993	0	13,117	-6,552	766,400	6,250	779,215	0	22,494	-4,720	1,000,725	5,000	1,023,499
1994	0	13,049	-6,282	766,400	6,250	779,417	0	22,419	1,618	1,041,325	5,000	1,070,362
1995	0	13,038	7,934	766,400	6,250	793,622	0	22,375	-10,402	1,081,925	5,000	1,098,898
1996	0	13,080	1,931	766,400	6,250	787,661	0	22,435	-12,037	1,104,325	5,000	1,119,723
1997	0	12,980	-11,646	766,400	6,250	773,984	0	22,452	40,616	1,126,725	5,000	1,194,793
1998	0	12,994	-2,277	766,400	6,250	783,367	0	22,407	-33,045	1,149,125	5,000	1,143,487
1999	0	13,012	3,941	766,400	6,250	789,603	0	22,344	32,622	1,171,525	5,000	1,231,491
2000	0	12,978	-7,793	766,400	6,250	777,835	0	22,499	7,676	1,193,925	5,000	1,229,100
2001	0	12,987	90	766,400	6,250	785,727	0	22,383	-16,474	1,216,525	5,000	1,227,434
2002	0	12,923	5,004	766,400	6,250	790,577	0	22,456	15,796	1,239,125	5,000	1,282,377
2003	0	12,750	-4,742	766,400	6,250	780,658	0	22,369	-35,807	1,261,725	5,000	1,253,287
2004	0	12,843	-4,647	766,400	6,250	780,846	0	22,403	46,171	1,284,325	5,000	1,357,899
2005	0	12,788	413	766,400	6,250	785,851	0	22,468	-26,649	1,306,925	5,000	1,307,744
2006	0	12,723	-2,681	766,400	6,250	782,692	0	22,441	14,244	1,331,325	5,000	1,373,010
2007	0	12,718	-172	766,400	6,250	785,196	0	22,465	11,474	1,355,725	5,000	1,394,664
2008	0	12,685	-244	766,400	6,250	785,091	0	22,426	-7,750	1,380,125	5,000	1,399,801
2009	0	12,687	327	766,400	6,250	785,664	0	22,388	-7,718	1,404,525	5,000	1,424,195
2010	0	12,686	-3,434	766,400	6,250	781,902	0	22,350	3,126	1,428,925	5,000	1,459,401
2011	0	12,644	940	705,200	6,250	725,034	0	22,303	11,717	1,453,525	5,000	1,492,545
2012	0	12,645	1,165	705,200	6,250	725,260	0	22,255	-20,177	1,478,125	5,000	1,485,203
2013	0	12,610	-769	705,200	6,250	723,291	0	22,281	8,867	1,502,725	5,000	1,538,873
2014	0	12,668	1,711	705,200	6,250	725,829	0	22,323	-32,832	1,504,025	5,000	1,498,516
2015	0	12,609	-844	705,200	6,250	723,215	0	22,236	27,176	1,504,625	5,000	1,559,037
2016	0	12,665	-842	705,200	6,250	723,273	0	22,354	13,596	1,505,225	5,000	1,546,175
2017	0	12,663	224	705,200	6,250	724,337	0	22,262	-51,977	1,505,825	5,000	1,481,110
2018	0	12,605	1	705,200	6,250	724,056	0	22,077	30,321	1,506,425	5,000	1,563,823
2019	0	12,619	566	705,200	6,250	724,635	0	22,309	11,819	1,507,025	5,000	1,546,153
2020(e	0	12,685	0	705,200	6,250	724,135	0	22,353	0	1,507,625	5,000	1,534,978

TABLE B-6: ANNUAL WATER QUANTITIES CONVEYED THRU EACH PUMPING

(in acre-feet)[b]

Calendar Year	CALIFORNIA AQUEDUCT (Continued)											
	WEST BRANCH, CALIFORNIA AQUEDUCT (Continued)											
	PYRAMID POWERPLANT						CASTAIC POWERPLANT					
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total
	(76)	(77)	(78)	(79)	(80)	(81)	(82)	(83)	(84)	(85)	(86)	(87)
1972	0	0	0	0	0	0	57,364	1,788	-6,162	71,938	6,481	131,409
1973	0	0	0	0	0	0	37,198	6,430	4,542	155,297	1,075	204,542
1974	0	0	0	0	0	0	82,364	1,772	-950	209,136	541	292,863
1975	0	0	0	0	0	0	90,460	5,002	-1,534	374,280	1,563	469,771
1976	0	0	0	0	0	0	55,990	-7,695	-132,036	420,684	1,429	338,372
1977	0	0	0	0	0	0	0	-1,485	-102,532	122,447	-20	18,410
1978	0	0	0	0	0	0	45,105	-2,264	129,523	171,139	176	343,679
1979	0	0	0	0	0	0	0	12,614	-33,789	282,220	2,200	263,245
1980	0	0	0	0	0	0	0	12,900	2,467	294,650	2,800	312,817
1981	0	0	0	0	0	0	0	13,000	94,655	302,000	2,900	412,555
1982	0	20,918	15,034	367,250	3,300	406,502	0	13,159	15,034	367,250	3,000	398,443
1983	0	19,483	8,360	376,400	3,400	407,643	0	11,725	8,360	376,400	3,100	399,585
1984	0	20,861	32,671	386,150	3,500	443,182	0	13,102	32,671	386,150	3,200	435,123
1985	0	20,791	3,573	411,300	3,920	439,584	0	13,032	3,573	411,300	3,600	431,505
1986	0	20,855	-162	428,900	4,020	453,613	0	13,096	-162	428,900	3,700	445,534
1987	0	20,731	-5,028	481,500	4,120	501,323	0	12,972	-5,028	481,500	3,800	493,244
1988	0	20,696	-15,171	515,100	4,220	524,845	0	12,937	-15,171	515,100	3,900	516,766
1989	0	20,761	-6,924	763,700	4,420	781,957	0	13,002	-6,924	763,700	4,100	773,878
1990	0	20,579	9,309	878,300	4,620	912,808	0	12,820	9,309	878,300	4,300	904,729
1991	0	20,559	-8,391	918,900	4,620	935,688	0	12,800	-8,391	918,900	4,300	927,609
1992	0	20,526	-5,704	959,500	4,620	978,942	0	12,767	-5,704	959,500	4,300	970,863
1993	0	20,584	-4,720	1,000,100	4,620	1,020,584	0	12,825	-4,720	1,000,100	4,300	1,012,505
1994	0	20,509	1,618	1,040,700	4,620	1,067,447	0	12,750	1,618	1,040,700	4,300	1,059,368
1995	0	20,465	-10,402	1,081,300	4,620	1,095,983	0	12,706	-10,402	1,081,300	4,300	1,087,904
1996	0	20,525	-12,037	1,103,700	4,620	1,116,808	0	12,766	-12,037	1,103,700	4,300	1,108,729
1997	0	20,542	40,616	1,126,100	4,620	1,191,878	0	12,783	40,616	1,126,100	4,300	1,183,799
1998	0	20,497	-33,045	1,148,500	4,620	1,140,572	0	12,738	-33,045	1,148,500	4,300	1,132,493
1999	0	20,434	32,622	1,170,900	4,620	1,228,576	0	12,675	32,622	1,170,900	4,300	1,220,497
2000	0	20,589	7,676	1,193,300	4,620	1,226,185	0	12,830	7,676	1,193,300	4,300	1,218,106
2001	0	20,473	-16,474	1,215,900	4,620	1,224,519	0	12,714	-16,474	1,215,900	4,300	1,216,440
2002	0	20,546	15,796	1,238,500	4,620	1,279,462	0	12,787	15,796	1,238,500	4,300	1,271,383
2003	0	20,459	-35,807	1,261,100	4,620	1,250,372	0	12,700	-35,807	1,261,100	4,300	1,242,293
2004	0	20,493	46,171	1,283,700	4,620	1,354,984	0	12,734	46,171	1,283,700	4,300	1,346,905
2005	0	20,558	-26,649	1,306,300	4,620	1,304,829	0	12,799	-26,649	1,306,300	4,300	1,296,750
2006	0	20,531	14,244	1,330,700	4,620	1,370,095	0	12,772	14,244	1,330,700	4,300	1,362,016
2007	0	20,555	11,474	1,355,100	4,620	1,391,749	0	12,796	11,474	1,355,100	4,300	1,383,670
2008	0	20,516	-7,750	1,379,500	4,620	1,396,886	0	12,757	-7,750	1,379,500	4,300	1,388,807
2009	0	20,478	-7,718	1,403,900	4,620	1,421,280	0	12,719	-7,718	1,403,900	4,300	1,413,201
2010	0	20,440	3,126	1,428,300	4,620	1,456,486	0	12,681	3,126	1,428,300	4,300	1,448,407
2011	0	20,393	11,717	1,452,900	4,620	1,489,630	0	12,634	11,717	1,452,900	4,300	1,481,551
2012	0	20,345	-20,177	1,477,500	4,620	1,482,288	0	12,586	-20,177	1,477,500	4,300	1,474,209
2013	0	20,371	8,867	1,502,100	4,620	1,535,958	0	12,612	8,867	1,502,100	4,300	1,527,879
2014	0	20,413	-32,832	1,503,400	4,620	1,495,601	0	12,654	-32,832	1,503,400	4,300	1,487,522
2015	0	20,326	27,176	1,504,000	4,620	1,556,122	0	12,567	27,176	1,504,000	4,300	1,548,043
2016	0	20,444	13,596	1,504,600	4,620	1,543,260	0	12,685	13,596	1,504,600	4,300	1,535,181
2017	0	20,352	-51,977	1,505,200	4,620	1,478,195	0	12,593	-51,977	1,505,200	4,300	1,470,116
2018	0	20,167	30,321	1,505,800	4,620	1,560,908	0	12,408	30,321	1,505,800	4,300	1,552,829
2019	0	20,399	11,819	1,506,400	4,620	1,543,238	0	12,640	11,819	1,506,400	4,300	1,535,159
2020(e	0	20,443	0	1,507,000	4,620	1,532,063	0	12,684	0	1,507,000	4,300	1,523,984

AND POWER RECOVERY PLANT OF PROJECT TRANSPORTATION FACILITIES[a]

(in acre-feet)[b]

Calendar Year	CALIFORNIA AQUEDUCT (Continued)						
	COASTAL BRANCH, CALIFORNIA AQUEDUCT						
	LAS PERILLAS AND BADGER HILL PUMPING PLANTS				DEVIL'S DEN, SAWTOOTH AND POLONIO PUMPING PLANTS AND SAN LUIS OBISPO POWERPLANT		
	Initial Fill Water	Operational Losses	Water Supply Delivery	Total	Operational Losses	Water Supply Delivery	Total
	(88)	(89)	(90)	(91)	(92)	(93)	(94)
1968	210	873	79,039	80,122	0	0	0
1969	0	1,042	62,064	63,106	0	0	0
1970	0	638	83,649	84,287	0	0	0
1971	0	3,455	110,971	114,426	0	0	0
1972	0	1,745	121,755	123,500	0	0	0
1973	0	5,479	78,645	84,124	0	0	0
1974	0	7,344	78,174	85,518	0	0	0
1975	0	5,819	85,216	91,035	0	0	0
1976	0	6,562	90,058	96,620	0	0	0
1977	0	5,777	40,579	46,356	0	0	0
1978	0	9,085	92,604	101,689	0	0	0
1979	0	590	113,416	114,006	0	0	0
1980	0	590	110,970	111,560	0	0	0
1981	0	590	114,960	115,550	0	0	0
1982	0	590	119,210	119,800	0	0	0
1983	0	590	125,020	125,610	0	0	0
1984	0	590	130,300	130,890	0	0	0
1985	0	590	130,300	130,890	0	0	0
1986	0	1,140	152,460	153,600	550	22,160	22,710
1987	0	1,140	154,165	155,305	550	23,865	24,415
1988	0	1,140	155,870	157,010	550	25,570	26,120
1989	0	1,140	157,585	158,725	550	27,285	27,835
1990	0	1,140	159,280	160,420	550	28,980	29,530
1991	0	1,140	161,604	162,744	550	31,304	31,854
1992	0	1,140	163,828	164,968	550	33,528	34,078
1993	0	1,140	166,152	167,292	550	35,852	36,402
1994	0	1,140	168,476	169,616	550	38,176	38,726
1995	0	1,140	170,800	171,940	550	40,500	41,050
1996	0	1,140	173,300	174,440	550	43,000	43,550
1997	0	1,140	175,700	176,840	550	45,400	45,950
1998	0	1,140	177,200	178,340	550	46,900	47,450
1999	0	1,140	179,700	180,840	550	49,400	49,950
2000	0	1,140	182,200	183,340	550	51,900	52,450
2001	0	1,140	183,800	184,940	550	53,500	54,050
2002	0	1,140	185,400	186,540	550	55,100	55,650
2003	0	1,140	187,000	188,140	550	56,700	57,250
2004	0	1,140	188,600	189,740	550	58,300	58,850
2005	0	1,140	190,200	191,340	550	59,900	60,450
2006	0	1,140	190,500	191,640	550	60,200	60,750
2007	0	1,140	190,800	191,940	550	60,500	61,050
2008	0	1,140	191,100	192,240	550	60,800	61,350
2009	0	1,140	191,400	192,540	550	61,100	61,650
2010	0	1,140	191,700	192,840	550	61,400	61,950
2011	0	1,140	191,700	192,840	550	61,400	61,950
2012	0	1,140	191,700	192,840	550	61,400	61,950
2013	0	1,140	191,800	192,940	550	61,500	62,050
2014	0	1,140	191,800	192,940	550	61,500	62,050
2015	0	1,140	191,800	192,940	550	61,500	62,050
2016	0	1,140	191,800	192,940	550	61,500	62,050
2017	0	1,140	191,800	192,940	550	61,500	62,050
2018	0	1,140	191,800	192,940	550	61,500	62,050
2019	0	1,140	191,800	192,940	550	61,500	62,050
2020(e	0	1,140	191,800	192,940	550	61,500	62,050

TABLE B-7: RECONCILIATION OF CAPITAL COSTS ALLOCATED TO WATER SUPPLY AND POWER GENERATION FOR THE PERIOD 1952-2035

(in thousands of dollars)

Project Facility	Project Costs Allocated to Water Supply and Power Generation							Project Costs Allocated to Other Purposes	Total, State Water Project
	Misc. Income Credited to Construction (a	Allowances for Future Price Escalation (b	Costs of Construction of Water Delivery Structures (c	Additional Costs of Requested Excess Capacity and Future Enlargement (d	Capital Cost Component of Delta Water Charge (e	Capital Cost Component of Transportation Water Charge (f	Water Supply and Power Total		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
CONSERVATION FACILITIES									
Upper Feather Division									
Frenchman Dam and Lake	173	0	0	0	530	0	703	2,621	3,324
Grizzly Valley Dam and Lake Davis	29	1	0	0	225	0	255	4,970	5,225
Antelope Dam and Lake	0	0	0	0	0	0	0	5,020	5,020
Abbey Bridge Dam and Res.	0	0	0	0	0	0	0	522	522
Dixie Refuge Dam and Res.	0	0	0	0	0	0	0	239	239
Total, Upper Feather Division	202	1	0	0	755	0	958	13,372	14,330
Oroville Division									
Multipurpose Facilities	3,159	180	149	0	333,290	0	336,778	81,149	417,927
Specific Power Facilities	0	0	0	0	114,754	0	114,754	1,487	116,241
Total, Oroville Division	3,159	180	149	0	448,044	0	451,532	82,636	534,168
California Aqueduct									
North San Joaquin Division	172	2,563	0	0	56,983	0	59,718	2,294	62,012
San Luis Division	395	73	0	0	83,182	0	83,650	3,556	87,206
Total, California Aqueduct	567	2,636	0	0	140,165	0	143,368	5,850	149,218
Delta Facilities	149	197,527	0	0	321,986	0	519,662	598,325	1,117,987
Additional Conservation Facilities	3	7,729,488	0	0	3,280,318	0	11,009,809	1,262,669	12,272,478
TOTAL CONSERVATION FACILITIES	4,080	7,929,832	149	0	4,191,268	0	12,125,329	1,962,852	14,088,181
TRANSPORTATION FACILITIES									
Upper Feather Division									
Grizzly Valley Pipeline	0	0	0	0	0	341	341	0	341
North Bay Aqueduct	19	8,379	86	0	0	30,916	39,400	0	39,400
South Bay Aqueduct	1,506	14	309	0	0	47,914	49,743	20,675	70,418
California Aqueduct									
North San Joaquin Division	383	5,737	18	0	0	127,364	133,502	4,524	138,026
San Luis Division	84	12,645	0	0	0	117,838	130,567	4,716	135,283
South San Joaquin Division	299	504	3,267	3,244	0	253,349	260,663	8,090	268,753
Tehachapi Division	23	5,490	9	6,991	0	295,142	307,655	9,507	317,162
Mojave Division	570	114,348	497	133,300 (g	0	262,770	511,485	8,980	520,465
Santa Ana Division	348	229	2,906	11,127	0	169,177	183,787	10,562	194,349
West Branch	36,932	7,663	2,755	106	0	434,721	482,177	18,141	500,318
Coastal Branch	10	47,134	87	0	0	141,014	188,245	105	188,350
Total California Aqueduct	38,649	193,750	9,539	154,768	0	1,801,375	2,198,081	64,625	2,262,706
TOTAL, TRANSPORTATION FACILITIES	40,174	202,143	9,934	154,768	0	1,880,546	2,287,565	85,300	2,372,865
SAN JOAQUIN DRAINAGE FACILITIES	0	0	0	0	0	0	0	9,669	9,669
UNASSIGNED AND DAVIS-GRUNSKY	0	0	0	0	0	0	0	143,037	143,037
TOTAL	44,254	8,131,975	10,083	154,768	4,191,268	1,880,546	14,412,894	2,200,858	16,613,752

a) Miscellaneous project receipts, including those from sale of Airpoint Reservoir land, that are applied for accounting purposes to reduce the capital costs of the particular facilities.
b) These allowances are included for planning the future financial program, but not for determining current water charges. The costs shown on this appendix are based on prices prevailing on December 31, 1978.
c) See Table B-8.
d) From Table B-9, less a portion allocated to recreation and fish and wildlife enhancement.
e) See Table B-13. A portion of these costs will be offset by power generation sales and credits.
f) See Table B-10.
g) Cost of future enlargement of the California Aqueduct in the Mojave Division.

TABLE B-8: CAPITAL COSTS OF REQUESTED DELIVERY STRUCTURES[a]

(in dollars)

Project Area and Water Supply Contractor	Calendar Year								Total
	1952-78	1979	1980	1981	1982	1983	1984	1985	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
FEATHER RIVER AREA									
County of Butte	104,924	0	0	0	0	0	0	0	104,924
Thermalito Irrigation District [b]	43,939	0	0	0	0	0	0	0	43,939
Subtotal	148,863	0	0	0	0	0	0	0	148,863
NORTH BAY AREA									
Napa County Flood Control and Water Conservation District	9,978	0	0	0	0	20,000	0	0	29,978
Solano County Flood Control and Water Conservation District	0	0	0	0	0	55,000	0	1,000	56,000
Subtotal	9,978	0	0	0	0	75,000	0	1,000	85,978
SOUTH BAY AREA									
Alameda County Flood Control and Water Conservation District, Zone 7	151,646	0	0	0	0	0	0	0	151,646
Alameda County Water District	143,789	0	0	0	0	0	0	0	143,789
Santa Clara Valley Water District	13,865	0	0	0	0	0	0	0	13,865
Subtotal	309,300	0	0	0	0	0	0	0	309,300
SAN JOAQUIN VALLEY									
Devil's Den Water District	75,841	0	0	0	0	0	0	0	75,841
Dudley Ridge Water District	283,509	0	0	0	0	0	0	0	283,509
Empire West Side Irrigation District	6,358	0	0	0	0	0	0	0	6,358
Green Valley Water District [c]	5,292	0	0	0	0	0	0	0	5,292
Hacienda Water District	20,659	0	0	0	0	0	0	0	20,659
Kern County Water Agency	2,680,660	14,000	5,000	0	6,000	0	0	11,000	2,716,660
Oak Flat Water District	13,333	0	0	0	0	0	0	0	13,333
Tracy Golf and Country Club [c]	1,028	0	0	0	0	0	0	3,500	4,528
Tulare Lake Basin Water Storage District	254,984	0	0	0	0	0	0	0	254,984
Subtotal	3,341,664	14,000	5,000	0	6,000	0	0	14,500	3,381,164
SOUTHERN CALIFORNIA AREA									
Antelope Valley-East Kern Water Agency	310,185	8,000	5,000	0	5,000	10,000	0	0	338,185
Castaic Lake Water Agency	340,372	8,000	5,000	0	0	0	0	0	353,372
Coachella Valley County Water District	14,206	0	0	0	0	0	0	8,000	22,206
Crestline-Lake Arrowhead Water Agency	12,097	0	0	0	3,000	0	0	0	15,097
Desert Water Agency	23,438	0	0	0	0	0	0	12,000	35,438
Littlerock Creek Irrigation District	23,732	0	0	0	0	0	0	0	23,732
Mojave Water Agency	65,378	0	10,000	10,000	0	0	4,000	0	89,378
Palmdale Water District	24,232	0	5,000	1,000	0	0	0	0	30,232
San Bernardino Valley Municipal Water District	597,553	0	5,000	0	80,000	0	0	5,000	687,553
San Gabriel Valley Municipal Water District	131,052	0	0	0	0	0	0	0	131,052
San Gorgonio Pass Water Agency	66,530	0	0	0	0	0	0	0	66,530
The Metropolitan Water District of Southern California	4,235,461	0	10,000	0	0	0	20,000	0	4,265,461
Ventura County Flood Control District	79,699	0	15,000	5,000	0	0	0	0	99,699
Subtotal	5,923,935	16,000	55,000	16,000	88,000	10,000	24,000	25,000	6,157,935
TOTAL	9,733,740	30,000	60,000	16,000	94,000	85,000	24,000	40,500	10,083,240

a) *Approximate only, not to be construed as invoice amounts.*
b) *Not a project water supply contractor. A delivery structure was constructed on the Thermalito Power Canal at the District's expense as a part of a water exchange agreement.*
c) *Not a project water supply contractor. District has contracted for surplus water.*

(in dollars unless otherwise indicated)

TOTAL REQUIRED ADVANCE OF FUNDS										
Reach Number	Year Reach Becomes Operational	Excess Capacity (cfs)	Total Reach Capacity (cfs)	Ratio of Excess Capacity to Total Capacity (cfs/cfs) (a	Total Reach Cost (b	Total Advance Payments for Excess Capacity (c	Total Incremental Costs for Excess Capacity (d	Reconciliation of Advance Payments (e	Interest Credit (f	Reconciliation of Advance Payments and Interest Credit
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
				THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA						
8C	1968	188.00000	8,257.54768	0.02276705	597,582	13,605	2,000	11,605	1,667	13,272
8D	1968	188.00000	8,058.99281	0.02332798	13,942,413	325,248	113,000	212,248	30,109	242,357
9	1968	188.00000	7,268.54004	0.02586489	9,162,227	236,980	71,000	165,980	32,640	198,620
10A	1968	188.00000	7,117.74784	0.02641285	9,710,336	256,478	92,000	164,478	32,106	196,584
11B	1968	188.00000	6,313.19561	0.02977890	13,692,127	407,736	108,000	299,736	60,463	360,199
12D	1969	188.00000	5,929.95263	0.03170346	11,888,004	376,891	156,000	220,891	46,967	267,858
12E	1969	188.00000	5,907.22734	0.03182542	7,484,322	238,192	118,000	120,192	24,967	145,159
13B	1969	188.00000	5,341.25081	0.03519775	16,313,712	574,206	139,000	435,206	75,150	510,356
14A	1970	188.00000	5,008.96939	0.03753267	55,742,657	2,092,171	559,000	1,533,171	381,330	1,914,501
14B	1970	188.00000	4,888.19779	0.03845998	10,081,251	387,725	175,000	212,725	55,369	268,094
14C	1970	188.00000	4,700.84105	0.03999284	9,083,502	363,275	223,000	140,275	36,501	176,776
15A	1970	188.00000	4,597.94994	0.04088779	38,646,108	1,580,154	593,000	987,154	200,521	1,187,675
16A	1971	188.00000	4,387.78387	0.04284623	62,627,071	2,683,334	995,000	1,688,334	448,974	2,137,308
17E	1971	188.00000	4,136.09906	0.04545346	224,099,973	10,186,119	5,811,000	4,375,119	1,264,021	5,639,140
17F	1971	188.00000	4,126.98262	0.04555386	58,567,574	2,667,979	1,396,000	1,271,979	444,423	1,716,402
25	1971	787.00000	2,019.63064	0.38967521	30,989,289	12,075,758	6,823,844	5,251,914	1,368,192	6,620,106
28J	1973	-	-	-	-	4,378,641	4,378,641	0	0	0
				SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT						
25	1971	21.00000	2,019.63064	0.01039794	31,022,106	322,566	182,156	140,410	36,579	176,989
				ANTELOPE VALLEY-EAST KERN WATER AGENCY						
29A	1971	19.00000	3,128.83908	0.00607254	29,976,119	182,032	85,000	97,032	22,045	119,077
29F	1971	19.00000	3,128.01611	0.00607414	13,582,587	82,503	24,000	58,503	15,039	73,542

a) Column 1 divided by Column 2.

b) Reach costs are compounded at the project interest rate of 4.342 percent per annum as follows:

Reaches	*Period*	*Year costs compounded to*
8C thru 17F	*1952 - 1965*	*1965*
25 (for MWD)	*1952 - 1966*	*1966*
25 (for SGVMWD)	*1952 - 1967*	*1967*
29A and 29F	*1952 - 1967*	*1967*

c) Column 3 multiplied by Column 4.

d) As shown in Table B-7, except, prior Incremental Costs for Reach 28J have been brought forward with interest at 4.457% to 1966 for purposes of repayment.

e) Column 5 less Column 6.

f) Interest on Advance Payments in excess of Incremental Costs is at 5.5 percent per annum, approximate average rate of interest earnings during the period.

g) Actual payments are shown for 1966 through 1973 with 1974 adjusted to reflect overpayments and underpayments without interest for prior years.

h) Interest for overpayments and underpayments under the provisions of Amendment 2 of the contract.

i) Interest for overpayments and underpayments under the provisions of Amendment 5 of the contract.

j) Reach totals include Reconciliation of Advance Payments and Interest Credit (Column 9)

k) Advance payments in excess of incremental costs under the provisions of the contract reduce the capital cost component of the Transportation Charge.

REQUESTED EXCESS PEAKING CAPACITY

(in dollars)

ANNUAL REQUIRED ADVANCE OF FUNDS

Reach Number	Item	Estimated Costs and Advance Payments by Calendar Year 1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	Reach Totals (j
		(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
		THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA										
8C	1. Incremental Costs		1,000	1,000								2,000
	2. Advance Payments		6,803	6,802		-13,272						333
8D	1. Incremental Costs	4,000	45,000	64,000								113,000
	2. Advance Payments	11,513	129,524	184,211		-242,357						82,891
9	1. Incremental Costs	4,000	24,000	35,000	8,000							71,000
	2. Advance Payments	13,351	80,106	116,821	26,702		-198,620					38,360
10A	1. Incremental Costs	5,000	30,000	46,000	11,000							92,000
	2. Advance Payments	13,939	83,634	128,239	30,666		-196,584					59,894
11B	1. Incremental Costs	7,000	42,000	48,000	11,000							108,000
	2. Advance Payments	26,427	158,564	181,216	41,529		-360,199					47,537
12D	1. Incremental Costs	16,000	20,000	18,000	84,000	18,000						156,000
	2. Advance Payments	38,655	48,319	43,487	202,941	43,489		-267,858				109,033
12E	1. Incremental Costs	10,000	14,000	14,000	66,000	14,000						118,000
	2. Advance Payments	20,186	28,260	28,260	133,226	28,260		-145,159				93,033
13B	1. Incremental Costs	1,000	2,000	14,000	96,000	26,000						139,000
	2. Advance Payments	4,131	8,262	57,834	396,574	107,405		-510,356				63,850
14A	1. Incremental Costs	51,000	65,000	39,000	194,000	150,000	60,000					559,000
	2. Advance Payments	190,878	243,276	145,965	726,084	561,405	224,563		-1,914,501			177,670
14B	1. Incremental Costs	31,000	14,000	10,000	45,000	63,000	12,000					175,000
	2. Advance Payments	68,683	31,018	22,156	99,701	139,581	26,586		-268,094			119,631
14C	1. Incremental Costs	39,000	18,000	13,000	58,000	80,000	15,000					223,000
	2. Advance Payments	63,532	29,323	21,177	94,484	130,323	24,436		-176,776			186,499
15A	1. Incremental Costs	4,000	10,000	46,000	243,000	162,000	128,000					593,000
	2. Advance Payments	10,659	26,647	122,575	647,517	431,678	341,078		-1,187,675			392,479
16A	1. Incremental Costs	14,000	12,000	56,000	387,000	357,000	119,000	50,000				995,000
	2. Advance Payments	37,755	32,362	151,022	1,043,669	962,764	320,921	134,841		-2,137,308		546,026
17E	1. Incremental Costs	30,000	259,000	1,159,000	1,971,000	1,565,000	551,000	276,000				5,811,000
	2. Advance Payments	52,587	454,002	2,031,615	3,454,972	2,743,293	965,850	483,800		-5,639,140		4,546,979
17F	1. Incremental Costs	78,000	203,000	468,000	349,000	276,000	15,000	7,000				1,396,000
	2. Advance Payments	149,070	387,965	894,423	666,995	527,480	28,667	13,379		-1,716,402		951,577
25	1. Incremental Costs			932,118	2,289,874	1,910,988	1,211,656	479,208				6,823,844
	2. Advance Payments			1,649,515	4,052,256	3,381,764	2,144,197	848,026		-6,620,106		5,455,652
28J	1. Incremental Costs		304,612	13,706	296,668	65,966	230,169	1,209,586	2,017,134	235,900	4,900	4,378,641
	2. Advance Payments		304,612	13,706	296,668	65,966	230,169	1,209,586	2,017,134	235,900	4,900	4,378,641
Totals Unadjusted for past payments	1. Incremental Costs	294,000	1,063,612	2,976,824	6,109,542	4,687,954	2,341,825	2,021,794	2,017,134	235,900	4,900	21,753,485
	2. Advance Payments	701,366	2,052,677	5,799,024	11,913,984	8,867,779	3,551,064	1,766,259	-1,529,912	-15,877,056	4,900	17,250,085
Current Adjustments	1. Advance Payments and Adjustments - Amendment 2 (g	0	8,056,000	9,094,963	1,523,252	8,310,651	3,426,736	1,086,045	-4,244,807	-14,381,396 (k		12,871,444
	2. Interest Credits-Amendment 2 (h									-1,532,433 (k		-1,532,433
	3. Advance Payments and Adjustments-Amendment 5 (g	0	1,240,000	1,483,180	2,469,325	-927,035	1,729,160	3,215,258	2,967,475	1,690,000	-9,488,722	4,378,641
	4. Interest Credits-Amendment 5 (i										-2,721,803	-2,721,803
	5. Net Required Advance of Funds	0	9,296,000	10,578,143	3,992,577	7,383,616	5,155,896	4,301,303	-1,277,332	-14,223,829	-12,210,525 (k	12,995,849
		SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT										
25	1. Incremental Costs	0	0	24,882	61,126	51,012	32,344	12,792				182,156
	2. Advance Payments	0	0	44,062	108,243	90,333	57,275	22,653		-176,989		145,577
Totals Unadjusted for past payments	1. Incremental Costs	0	0	24,882	61,126	51,012	32,344	12,792				182,156
	2. Advance Payments	0	0	44,062	108,243	90,333	57,275	22,653		-176,989		145,577
Current Adjustments	1. Advance Payments and Adjustments (g	0	0	0	184,422	49,052	44,911	61,588	-20,263	-174,133		145,577
	2. Interest Credit									-6,332		-6,332
	3. Net Required Advance of Funds	0	0	0	184,422	49,052	44,911	61,588	-20,263 (k	-180,465 (k		139,245
		ANTELOPE VALLEY-EAST KERN WATER AGENCY										
29A	1. Incremental Costs	0	0	8,000	14,000	26,000	26,000	11,000				85,000
	2. Advance Payments	0	0	17,132	29,982	55,680	55,680	23,558		-119,077		62,955
29F	1. Incremental Costs	0	0	3,000	4,000	14,000	2,000	1,000				24,000
	2. Advance Payments	0	0	10,313	13,751	48,127	6,875	3,437		-73,542		8,961
Totals Unadjusted for past payments	1. Incremental Costs	0	0	11,000	18,000	40,000	28,000	12,000				109,000
	2. Advance Payments	0	0	27,445	43,733	103,807	62,555	26,995		-192,619		71,916
Current Adjustments	1. Advance Payments and Adjustments (g				85,495	52,625	101,648	34,062	-12,794	-189,120		71,916
	2. Interest Credit	0	0	0						-16,234		-16,234
	3. Net Required Advance of Funds	0	0	0	85,495	52,625	101,648	34,062	-12,794	-205,354 (k		55,682

TABLE B-10: CAPITAL COSTS OF EACH AQUEDUCT REACH TO BE REIM-

(in dollars)

Calendar Year	UPPER FEATHER DIVISION	NORTH BAY AQUEDUCT				SOUTH BAY AQUEDUCT			
		Reach 1	Reach 2	Reach 3	Total	Reach 1	Reach 2	Reach 4	Reach 5
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1952	0	0	0	0	0	97	34	30	57
1953	0	0	0	0	0	477	166	144	297
1954	0	0	0	0	0	1,466	508	437	959
1955	0	0	0	0	0	1,944	674	560	1,266
1956	0	0	0	0	0	18,789	6,515	5,090	12,545
1957	0	13,290	3,391	9,953	26,634	45,090	15,639	12,285	33,218
1958	2	19,202	5,011	25,798	50,011	195,985	80,961	7,714	21,930
1959	14	7,517	2,118	17,653	27,288	496,140	148,516	24,945	17,118
1960	28	8,797	4,292	4,838	17,927	1,130,378	67,351	71,779	68,028
1961	10	1,551	10,318	2,526	14,395	3,273,247	180,596	307,885	74,398
1962	32	217	1,751-	414	1,120-	1,548,884	203,535	695,446	35,102
1963	51	2,510	1,063-	983	2,430	480,716	69,182	2,284,291	206,587
1964	7,791	39,879	12,046	21,934	73,859	2,549,118	15,903	181,900	264,410
1965	3,139	72,793	17,900	170,361	261,054	807,505	153,454	85,425	447,830
1966	48-	59,615	12,972	438,949	511,536	898,074	149,529	142,096	1,690,200
1967	47	47,257	11,597	1,551,023	1,609,877	607,614	50,423	293,304	3,496,284
1968	51,573	70,586	19,560	831,158	921,304	965,119	19,543	89,300	2,931,101
1969	234,232	63,650	23,628	46,428	133,706	455,173	9,618	3,860	896,727
1970	16,227	59,090	42,733	9,415	111,238	52,481	3,380	10,517	154,358
1971	27,204	20,819	31,516	8,480	60,815	24,505	4,645	5,035	20,395
1972	9	15,536	12,948	10,058	38,542	26,918	825	2,945	26,090
1973	26	18,510	29,018	39,891	87,419	24,495	4,012	6,025	12,732
1974	58	67,148	28,831	135,124	231,103	17,536	1,255	1,952	66,505
1975	27	62,392	67,891	49,674	179,957	57,810	590	1,250	7,709
1976	54	51,572	74,283	14,097	139,952	105,573	3,007	9,422	14,515
1977	16	48,067	64,323	28,770	141,160	175,164	3,678	3,409	16,877
1978	27	52,875	55,520	25,215	133,610	226,801	4,552	3,856	12,732
1979	0	442,508	185,878	243,000	871,386	20,000	21,000	1,000	28,000
1980	0	533,691	137,787	283,000	954,478	3,000	30,000	1,000	35,000
1981	0	623,603	117,672	255,000	996,275	1,000	15,000	1,000	18,000
1982	0	3,470,459	1,378,966	799,000	5,648,425	0	0	0	0
1983	0	8,231,359	3,220,875	1,849,000	13,301,234	0	0	0	0
1984	0	1,951,000	1,111,000	556,000	3,618,000	0	0	0	0
1985	0	333,000	155,000	104,000	592,000	0	0	0	0
1986	0	72,000	27,000	12,000	111,000	0	0	0	0
1987	0	22,000	7,000	4,000	33,000	0	0	0	0
1988	0	7,000	3,000	0	10,000	0	0	0	0
1989	0	5,000	2,000	0	7,000	0	0	0	0
1990	0	1,000	0	0	1,000	0	0	0	0
1991	0	0	0	0	0	0	0	0	0
TOTAL	340,519	16,495,493	6,873,260	7,547,742	30,916,495	14,211,099	1,264,091	4,253,902	10,610,970

BURSED THRU CAPITAL COST COMPONENT OF TRANSPORTATION CHARGE

(in dollars)

Calendar Year	SOUTH BAY AQUEDUCT (continued)					CALIFORNIA AQUEDUCT NORTH SAN JOAQUIN DIVISION			
	Reach 6	Reach 7	Reach 8	Reach 9	Total	Reach 1	Reach 2A	Reach 2B	Subtotal
	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1952	8	66	72	132	496	4,029	3,293	1,505	8,827
1953	38	327	336	640	2,425	10,602	8,624	3,980	23,206
1954	123	1,005	1,003	1,954	7,455	13,853	11,209	5,201	30,263
1955	160	1,293	1,149	2,454	9,500	7,400	5,976	2,771	16,147
1956	1,559	11,959	11,043	28,372	95,872	9,920	5,041	2,408	17,369
1957	3,659	28,675	27,385	563,114	729,065	12,003	5,478	2,623	20,104
1958	2,243	17,872	17,385	560,904	904,994	18,665	17,263	8,026	43,954
1959	357	3,200	3,568	149,874	843,718	123,679	100,724	45,700	270,103
1960	1,102	2,944	4,498	359,749	1,705,829	192,199	102,556	49,172	343,927
1961	4,726	18,325	22,765	1,367-	3,880,575	154,391	196,751	43,016	394,158
1962	17,295	160,939	178,242	209,042	3,048,485	614,752	493,223	168,898	1,276,873
1963	265,414	1,250,386	939,832	129,902	5,626,310	2,001,427	1,531,975	686,889	4,220,291
1964	100,603	1,716,371	2,327,770	2,942,657	10,098,732	4,693,541	2,379,598	702,947	7,776,086
1965	42,345	368,476	637,266	1,921,844	4,464,145	5,901,476	6,902,119	2,988,022	15,791,617
1966	17,663	34,915	140,350	777,872	3,850,699	8,588,740	14,171,215	5,700,582	28,460,537
1967	41,567-	137,856	147,183	379,764	5,070,861	9,718,648	10,716,280	6,674,249	27,109,177
1968	84,553	2,130	68,057	253,152	4,412,955	6,419,133	895,372	1,308,583	8,623,088
1969	4,279	11,572	162,300	32,000	1,575,529	3,557,438	795,540	445,760	4,798,738
1970	2,487	6,820	20,086	15,718-	234,411	2,245,869	150,311	116,476	2,512,656
1971	4,350	6,923	17,750	39,084	122,687	98,543	216,405	69,702	384,650
1972	1,084	203	4,800	32,199	95,064	160,273	43,900	7,775	211,948
1973	289	998	7,459	9,713	65,723	106,138	25,685	22,550	154,373
1974	553	6,207	30,850	11,887	136,745	178,306	18,798	46,861	243,965
1975	138	764	1,189	3,670	73,120	239,847	15,622	170,783	426,252
1976	768	4,016	8,952	27,393	173,646	1,330,152	57,640	71,955	1,459,747
1977	295	1,490	8,869	25,380	235,162	436,606-	19,961	22,437	394,208-
1978	236	1,203	1,715	17,308	268,403	345,811	35,141	9,147	390,099
1979	0	0	1,000	1,000	72,000	631,150	99,725	52,205	783,080
1980	0	0	1,000	2,000	72,000	1,534,036	68,937	44,174	1,647,147
1981	0	0	1,000	1,000	37,000	2,894,053	12,047	8,032	2,914,132
1982	0	0	0	0	0	1,446,357	14,055	8,701	1,469,113
1983	0	0	0	0	0	2,958,306	12,717	8,701	2,979,724
1984	0	0	0	0	0	6,426,618	18,071	12,047	6,456,736
1985	0	0	0	0	0	5,082,664	17,402	11,378	5,111,444
1986	0	0	0	0	0	1,316,513	6,024	4,016	1,326,553
1987	0	0	0	0	0	22,756	2,008	1,339	26,103
1988	0	0	0	0	0	669	669	669	2,007
1989	0	0	0	0	0	5,354	2,677	2,008	10,039
1990	0	0	0	0	0	6,693	3,346	2,008	12,047
1991	0	0	0	0	0	6,693	3,346	2,008	12,047
TOTAL	514,760	3,796,935	4,794,874	8,466,975	47,913,606	68,642,091	39,186,724	19,535,304	127,364,119

TABLE B-10: CAPITAL COSTS OF EACH AQUEDUCT REACH TO BE REIM-

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	SAN LUIS DIVISION						SOUTH SAN JOAQUIN DIVISION		
	Reach 3	Reach 4	Reach 5	Reach 6	Reach 7	Subtotal	Reach 8C	Reach 8D	Reach 9
	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
1952	2,503	3,651	4,100	1,039	1,430	12,723	14	747	1,140
1953	7,028	10,434	11,301	2,915	3,980	35,658	46	2,748	4,305
1954	8,739	12,903	14,086	3,622	4,904	44,254	51	2,797	4,141
1955	4,290	6,228	7,007	1,777	2,391	21,693	21	913	1,132
1956	3,309	5,761	6,024	1,486	3,658	20,238	100	3,959	4,500
1957	3,558	6,289	6,539	1,610	4,113	22,109	241	10,909	13,587
1958	11,977	19,947	22,668	5,667	7,726	67,985	387	19,577	25,792
1959	22,071	38,428	40,825	10,094	20,243	131,661	450	21,169	26,433
1960	207,895	46,714	42,215	12,422	38,709	347,955	1,719	45,833	26,010
1961	185,194	300,985	175,425	39,431	72,063	773,098	4,061	77,866	31,721
1962	497,879	565,697	259,913	23,036	27,733	1,374,258	6,304	163,917	64,118
1963	2,783,670	2,092,547	2,570,238	68,244	31,511	7,546,210	6,027	165,732	83,601
1964	4,366,309	5,073,497	1,083,371	166,043	258,655	10,947,875	4,126	93,176	121,226
1965	3,876,971	5,851,079	2,952,075	1,102,801	686,877	14,469,803	15,479	501,146	589,347
1966	2,321,931	8,771,913	5,930,814	4,351,300	7,928,970	29,304,928	207,030	5,344,571	2,614,831
1967	44,709-	2,121,258	7,141,112	229,255	6,866,361	16,313,277	217,692	5,106,198	3,452,149
1968	120,433	407,195	1,002,285	185,153	474,435	2,189,501	57,013	637,713	972,296
1969	6,088-	130,536	101,275	110,523	165,212	501,458	57,042	123,079	87,569
1970	32,523	20,823-	108,404	851,149-	1,250,782	519,737	14,399	119,141	86,526
1971	100,359	237,227	313,965	27,768	350,773	1,030,092	6,928	36,185	23,750
1972	16,055	88,246	12,333	13,775	285,351	415,760	8,948	15,910	17,078
1973	6,811	77,678	13,728	7,173	20,083	125,473	2,972	13,757	13,647
1974	7,344	87,986	24,323	8,020	48,624	176,297	5,390	25,967	17,446
1975	19,342	95,849	9,450	5,209	145,735	275,585	5,058	17,604	13,758
1976	19,038	82,963	15,276	5,494	45,793	168,564	18,542	82,701	65,371
1977	35,633	72,765	8,448	3,622	9,530	129,998	21,385	73,036	101,200
1978	8,395	34,328	5,561	3,022	6,133	57,439	4,349	44,940	17,792
1979	8,497	118,340	26,190	12,610	20,370	186,007	4,850	16,490	20,370
1980	13,454	67,900	24,250	11,640	18,430	135,674	2,910	6,790	7,760
1981	5,664	75,660	228,920	103,790	129,980	544,014	1,940	2,910	4,850
1982	1,416	157,140	661,540	296,820	370,540	1,487,456	1,940	1,940	4,850
1983	708	456,870	1,545,210	667,360	843,900	3,514,048	970	1,940	4,850
1984	1,416	1,098,040	2,420,150	963,210	1,255,180	5,737,996	970	1,940	5,820
1985	1,416	1,586,920	2,793,600	1,044,690	1,391,950	6,818,576	970	1,940	5,820
1986	708	1,623,780	2,543,340	910,830	1,232,870	6,311,528	970	970	2,910
1987	708	1,228,020	1,927,390	689,670	934,110	4,779,898	970	970	970
1988	708	329,800	517,010	185,270	250,260	1,283,048	970	970	970
1989	0	1,940	970	970	970	4,850	0	0	970
1990	0	2,910	970	970	970	5,820	0	0	970
1991	0	2,910	970	970	970	5,820	0	0	970
TOTAL	14,653,155	32,971,511	34,573,271	10,428,152	25,212,275	117,838,364	683,234	12,788,151	8,542,546

BURSED THRU CAPITAL COST COMPONENT OF TRANSPORTATION CHARGE

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	SOUTH SAN JOAQUIN DIVISION (continued)								
	Reach 10A	Reach 11B	Reach 12D	Reach 12E	Reach 13B	Reach 14A	Reach 14B	Reach 14C	Reach 15A
	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
1952	715	1,315	2,036	1,024	1,710	818	219	219	1,966
1953	2,642	4,928	7,694	3,852	6,415	2,673	754	763	7,217
1954	2,901	4,994	7,780	3,900	6,499	2,964	833	841	7,275
1955	1,128	1,604	2,474	1,246	2,083	1,217	333	336	2,318
1956	4,555	6,401	9,498	4,873	8,284	7,226	1,687	1,629	10,225
1957	13,649	19,309	29,916	15,033	25,111	16,099	3,943	3,976	27,642
1958	25,806	49,570	80,813	40,208	63,482	34,692	12,684	12,151	50,917
1959	26,525	69,170	110,867	55,376	88,953	66,677	22,733	22,454	72,867
1960	48,843	68,208	80,158	41,002	65,330	86,771	23,923	22,942	75,400
1961	70,446	47,365	90,757	52,908	28,781	249,656	93,888	67,429	154,469
1962	59,318	57,614	71,089	46,094	50,523	214,040	63,222	48,937	137,425
1963	54,037	94,481	178,862	88,830	69,591	437,630	107,369	80,146	104,905
1964	127,504	343,088	299,208	179,419	88,665	1,124,883	703,521	498,858	587,404
1965	649,529	1,086,113	1,554,641	1,066,779	201,098	3,434,895	1,673,446	1,441,244	487,213
1966	2,879,875	3,792,929	673,238	465,942	428,097	4,994,256	990,890	728,463	1,872,407
1967	3,741,053	4,740,513	1,936,389	1,278,276	1,272,436	2,840,831	530,956	398,988	1,739,386
1968	1,058,995	1,359,413	4,804,878	3,190,004	8,526,040	10,391,953	1,343,294	1,402,157	7,566,401
1969	149,264	235,745	721,514	541,077	3,815,471	15,503,212	1,215,863	1,102,333	9,767,642
1970	76,496	87,589	72,751	74,882	329,983	11,408,974	1,016,216	754,262	9,089,765
1971	16,041	46,294	45,248	43,847	348,785	3,045,338	198,788	37,560	3,422,176
1972	20,298	33,593	45,198	25,456	84,282	1,434,320	104,697	20,743	1,037,277
1973	14,710	16,945	10,290	16,803	25,840	700,811	20,166	13,872	822,671
1974	23,138	15,946	20,721	33,377	31,020	541,460	32,217	17,406	804,422
1975	16,753	14,463	11,686	14,368	27,261	278,830	26,418	22,150	382,914
1976	79,878	57,798	40,487	62,673	110,756	529,854	63,191	45,586	452,417
1977	78,255	55,082	24,134	56,313	84,355	305,537	52,002	31,589	236,696
1978	49,978	16,733	3,070-	27,923	44,023	175,545	670-	1,581	74,877
1979	22,310	18,430	27,160	23,280	47,530	42,680	18,430	10,670	28,130
1980	7,760	8,730	7,760	7,760	9,700	29,100	10,670	5,820	18,430
1981	4,850	6,790	4,850	4,850	6,790	26,190	9,700	2,910	16,490
1982	4,850	7,760	4,850	4,850	7,760	32,980	10,670	1,940	20,370
1983	4,850	6,790	3,880	3,880	6,790	32,980	10,670	970	20,370
1984	5,820	9,700	4,850	4,850	9,700	46,560	14,550	1,940	28,130
1985	5,820	8,730	4,850	4,850	8,730	45,590	14,550	1,940	27,160
1986	2,910	3,880	1,940	1,940	3,880	14,550	4,850	970	8,730
1987	970	1,940	970	970	1,940	3,880	1,940	970	2,910
1988	970	970	970	970	970	970	970	970	970
1989	970	970	970	970	970	6,790	1,940	0	3,880
1990	970	1,940	970	970	1,940	8,730	2,910	0	4,850
1991	970	1,940	970	970	1,940	8,730	2,910	0	4,850
TOTAL	9,356,352	12,405,773	10,994,247	7,492,595	15,943,514	58,130,892	8,407,343	6,807,715	39,181,564

TABLE B-10: CAPITAL COSTS OF EACH AQUEDUCT REACH TO BE REIM-

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	SOUTH SAN JOAQUIN DIVISION (continued)		TEHACHAPI DIVISION			MOJAVE DIVISION			
	Reach 16A	Subtotal	Reach 17E	Reach 17F	Subtotal	Reach 18A	Reach 19	Reach 19C	Reach 20A
	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)
1952	4,568	16,491	9,980	4,188	14,168	4,208	1,563	0	2,634
1953	16,986	61,023	32,234	13,666	45,900	12,971	4,819	0	7,453
1954	17,076	62,052	47,566	20,582	68,148	17,118	6,360	0	9,779
1955	5,373	20,178	26,622	11,687	38,309	5,773	2,145	0	2,602
1956	22,377	85,314	48,847	18,113	66,960	6,210	2,307	0	2,511
1957	64,451	243,866	123,100	50,537	173,637	22,988	8,542	0	9,293
1958	136,891	552,970	168,754	74,157	242,911	39,003	14,570	123	15,832
1959	211,640	795,314	155,722	59,540	215,262	39,725	24,122	1,102	24,281
1960	210,629	796,768	209,024	46,614	255,638	21,962	26,837	5,318	41,681
1961	212,105	1,181,452	398,788	87,956	486,744	35,861	31,289	2,262	34,286
1962	176,117	1,158,718	362,995	84,897	447,892	70,001	272,918	1,841	9,780
1963	495,443	1,966,654	1,225,260	128,213	1,353,473	28,332	424,574	4,137	20,550
1964	1,829,595	6,000,673	1,918,964	797,112	2,716,076	98,266	726,255	8,564	44,347
1965	1,291,460	13,992,390	2,619,141	2,380,351	4,999,492	124,314	736,115	9,156	111,260
1966	2,967,340	27,959,869	5,494,043	9,647,118	15,141,161	376,438	1,703,904	13,373	163,560
1967	3,504,352	30,759,219	26,296,997	12,553,327	38,850,324	1,341,294	907,089	24,103	646,904
1968	7,553,536	48,863,693	32,927,215	7,543,907	40,471,122	140,313	7,312,015	71,388	1,942,840
1969	13,342,339	46,662,150	40,839,892	7,066,275	47,906,167	213,912	2,521,360	7,423	6,096,685
1970	14,386,402	37,517,386	36,903,614	7,200,395	44,104,009	2,244,967	1,162,827	6,217	3,686,001
1971	8,211,299	15,482,239	21,127,944	7,024,179	28,152,123	1,539,583	292,628	6,994	1,105,291
1972	3,137,631	5,985,431	10,476,859	35,797	10,512,656	133,143	424,118	3,619	485,469
1973	1,520,189	3,192,673	3,196,493	37,359	3,233,852	23,757	75,748	2,575	89,194
1974	1,069,716	2,638,226	4,970,291	159,633	5,129,924	26,159	209,647	2,312	141,443
1975	506,269	1,337,532	2,215,515	424,404	2,639,919	43,858	70,385	4,185	68,311
1976	644,236	2,253,490	1,185,827	185,809	1,371,636	122,470	86,121	6,522	61,336
1977	583,602	1,703,186	626,197	32,408	658,605	266,375	135,887	5,741	120,043
1978	135,326	589,327	311,455	27,986	339,441	559,187	45,516	4,014	42,299
1979	44,620	324,950	1,127,140	4,850	1,131,990	1,099,980	150,350	143,790	124,160
1980	32,980	156,170	4,616,230	9,700	4,625,930	1,384,190	105,730	133,853	94,090
1981	32,010	125,130	13,958,300	3,880	13,962,180	6,852,080	33,950	190,083	30,070
1982	40,740	145,500	16,819,800	2,910	16,822,710	12,139,550	22,310	366,246	19,400
1983	40,740	139,680	7,719,260	2,910	7,722,170	4,544,450	10,670	1,070,428	8,730
1984	58,200	193,030	1,060,210	3,880	1,064,090	75,660	13,580	7,781,717	11,640
1985	56,260	187,210	87,300	3,880	91,180	4,850	12,610	9,111,100	10,670
1986	17,460	65,960	27,160	1,940	29,100	1,940	4,850	1,246,000	3,880
1987	3,880	23,280	5,820	970	6,790	970	1,940	16,000	1,940
1988	970	12,610	970	970	1,940	970	970	9,000	970
1989	8,730	27,160	13,580	0	13,580	970	1,940	5,000	970
1990	10,670	34,920	16,490	970	17,460	970	1,940	4,000	1,940
1991	10,670	34,920	16,490	970	17,460	970	1,940	2,000	1,940
TOTAL	62,614,878	253,348,804	239,388,089	55,754,040	295,142,129	33,665,738	17,592,441	20,270,186	15,296,065

BURSED THRU CAPITAL COST COMPONENT OF TRANSPORTATION CHARGE

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	MOJAVE DIVISION (continued)							SANTA ANA DIVISION	
	Reach 20B	Reach 21	Reach 22A	Reach 22B	Reach 23	Reach 24	Subtotal	Reach 25	Reach 26A
	(46)	(47)	(48)	(49)	(50)	(51)	(52)	(53)	(54)
1952	917	5,954	36	2,071	2,133	2,481	21,997	3,429	5,759
1953	3,498	18,356	73	5,917	7,083	7,651	67,821	10,570	17,758
1954	4,678	24,232	380	8,805	8,073	10,100	89,525	13,953	23,441
1955	2,275	8,174	185	2,833	2,803	3,408	30,198	4,708	7,908
1956	2,731	8,785	221	2,989	3,047	3,662	32,463	5,059	8,500
1957	10,109	32,521	822	11,064	11,274	13,556	120,169	18,726	31,460
1958	17,234	55,104	1,438	19,254	19,108	23,275	204,941	31,889	53,508
1959	19,137	58,349	1,896	26,149	20,954	46,952	262,667	40,452	59,802
1960	38,243	45,141	11,346	140,662	17,640	112,950	461,780	67,527	96,373
1961	36,747	21,461	14,275	216,976	9,749	381,525	784,431	27,695	58,042
1962	10,301	8,038	3,969	166,204	4,422	286,019	833,493	10,194	37,079
1963	24,394	19,160	9,395	181,668	6,607	326,539	1,045,356	31,302	111,795
1964	72,939	34,742	23,340	269,795	7,046	250,511	1,535,805	71,610	208,327
1965	353,016	93,544	67,422	850,190	12,158	638,741	2,995,916	287,183	212,169
1966	1,348,926	164,856	183,537	1,795,181	31,941	1,047,309	6,829,025	426,867	374,202
1967	1,753,691	505,817	371,797	3,184,240	63,213	2,370,863	11,169,011	3,306,913	653,587
1968	2,356,554	1,174,255	1,178,219	4,717,247	105,079	2,673,275	21,671,185	7,864,274	1,304,076
1969	5,776,445	2,421,215	1,553,488	7,933,036	267,580	11,429,770	38,220,914	6,520,178	1,816,480
1970	5,394,456	3,296,870	2,112,830	23,902,238	1,273,407	17,253,564	60,333,377	1,692,735	7,423,418
1971	1,122,135	848,580	444,743	17,251,574	1,977,102	5,539,449	30,128,079	911,090	10,092,231
1972	653,696	498,647	334,164	3,897,349	49,424	811,038	7,290,667	1,382,082	5,679,711
1973	84,724	64,904	36,512	1,664,387	24,967	4,344,089	6,410,857	140,930	1,862,340
1974	120,614	105,411	55,813	5,849,009	131,970	790,991	7,433,369	71,362	1,979,734
1975	171,610	171,404	19,968	4,920,607	18,955	383,545	5,872,828	172,429	3,897,271
1976	102,485	46,973	27,542	3,182,732	84,407	216,196	3,936,784	493,319	1,544,860
1977	120,505	72,978	51,626	1,682,920	59,817	239,528	2,755,420	78,531	800,963
1978	60,774	28,722	14,594	500,378	35,728	128,393	1,419,605	58,286	135,110
1979	479,180	90,210	59,170	646,990	42,680	448,140	3,284,650	719,740	498,580
1980	137,740	64,990	42,680	575,210	29,100	373,450	2,941,033	166,840	297,790
1981	39,770	20,370	13,580	157,140	8,730	119,310	7,465,083	41,710	60,140
1982	22,310	14,550	8,730	104,760	5,820	42,680	12,746,356	21,340	33,950
1983	9,700	6,790	3,880	53,350	1,940	7,760	5,717,698	970	7,760
1984	13,580	9,700	4,850	73,720	1,940	9,700	7,996,087	1,940	10,670
1985	12,610	8,730	3,880	68,870	1,940	7,760	9,243,020	1,940	10,670
1986	4,850	3,880	1,940	22,310	970	2,910	1,293,530	970	3,880
1987	1,940	1,940	970	4,850	970	1,940	33,460	970	1,940
1988	970	970	970	970	970	970	17,730	970	970
1989	1,940	970	0	10,670	0	970	23,430	0	1,940
1990	1,940	970	970	12,610	0	970	26,310	0	1,940
1991	1,940	970	970	12,610	0	970	24,310	0	1,940
TOTAL	20,391,304	10,059,233	6,662,221	84,129,535	4,350,747	50,352,910	262,770,380	24,700,683	39,428,074

TABLE B-10: CAPITAL COSTS OF EACH AQUEDUCT REACH TO BE REIM-

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	SANTA ANA DIVISION (continued)				WEST BRANCH				
	Reach 28G[a]	Reach 28H	Reach 28J	Subtotal	Reach 29A	Reach 29 F	Reach 29G	Reach 29H	Reach 29J
	(55)	(56)	(57)	(58)	(59)	(60)	(61)	(62)	(63)
1952	4,922	4,170	3,106	21,386	3,007	139	180	472	569
1953	16,026	11,842	9,748	65,944	9,352	353	244	1,803	1,731
1954	18,531	18,618	12,507	87,050	7,601	1,234	2,293	2,418	4,282
1955	6,226	6,255	4,269	29,366	1,047	601	1,117	1,178	2,086
1956	6,683	6,713	4,609	31,564	502	718	1,332	1,405	2,488
1957	24,732	24,848	17,062	116,828	1,860	2,656	4,931	5,202	9,209
1958	42,012	42,208	29,286	198,903	3,350	4,647	8,963	9,133	16,301
1959	47,056	47,262	45,602	240,174	8,181	9,413	19,969	18,766	36,600
1960	60,789	60,219	122,368	407,276	22,374	15,416	35,426	30,614	71,741
1961	32,825	35,009	722,892	876,463	22,453	11,994	21,450	20,252	40,742
1962	21,793	20,901	61,489	151,456	41,038	28,934	88,985	59,609	111,872
1963	41,258	38,588	1,871,018	2,093,961	86,720	56,844	158,965	108,102	215,776
1964	92,193	46,980	104,427	523,537	154,850	68,140	213,746	147,329	299,577
1965	99,647	79,011	155,399	833,409	371,983	79,892	414,427	130,974	606,382
1966	175,685	317,520	610,701	1,904,975	503,312	209,115	1,268,711	358,722	3,324,070
1967	237,474	287,722	1,207,337	5,693,033	1,620,867	892,734	1,207,666	912,841	31,977,002
1968	896,068	273,721	823,321	11,161,460	3,998,535	305,064	407,120	1,136,094	37,192,844
1969	1,147,431	1,483,335	971,559	11,938,983	6,757,323	323,803	707,648	1,215,077	9,931,033
1970	1,882,906	1,027,540	3,976,970	16,003,569	8,179,871	6,215,939	2,677,927	3,071,319	8,699,766
1971	16,556,376	6,584,482	12,492,005	46,636,184	4,367,395	3,877,055	1,155,587	8,480,386	6,011,071
1972	1,580,496	12,302,641	22,212,648	43,157,578	1,927,396	439,161	1,013,866	19,325,650	23,674,722-
1973	215,379	253,414	3,767,597	6,239,660	797,706	171,669	444,927	9,677,761	1,873,427
1974	158,873	105,647	2,039,874	4,355,490	577,522	173,478	175,305	4,120,819	3,548,808-
1975	155,577	128,606	1,650,712	6,004,595	363,599	431,978	993,411	683,556	629,152
1976	168,302	126,003	1,549,311	3,881,795	410,563	670,217	1,319,667	731,482	681,749
1977	122,073	91,851	326,351	1,419,769	426,825	3,103,906	2,215,385	201,325	1,172,582
1978	143,687	155,717	428,083	920,883	1,348,874	2,341,494	6,906,377	78,689	200,865
1979	184,300	214,370	649,112	2,266,102	1,746,970	3,580,270	23,866,850	703,250	1,020,440
1980	136,770	161,990	519,920	1,283,310	304,580	4,478,490	27,594,560	312,340	735,260
1981	108,640	34,920	88,270	333,680	60,140	1,531,630	17,584,160	77,600	149,380
1982	77,600	17,460	43,650	194,000	48,500	203,700	7,090,700	42,680	79,540
1983	3,880	1,940	3,880	18,430	30,070	5,820	4,620,110	5,820	7,760
1984	5,820	2,910	4,850	26,190	41,710	7,760	204,670	7,760	10,670
1985	5,820	2,910	4,850	26,190	40,740	7,760	3,880	6,790	10,670
1986	2,910	1,940	1,940	11,640	12,610	2,910	1,940	2,910	3,880
1987	970	970	970	5,820	2,910	1,940	970	1,940	1,940
1988	970	970	970	4,850	970	970	970	970	970
1989	970	0	970	3,880	5,820	970	0	970	970
1990	970	0	970	3,880	7,760	970	0	970	1,940
1991	970	0	970	3,880	7,760	970	0	970	1,940
TOTAL	24,485,610	24,021,203	56,541,573	169,177,143	34,324,646	29,260,754	102,434,435	51,695,948	77,914,747

a) Includes excess capacity costs in the following years allocated to the Metropolitan Water District and repaid under Article 24(c) of their contract; 1970, $362,000; 1971, $6,198,000; 1972, $139,000.

BURSED THRU CAPITAL COST COMPONENT OF TRANSPORTATION CHARGE

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								GRAND TOTAL
	WEST BRANCH (continued)		COASTAL BRANCH					TOTAL	
	Reach 30	Subtotal	Reach 31A	Reach 33A	Reach 34	Reach 35	Subtotal		
	(64)	(65)	(66)	(67)	(68)	(69)	(70)	(71)	(72)
1952	1,448	5,815	0	0	0	0	0	101,407	101,903
1953	4,470	17,953	0	0	0	0	0	317,505	319,930
1954	5,909	23,737	0	0	0	0	0	405,029	412,484
1955	1,999	8,028	0	0	0	0	0	163,919	173,419
1956	2,136	8,581	0	0	0	0	0	262,489	358,361
1957	7,907	31,765	0	0	0	0	0	728,478	1,484,177
1958	14,331	56,725	0	0	0	0	0	1,368,389	2,323,396
1959	45,653	138,582	28,046	49,114	7,441	8,236	92,837	2,146,600	3,017,620
1960	87,117	262,688	34,404	70,450	8,507	14,265	127,626	3,003,658	4,727,442
1961	118,530	235,421	13,801	17,868	1,501	3,931	37,101	4,768,868	8,663,848
1962	354,005	684,443	10,121	7,798	524	1,689	20,132	5,947,265	8,994,662
1963	432,675	1,059,082	20,470	14,299	880	2,943	38,592	19,323,619	24,952,410
1964	1,410,463	2,294,105	315,418	26,963	1,687	5,639	349,707	32,143,864	42,324,246
1965	3,478,911	5,082,569	747,023	36,178	2,118	7,060	792,379	58,957,575	63,685,913
1966	9,631,335	15,295,265	2,258,915	35,864	1,736	5,764	2,302,279	127,198,039	131,560,226
1967	18,038,030	54,649,140	6,310,419	38,331	1,891	6,213	6,356,854	190,900,035	197,580,820
1968	16,182,767	59,222,424	2,707,580	30,784	1,324	4,369	2,744,057	194,946,530	200,332,362
1969	16,628,705	35,563,589	423,797	26,549	907	2,905	454,158	186,046,157	187,989,624
1970	22,606,073	51,450,895	269,194	24,368	851	2,787	297,200	212,738,829	213,100,705
1971	17,372,724	41,264,218	164,446	32,230	1,315	3,804	201,795	163,279,380	163,490,086
1972	3,927,270	2,958,621	131,332	17,597	522	1,660	151,111	70,683,772	70,817,387
1973	13,690,707	26,656,197	182,526	16,288	554	1,797	201,165	46,214,250	46,367,418
1974	2,845,719	4,344,035	191,191	17,516	337	1,109	210,153	24,531,459	24,899,365
1975	1,662,523	4,764,219	67,207	30,793	1,828	4,755	104,583	21,425,513	21,678,617
1976	1,092,825	4,906,503	203,345	64,080	4,640	13,242	285,307	18,263,826	18,577,478
1977	356,316	7,476,339	917,299	74,244	1,203	3,703	996,449	14,745,558	15,121,896
1978	374,259	11,250,558	31,040	71,965	721	2,229	105,955	15,073,307	15,475,347
1979	1,343,450	32,261,230	24,000	262,653	73,951	117,695	478,299	40,716,308	41,659,694
1980	1,356,060	34,781,290	14,000	1,046,202	172,781	440,013	1,672,996	47,243,550	48,270,028
1981	312,340	19,715,250	12,000	1,581,368	272,191	714,949	2,580,508	47,639,977	48,673,252
1982	1,863,370	9,328,490	41,000	7,417,529	350,946	1,058,083	8,867,558	51,061,183	56,709,608
1983	3,233,980	7,903,560	155,000	26,322,076	1,676,736	6,698,092	34,851,904	62,847,214	76,148,448
1984	583,940	856,510	600,000	30,967,500	2,961,716	9,112,034	43,641,250	65,971,889	69,589,889
1985	10,670	80,510	988,000	19,888,607	1,918,891	5,050,447	27,845,945	49,404,075	49,996,075
1986	3,880	28,130	232,000	2,466,000	340,000	573,000	3,611,000	12,677,441	12,788,441
1987	1,940	11,640	33,000	1,033,000	111,000	268,000	1,445,000	6,331,991	6,364,991
1988	970	5,820	27,000	22,000	12,000	15,000	76,000	1,404,005	1,414,005
1989	970	9,700	23,000	5,000	5,000	5,000	38,000	130,639	137,639
1990	1,940	13,580	23,000	0	0	0	23,000	137,017	138,017
1991	1,940	13,580	13,000	0	0	0	13,000	125,017	125,017
TOTAL	139,090,257	434,720,787	17,212,574	91,715,214	7,935,699	24,150,413	141,013,900	1,801,375,626	1,880,546,246

TABLE B-11: MINIMUM OMP&R COSTS OF EACH AQUEDUCT REACH TO BE

(in dollars)

Calendar Year	UPPER FEATHER DIVISION	NORTH BAY AQUEDUCT				SOUTH BAY AQUEDUCT			
		Reach 1	Reach 2	Reach 3	Total	Reach 1	Reach 2	Reach 4	Reach 5
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	37,396	5,522	0	0
1963	0	0	0	0	0	147,719	20,639	0	0
1964	0	0	0	0	0	149,750	15,574	19,405	0
1965	0	0	0	0	0	259,939	45,718	46,485	0
1966	0	0	0	0	0	270,890	23,799	63,921	0
1967	0	0	0	0	0	438,050	32,798	108,127	0
1968	0	0	0	130	130	410,919	44,277	66,973	706
1969	0	0	0	80,875	80,875	487,377	48,339	75,644	706
1970	0	0	0	94,872	94,872	381,734	44,852	64,833	71,376
1971	54	0	0	45,579	45,579	357,850	25,666	50,344	38,735
1972	40	0	0	37,890	37,890	347,885	30,601	56,790	100,089
1973	1	0	0	32,982	32,982	386,817	36,162	58,273	28,797
1974	143	0	0	46,478	46,478	456,275	57,065	83,101	61,610
1975	1,068	0	0	37,695	37,695	624,877	46,098	81,342	36,675
1976	139	0	0	60,923	60,923	614,279	47,835	123,742	91,323
1977	892	0	0	80,022	80,022	512,063	48,955	104,293	102,159
1978	63	0	0	63,465	63,465	680,491	109,151	165,150	58,604
1979	200	0	0	76,362	76,362	716,562	87,819	125,020	138,966
1980	200	0	0	89,119	89,119	835,505	104,468	154,465	140,063
1981	200	0	0	91,936	91,936	849,656	111,288	176,591	146,234
1982	200	0	0	92,016	92,016	863,189	112,587	179,396	146,736
1983	200	0	0	95,058	95,058	841,724	113,325	181,652	157,450
1984	200	208,256	65,213	102,517	375,986	865,235	113,387	181,993	160,897
1985	200	274,075	62,731	136,735	473,541	863,942	113,185	181,688	160,668
1986	200	272,125	61,592	132,719	466,436	862,525	113,369	182,038	161,339
1987	200	270,846	61,061	132,493	464,400	860,614	113,107	181,372	161,211
1988	200	270,126	60,891	133,305	464,322	861,028	113,081	181,414	161,932
1989	200	269,442	60,711	133,219	463,372	859,292	112,828	181,009	161,548
1990	200	267,211	60,167	132,918	460,296	853,245	111,963	179,664	160,388
1991	200	267,296	60,195	132,931	460,422	853,524	112,013	179,757	160,155
1992	200	261,706	59,591	131,273	452,570	810,265	108,565	172,023	157,735
1993	200	259,837	59,160	131,025	450,022	805,070	107,774	170,754	156,301
1994	200	261,281	59,506	131,219	452,006	809,017	108,399	171,812	157,881
1995	200	261,000	59,430	131,243	451,673	808,748	108,268	171,601	157,668
1996	200	263,091	59,904	131,546	454,541	814,834	109,128	172,933	158,477
1997	200	263,656	60,041	131,608	455,305	816,276	109,380	173,347	158,911
1998	200	263,648	60,038	131,610	455,296	816,269	109,371	173,329	158,862
1999	200	263,473	60,029	131,345	454,847	813,795	109,358	173,325	158,973
2000	200	263,525	60,020	131,497	455,042	815,139	109,343	173,282	158,868
2001	200	263,569	60,028	131,548	455,145	815,603	109,354	173,313	159,225
2002	200	263,588	60,035	131,548	455,171	816,613	109,366	173,348	159,378
2003	200	263,613	60,039	131,581	455,233	816,921	109,372	173,363	159,454
2004	200	263,622	60,043	131,581	455,246	816,927	109,380	173,385	159,552
2005	200	263,604	60,036	131,581	455,221	816,917	109,368	173,352	159,404
2006	200	263,590	60,030	131,581	455,201	815,910	109,359	173,328	159,467
2007	200	263,624	60,040	131,599	455,263	817,078	109,377	173,379	159,693
2008	200	263,972	60,038	132,327	456,337	823,595	109,372	173,364	159,859
2009	200	265,234	60,039	134,930	460,203	846,901	109,375	173,373	160,742
2010	200	264,515	60,035	133,464	458,014	833,765	109,368	173,352	160,175
2011	200	264,907	60,033	134,287	459,227	841,140	109,366	173,348	160,210
2012	200	264,862	60,044	134,136	459,042	839,804	109,384	173,401	160,391
2013	200	264,526	60,048	133,420	457,994	833,390	109,389	173,411	160,206
2014	200	263,613	60,039	131,581	455,233	816,923	109,374	173,371	159,437
2015	200	263,606	60,037	131,581	455,224	816,919	109,369	173,357	159,377
2016	200	263,636	60,049	131,581	455,266	816,935	109,390	173,416	159,772
2017	200	263,608	60,037	131,581	455,226	816,919	109,370	173,360	159,526
2018	200	263,604	60,036	131,581	455,221	816,919	109,370	173,358	159,524
2019	200	263,630	60,046	131,581	455,257	816,933	109,387	173,407	159,736
2020 (a	200	263,633	60,047	131,581	455,261	816,950	109,409	173,466	159,996

a) And each year thereafter for the remainder of the project repayment period.

REIMBURSED THRU MINIMUM OMP&R COMPONENT OF TRANSPORTATION CHARGE

(in dollars)

Calendar Year	SOUTH BAY AQUEDUCT (continued)					CALIFORNIA AQUEDUCT			
						NORTH SAN JOAQUIN DIVISION			
	Reach 6	Reach 7	Reach 8	Reach 9	Total	Reach 1	Reach 2A	Reach 2B	Subtotal
	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	42,918	0	0	0	0
1963	0	0	0	0	168,358	0	0	0	0
1964	0	0	0	0	184,729	0	0	0	0
1965	2,634	6,490	4,704	12,904	378,874	0	0	0	0
1966	4,707	10,328	9,233	25,519	408,397	0	0	0	0
1967	2,712	7,659	10,812	34,347	634,505	0	0	0	0
1968	3,109	7,960	10,166	40,372	584,482	962,889	219,434	99,101	1,281,424
1969	3,944	5,975	8,795	38,566	669,346	896,700	289,811	180,833	1,367,344
1970	2,464	1,991-	6,870	28,210	598,348	933,524	294,137	145,611	1,373,272
1971	3,116	9,394	9,895	31,068	526,068	1,059,747	244,727	109,249	1,413,723
1972	5,123	10,245	12,050	44,689	607,472	1,064,129	221,682	105,769	1,391,580
1973	4,177	7,498	4,886	43,805	570,415	1,105,315	212,661	96,243	1,414,219
1974	7,806	7,561	5,519	48,038	726,975	1,221,581	222,152	112,480	1,556,213
1975	18,116	14,681	18,321	68,364	908,474	1,377,841	437,033	193,080	2,007,954
1976	10,872	5,555	19,917	49,906	963,429	1,454,603	205,394	433,887	2,093,884
1977	238-	2,219	8,392	89,651	867,494	1,847,512	279,843	188,486	2,315,841
1978	954-	16,389	4,944-	102,243	1,126,130	1,978,462	291,297	188,819	2,458,578
1979	17,706	12,499	15,765	61,693	1,176,030	2,495,371	391,676	239,332	3,126,379
1980	12,460	15,668	15,166	69,681	1,347,476	2,793,901	444,759	274,588	3,513,248
1981	10,386	16,725	15,180	80,127	1,406,187	2,447,490	476,282	266,011	3,189,783
1982	10,375	17,748	15,122	81,036	1,426,189	2,053,506	471,632	259,727	2,784,865
1983	10,363	17,725	15,103	80,931	1,418,273	1,864,221	495,421	266,859	2,626,501
1984	10,351	17,703	15,087	80,831	1,445,484	2,044,392	502,304	268,878	2,815,574
1985	10,334	17,670	15,060	80,683	1,443,230	2,067,804	501,615	268,424	2,837,843
1986	10,343	17,693	15,077	80,783	1,443,167	2,085,809	503,077	268,881	2,857,767
1987	10,261	17,607	14,944	80,489	1,439,605	2,087,198	501,854	268,021	2,857,073
1988	10,254	17,592	14,932	80,424	1,440,657	2,088,131	503,243	268,341	2,859,715
1989	10,233	17,555	14,900	80,246	1,437,611	2,084,105	501,493	267,577	2,853,175
1990	10,157	17,421	14,792	79,626	1,427,256	2,070,244	498,012	265,612	2,833,868
1991	10,161	17,427	14,797	79,653	1,427,487	2,071,549	498,577	265,824	2,835,950
1992	9,264	16,469	13,381	76,171	1,363,873	2,014,929	484,762	257,237	2,756,928
1993	9,198	16,351	13,286	75,625	1,354,359	2,002,028	480,938	255,287	2,738,253
1994	9,245	16,438	13,355	76,024	1,362,171	2,014,647	485,048	257,113	2,756,808
1995	9,236	16,418	13,339	75,934	1,361,212	2,016,596	484,477	256,809	2,757,882
1996	9,310	16,554	13,449	76,558	1,371,243	2,030,547	487,616	258,665	2,776,828
1997	9,330	16,588	13,478	76,719	1,374,029	2,034,482	489,103	259,349	2,782,934
1998	9,330	16,588	13,478	76,719	1,373,946	2,033,836	488,953	259,304	2,782,093
1999	9,327	16,583	13,475	76,697	1,371,533	2,016,502	489,301	259,379	2,765,182
2000	9,327	16,583	13,475	76,697	1,372,714	2,026,272	488,859	259,244	2,774,375
2001	9,327	16,583	13,475	76,697	1,373,577	2,030,434	489,187	259,344	2,778,965
2002	9,327	16,583	13,475	76,697	1,374,787	2,031,091	489,508	259,442	2,780,041
2003	9,327	16,583	13,475	76,697	1,375,192	2,033,419	489,645	259,483	2,782,547
2004	9,327	16,583	13,475	76,697	1,375,326	2,034,070	489,870	259,553	2,783,493
2005	9,327	16,583	13,475	76,697	1,375,123	2,033,415	489,543	259,453	2,782,411
2006	9,327	16,583	13,475	76,697	1,374,146	2,032,763	489,326	259,387	2,781,476
2007	9,327	16,583	13,475	76,697	1,375,609	2,035,251	489,810	259,535	2,784,596
2008	9,327	16,583	13,475	76,697	1,382,272	2,084,773	489,669	259,492	2,833,934
2009	9,327	16,583	13,475	76,697	1,406,473	2,264,662	489,749	259,515	3,013,926
2010	9,327	16,583	13,475	76,697	1,392,742	2,163,020	489,564	259,460	2,912,044
2011	9,327	16,583	13,475	76,697	1,400,146	2,219,750	489,523	259,447	2,968,720
2012	9,327	16,583	13,475	76,697	1,399,062	2,210,021	490,036	259,603	2,959,660
2013	9,327	16,583	13,475	76,697	1,392,478	2,161,312	490,152	259,638	2,911,102
2014	9,327	16,583	13,475	76,697	1,375,187	2,034,065	489,744	259,514	2,783,323
2015	9,327	16,583	13,475	76,697	1,375,104	2,033,418	489,618	259,476	2,782,512
2016	9,327	16,583	13,475	76,697	1,375,595	2,034,725	490,177	259,648	2,784,550
2017	9,327	16,583	13,475	76,697	1,375,257	2,033,419	489,633	259,481	2,782,533
2018	9,327	16,583	13,475	76,697	1,375,253	2,033,419	489,659	259,488	2,782,566
2019	9,327	16,583	13,475	76,697	1,375,545	2,034,721	490,092	259,621	2,784,434
2020(a	9,327	16,583	13,475	76,697	1,375,903	2,034,817	492,175	260,258	2,787,250

TABLE B-11: MINIMUM OMP&R COSTS OF EACH AQUEDUCT REACH TO BE

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	SAN LUIS DIVISION						SOUTH SAN JOAQUIN DIVISION		
	Reach 3	Reach 4	Reach 5	Reach 6	Reach 7	Subtotal	Reach 8C	Reach 8D	Reach 9
	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	115,571	411,724	125,055	42,853	99,937	795,140	0	0	0
1969	86,755	443,026	177,185	34,329	225,812	967,107	21,115	129,255	82,572
1970	86,296	465,450	217,000	63,450	184,831	1,017,027	25,138	150,563	123,018
1971	96,311	520,590	168,738	61,666	151,885	999,190	30,989	182,956	113,549
1972	112,394	622,430	167,640	70,730	148,599	1,121,793	33,597	179,579	125,054
1973	112,472	587,629	151,934	56,036	147,810	1,055,881	49,045	216,443	122,278
1974	115,789	644,669	144,856	61,343	144,164	1,110,821	33,327	190,919	125,907
1975	128,549	805,516	171,823	78,185	151,205	1,335,278	75,291	240,055	152,480
1976	50,473	848,794	212,240	86,745	167,923	1,366,175	37,630	126,898	117,140
1977	71,107	1,073,727	260,053	94,253	188,599	1,687,739	36,498	119,761	170,592
1978	77,985	1,012,126	218,385	106,955	204,322	1,619,773	43,523	170,450	137,768
1979	198,819	1,329,948	257,390	87,985	127,574	2,001,716	54,987	206,931	176,133
1980	214,248	1,410,517	262,677	93,629	153,564	2,134,635	62,338	236,459	201,658
1981	229,510	1,321,341	263,433	98,776	177,447	2,090,507	69,248	260,985	222,255
1982	230,271	1,345,066	265,624	99,683	179,691	2,120,335	70,121	263,664	225,067
1983	255,670	1,306,238	298,163	110,327	193,269	2,163,667	70,286	276,580	237,181
1984	262,917	1,423,460	305,093	112,526	195,960	2,299,956	70,273	280,136	240,569
1985	262,511	1,420,538	304,178	112,175	195,333	2,294,735	70,143	279,785	240,270
1986	264,251	1,417,719	306,265	112,828	196,223	2,297,286	70,245	280,767	241,099
1987	263,860	1,423,706	305,176	112,436	195,682	2,300,860	70,259	280,752	241,013
1988	265,520	1,424,608	299,731	110,382	192,791	2,293,032	70,222	281,535	241,765
1989	263,930	1,421,025	297,891	109,748	191,791	2,284,385	70,026	280,655	241,018
1990	261,500	1,407,506	295,082	108,670	189,814	2,262,572	69,482	278,749	239,388
1991	262,041	1,409,300	295,610	108,847	190,065	2,265,863	69,511	279,048	239,658
1992	256,196	1,386,489	287,830	106,371	185,675	2,222,561	68,026	270,356	233,370
1993	253,246	1,372,853	284,556	105,172	183,616	2,199,443	67,538	268,255	231,543
1994	256,797	1,388,418	288,300	106,480	185,667	2,225,662	67,907	270,502	233,545
1995	256,372	1,388,110	287,774	106,287	185,332	2,223,875	67,828	270,163	233,250
1996	257,602	1,396,188	289,335	106,904	186,536	2,236,565	68,371	271,924	234,737
1997	259,685	1,405,754	291,647	107,745	187,960	2,252,791	68,518	272,747	235,464
1998	259,527	1,405,642	291,475	107,690	187,890	2,252,224	68,517	272,657	235,380
1999	259,944	1,396,513	291,852	107,805	188,013	2,244,127	68,502	272,839	235,559
2000	259,475	1,401,189	291,402	107,661	187,832	2,247,559	68,498	272,603	235,337
2001	259,822	1,404,324	291,741	107,768	187,969	2,251,624	68,501	272,780	235,503
2002	260,163	1,405,477	292,076	107,877	188,104	2,253,697	68,505	272,957	235,669
2003	260,307	1,406,887	292,220	107,922	188,162	2,255,498	68,507	273,033	235,739
2004	260,547	1,407,966	292,447	107,994	188,253	2,257,207	68,509	273,152	235,851
2005	260,201	1,406,816	292,113	107,886	188,118	2,255,134	68,505	272,975	235,686
2006	259,971	1,405,733	291,882	107,813	188,025	2,253,424	68,502	272,853	235,573
2007	260,483	1,408,594	292,385	107,974	188,228	2,257,664	68,508	273,119	235,822
2008	260,332	1,435,952	292,234	107,926	188,167	2,284,611	68,507	273,040	235,746
2009	260,418	1,538,352	292,326	107,955	188,204	2,387,255	68,508	273,088	235,791
2010	260,221	1,480,150	292,123	107,891	188,122	2,328,507	68,505	272,981	235,691
2011	260,179	1,512,218	292,079	107,876	188,105	2,360,457	68,505	272,959	235,670
2012	260,721	1,508,550	292,613	108,047	188,320	2,358,251	68,511	273,239	235,933
2013	260,845	1,480,702	292,729	108,083	188,367	2,330,726	68,512	273,299	235,989
2014	260,414	1,407,875	292,311	107,950	188,198	2,256,748	68,508	273,080	235,784
2015	260,280	1,406,858	292,177	107,908	188,144	2,255,367	68,506	273,010	235,718
2016	260,872	1,409,102	292,760	108,094	188,378	2,259,206	68,512	273,317	236,006
2017	260,296	1,406,873	292,198	107,915	188,153	2,255,435	68,506	273,021	235,729
2018	260,322	1,406,880	292,210	107,918	188,158	2,255,488	68,506	273,027	235,734
2019	260,782	1,409,045	292,674	108,065	188,344	2,258,910	68,512	273,272	235,962
2020 (a	262,990	1,410,103	294,269	108,576	188,987	2,264,925	68,528	274,109	236,748

REIMBURSED THRU MINIMUM OMP&R COMPONENT OF TRANSPORTATION CHARGE

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	SOUTH SAN JOAQUIN DIVISION (continued)								
	Reach 10A	Reach 11B	Reach 12D	Reach 12E	Reach 13B	Reach 14A	Reach 14B	Reach 14C	Reach 15A
	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	80,276	56,673	0	0	0	0	0	0	0
1970	113,207	82,257	90,320	118,354	146,192	0	0	0	0
1971	124,523	77,013	91,204	87,698	160,312	663,624	145,766	107,066	508,222
1972	112,821	80,836	94,597	110,905	140,111	841,553	119,713	97,320	584,186
1973	112,868	88,460	71,178	110,172	212,254	922,240	115,168	95,339	664,290
1974	135,845	94,074	71,842	185,586	135,729	861,362	137,955	110,893	818,055
1975	199,364	119,005	59,267	112,396	103,722	1,109,203	173,188	114,961	947,448
1976	132,108	65,271	30,670	140,688	128,331	1,078,276	169,984	109,567	995,267
1977	185,910	103,776	87,405	167,544	132,494	1,344,149	195,496	114,614	1,288,418
1978	171,596	104,094	76,378	167,669	145,937	1,336,927	145,695	125,289	1,338,537
1979	191,163	127,979	110,544	178,282	204,854	1,512,734	160,790	115,566	1,431,596
1980	219,107	146,172	124,995	203,061	233,749	1,669,523	184,029	132,926	1,543,421
1981	240,944	160,642	138,520	224,349	258,037	1,633,813	202,541	146,171	1,461,851
1982	243,865	163,016	139,523	226,593	260,942	1,663,872	204,632	148,421	1,490,934
1983	256,870	170,103	151,191	233,922	271,409	1,569,514	216,749	157,257	1,372,751
1984	260,503	172,154	154,529	235,920	274,360	1,680,794	220,318	159,809	1,482,644
1985	260,187	171,881	154,384	235,570	273,935	1,679,778	220,042	159,625	1,480,962
1986	261,082	172,298	155,079	236,152	274,661	1,672,135	220,614	160,255	1,472,592
1987	260,976	172,226	155,042	236,113	274,646	1,679,653	220,439	160,217	1,481,471
1988	261,783	172,611	155,822	236,506	275,215	1,682,290	221,175	160,784	1,481,545
1989	260,985	172,106	155,270	235,852	274,414	1,679,110	220,621	160,322	1,479,726
1990	259,243	170,952	154,280	234,167	272,503	1,668,022	219,167	159,255	1,469,885
1991	259,533	171,122	154,517	234,363	272,765	1,669,677	219,426	159,442	1,470,375
1992	253,051	166,853	150,060	229,091	264,761	1,635,460	213,775	155,066	1,444,872
1993	251,100	165,584	148,815	227,369	262,713	1,624,978	212,083	153,833	1,435,890
1994	253,242	166,905	150,364	229,039	264,791	1,635,139	213,983	155,222	1,444,344
1995	252,927	166,701	150,165	228,760	264,461	1,636,220	213,695	155,010	1,445,756
1996	254,515	167,796	151,012	230,358	266,274	1,647,239	215,044	155,994	1,455,635
1997	255,294	168,282	151,559	230,983	267,042	1,649,828	215,739	156,501	1,457,583
1998	255,203	168,231	151,478	230,932	266,968	1,649,716	215,645	156,432	1,457,559
1999	255,393	168,330	151,669	231,017	267,106	1,640,185	215,825	156,564	1,447,549
2000	255,156	168,199	151,455	230,879	266,913	1,645,163	215,604	156,403	1,452,917
2001	255,334	168,297	151,617	230,983	267,059	1,648,373	215,771	156,525	1,455,100
2002	255,511	168,394	151,775	231,084	267,201	1,648,574	215,937	156,648	1,456,076
2003	255,588	168,437	151,842	231,128	267,265	1,650,034	216,009	156,700	1,457,512
2004	255,709	168,502	151,949	231,197	267,363	1,650,171	216,120	156,781	1,457,542
2005	255,531	168,406	151,792	231,095	267,217	1,649,967	215,954	156,659	1,457,495
2006	255,408	168,337	151,682	231,025	267,119	1,649,824	215,836	156,572	1,457,462
2007	255,675	168,485	151,921	231,178	267,336	1,650,832	216,088	156,758	1,458,253
2008	255,595	168,441	151,849	231,133	267,270	1,680,434	216,013	156,702	1,488,801
2009	255,643	168,466	151,891	231,160	267,310	1,786,585	216,058	156,735	1,598,028
2010	255,536	168,408	151,796	231,098	267,223	1,726,681	215,955	156,660	1,536,461
2011	255,513	168,395	151,776	231,086	267,204	1,760,235	215,933	156,644	1,571,024
2012	255,796	168,552	152,027	231,249	267,434	1,755,334	216,196	156,837	1,564,766
2013	255,856	168,585	152,082	231,283	267,483	1,726,188	216,252	156,878	1,534,708
2014	255,635	168,463	151,885	231,156	267,303	1,650,081	216,045	156,727	1,457,521
2015	255,565	168,424	151,822	231,115	267,246	1,650,001	215,979	156,678	1,457,501
2016	255,874	168,594	152,096	231,293	267,498	1,651,284	216,272	156,892	1,457,583
2017	255,576	168,430	151,832	231,122	267,254	1,650,015	215,991	156,687	1,457,505
2018	255,583	168,433	151,837	231,126	267,261	1,650,015	215,993	156,688	1,457,503
2019	255,828	168,569	152,056	231,267	267,460	1,651,233	216,229	156,859	1,457,572
2020 (a	256,671	169,034	152,809	231,752	268,147	1,651,950	216,817	157,292	1,457,710

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TABLE B-11: MINIMUM OMP&R COSTS OF EACH AQUEDUCT REACH TO BE

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	SOUTH SAN JOAQUIN DIVISION (continued)		TEHACHAPI DIVISION			MOJAVE DIVISION			
	Reach 16A	Subtotal	Reach 17E	Reach 17F	Subtotal	Reach 18A	Reach 19	Reach 19C	Reach 20A
	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	369,891	0	0	0	0	0	0	0
1970	0	849,049	0	0	0	0	0	0	0
1971	9,867	2,302,789	3,328	0	3,328	0	0	0	0
1972	1,061,578	3,581,850	1,366,705	28,206	1,394,911	34,692	128,509	0	123,520
1973	1,192,788	3,972,523	1,704,271	51,457	1,755,728	33,224	135,949	0	149,717
1974	1,288,758	4,190,252	2,203,748	18,877	2,222,625	27,502	80,829	0	103,815
1975	1,474,647	4,881,027	2,304,701	38,706	2,343,407	36,713	110,530	0	124,073
1976	1,656,871	4,788,701	2,663,367	143,662	2,807,029	107,099	180,678	0	164,309
1977	1,890,440	5,837,097	3,720,732	96,684	3,817,416	84,652	204,830	0	163,328
1978	2,110,185	6,074,048	3,841,412	67,217	3,908,629	79,184	195,910	0	193,990
1979	2,232,538	6,704,097	4,588,406	66,273	4,654,679	173,505	282,602	0	234,731
1980	2,434,280	7,391,718	4,917,489	57,947	4,975,436	215,268	307,746	0	248,944
1981	2,200,025	7,219,381	3,920,765	54,090	3,974,855	210,766	340,470	0	268,188
1982	2,245,587	7,346,237	4,041,789	54,884	4,096,673	226,240	342,326	0	271,882
1983	1,997,074	6,980,887	3,034,009	58,164	3,092,173	162,158	439,067	0	333,942
1984	2,243,746	7,475,755	3,786,150	58,363	3,844,513	156,914	466,420	0	351,491
1985	2,242,305	7,468,867	3,780,033	58,281	3,838,314	155,150	466,790	0	351,624
1986	2,221,882	7,438,861	3,701,687	58,429	3,760,116	153,858	471,763	67,968	354,812
1987	2,240,751	7,473,558	3,766,493	58,302	3,824,795	155,180	471,562	65,615	354,628
1988	2,243,733	7,484,986	3,769,632	58,467	3,828,099	155,451	478,063	64,590	358,753
1989	2,240,037	7,470,142	3,764,888	58,320	3,823,208	155,161	477,612	62,407	358,337
1990	2,227,691	7,422,784	3,743,533	57,951	3,801,484	154,165	476,236	55,284	357,113
1991	2,228,801	7,428,238	3,745,413	58,010	3,803,423	154,254	477,104	55,543	357,686
1992	2,183,149	7,267,890	3,684,664	55,448	3,740,112	152,695	472,802	49,726	349,094
1993	2,170,966	7,220,667	3,669,379	55,011	3,724,390	151,731	468,061	43,511	345,725
1994	2,185,013	7,269,996	3,688,676	55,479	3,744,155	152,795	476,621	48,054	351,461
1995	2,188,177	7,273,113	3,706,809	55,401	3,762,210	153,019	475,647	47,033	350,780
1996	2,201,258	7,320,157	3,726,436	55,776	3,782,212	154,013	476,963	54,144	351,998
1997	2,205,013	7,334,553	3,728,672	55,948	3,784,620	154,284	479,381	55,978	353,646
1998	2,203,804	7,332,522	3,728,675	55,925	3,784,600	154,251	478,810	55,978	353,279
1999	2,181,469	7,292,007	3,649,710	55,960	3,705,670	152,802	480,823	55,730	354,561
2000	2,193,899	7,313,026	3,696,006	55,912	3,751,918	153,602	478,802	55,730	353,262
2001	2,200,010	7,325,853	3,712,800	55,949	3,768,749	153,962	479,737	55,730	353,863
2002	2,200,483	7,328,814	3,713,729	55,985	3,769,714	154,041	481,186	55,730	354,795
2003	2,203,800	7,335,594	3,724,244	56,003	3,780,247	154,300	482,163	55,730	355,424
2004	2,205,038	7,337,884	3,725,173	56,027	3,781,200	154,361	483,239	55,730	356,113
2005	2,203,639	7,334,921	3,724,244	55,989	3,780,233	154,252	481,359	55,730	354,903
2006	2,203,293	7,333,486	3,723,315	55,960	3,779,275	154,232	480,931	55,730	354,630
2007	2,206,528	7,340,503	3,730,522	56,019	3,786,541	154,442	482,838	55,730	355,855
2008	2,272,629	7,466,160	3,956,679	56,002	4,012,681	158,796	482,256	55,730	355,485
2009	2,513,966	7,923,229	4,768,916	56,012	4,824,928	174,453	481,849	55,730	355,222
2010	2,377,358	7,664,353	4,310,865	55,988	4,366,853	165,614	481,784	55,730	355,177
2011	2,453,341	7,808,285	4,567,650	55,981	4,623,631	170,532	480,991	55,730	354,668
2012	2,441,091	7,786,965	4,522,468	56,042	4,578,510	169,747	483,155	55,730	356,058
2013	2,375,081	7,662,196	4,299,072	56,054	4,355,126	165,470	483,917	55,730	356,550
2014	2,204,813	7,337,001	3,725,173	56,006	3,781,179	154,292	482,024	55,730	355,330
2015	2,203,695	7,335,260	3,724,244	55,993	3,780,237	154,286	481,943	55,730	355,281
2016	2,205,459	7,340,680	3,726,102	56,060	3,782,162	154,414	484,231	55,730	356,750
2017	2,203,731	7,335,399	3,724,244	55,995	3,780,239	154,284	481,876	55,730	355,238
2018	2,203,719	7,335,425	3,724,244	55,995	3,780,239	154,290	482,009	55,730	355,322
2019	2,205,339	7,340,158	3,726,102	56,050	3,782,152	154,398	483,894	55,730	356,535
2020(a	2,206,469	7,348,036	3,726,102	56,121	3,782,223	154,533	486,354	55,730	358,114

REIMBURSED THRU MINIMUM OMP&R COMPONENT OF TRANSPORTATION CHARGE

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	MOJAVE DIVISION (continued)							SANTA ANA DIVISION	
	Reach 20B	Reach 21	Reach 22A	Reach 22B	Reach 23	Reach 24	Subtotal	Reach 25	Reach 26A
	(46)	(47)	(48)	(49)	(50)	(51)	(52)	(53)	(54)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0
1972	113,706	71,853	76,421	981,269	48,859	343,928	1,922,757	25	555
1973	137,645	55,753	61,693	1,191,047	61,111	328,641	2,154,780	18,817	631,863
1974	78,989	58,743	70,360	1,347,237	87,774	300,101	2,155,350	21,984	730,956
1975	107,196	122,426	69,838	1,463,090	99,853	376,697	2,510,416	26,645	798,669
1976	135,893	94,997	117,217	1,431,848	95,462	270,382	2,597,885	46,607	990,831
1977	101,259	89,016	77,286	1,708,819	62,930	40,910	2,533,030	56,703	1,289,765
1978	112,337	100,845	72,072	2,085,480	79,412	662,984	3,582,214	61,935	1,234,342
1979	201,481	135,782	101,601	1,982,112	62,483	287,239	3,461,536	43,423	1,345,020
1980	175,573	127,046	93,668	2,129,933	71,862	612,738	3,982,778	36,739	1,543,461
1981	188,137	130,950	106,874	2,164,503	88,315	557,131	4,055,334	42,320	1,544,156
1982	190,759	131,808	106,954	2,194,493	89,141	571,422	4,125,025	42,111	1,575,266
1983	252,927	166,878	134,490	2,329,254	88,982	837,091	4,744,789	41,939	934,964
1984	270,616	176,868	142,282	2,481,663	88,869	522,126	4,657,249	41,922	1,548,223
1985	270,900	176,963	142,347	2,481,623	88,698	925,328	5,059,423	41,840	1,546,471
1986	273,952	178,704	143,782	2,485,371	88,777	1,240,125	5,459,112	41,860	1,535,871
1987	273,669	178,541	143,628	2,491,590	88,749	930,629	5,153,791	41,864	1,546,465
1988	277,861	180,872	145,484	2,508,452	88,676	1,127,439	5,385,641	41,828	1,546,221
1989	277,663	180,683	145,295	2,505,107	88,443	1,553,685	5,804,393	41,700	1,543,180
1990	277,050	180,146	144,880	2,492,573	87,752	405,961	4,631,160	41,373	1,532,427
1991	277,596	180,464	145,130	2,495,196	87,781	1,099,079	5,329,833	41,388	1,533,832
1992	269,726	176,279	141,238	2,435,613	85,106	1,185,903	5,318,182	40,163	1,506,161
1993	266,925	174,522	139,840	2,417,162	84,496	1,279,684	5,371,657	39,875	1,496,600
1994	272,246	177,653	142,313	2,444,637	84,942	373,365	4,524,087	40,084	1,504,442
1995	271,658	177,295	142,029	2,443,328	84,843	1,655,105	5,800,737	40,037	1,506,164
1996	272,227	177,811	142,455	2,454,671	85,540	1,134,453	5,304,275	40,367	1,516,985
1997	273,706	178,698	143,159	2,463,188	85,719	1,001,017	5,188,776	40,452	1,518,977
1998	273,337	178,491	142,995	2,461,794	85,719	1,228,703	5,413,357	40,451	1,518,980
1999	274,643	179,219	143,569	2,457,361	85,696	459,428	4,643,832	40,440	1,507,318
2000	273,344	178,489	142,992	2,457,974	85,696	1,519,359	5,699,250	40,440	1,513,675
2001	273,945	178,826	143,257	2,461,984	85,696	267,477	4,454,477	40,440	1,516,123
2002	274,877	179,354	143,669	2,466,194	85,696	1,472,355	5,667,897	40,440	1,517,052
2003	275,506	179,709	143,948	2,469,434	85,696	1,310,975	5,512,885	40,440	1,518,674
2004	276,195	180,099	144,254	2,471,818	85,696	331,532	4,539,037	40,440	1,518,674
2005	274,985	179,416	143,720	2,467,710	85,696	1,715,600	5,913,371	40,440	1,518,674
2006	274,712	179,261	143,596	2,465,610	85,696	1,039,052	5,233,450	40,440	1,518,674
2007	275,937	179,955	144,143	2,471,532	85,696	559,932	4,766,060	40,440	1,519,499
2008	275,567	179,744	143,976	2,494,904	85,696	944,540	5,176,694	40,440	1,554,537
2009	275,304	179,594	143,859	2,582,558	85,696	1,816,699	6,150,964	40,440	1,679,711
2010	275,259	179,568	143,840	2,532,372	85,696	745,377	5,020,417	40,440	1,609,182
2011	274,750	179,282	143,616	2,558,717	85,696	1,185,494	5,489,476	40,440	1,648,801
2012	276,140	180,066	144,230	2,558,530	85,696	709,912	5,019,264	40,440	1,641,544
2013	276,632	180,344	144,448	2,535,844	85,696	1,137,755	5,422,386	40,440	1,607,077
2014	275,412	179,658	143,908	2,469,240	85,696	1,491,305	5,692,595	40,440	1,518,674
2015	275,363	179,629	143,886	2,468,892	85,696	457,412	4,658,118	40,440	1,518,674
2016	276,832	180,460	144,537	2,475,082	85,696	1,640,995	5,854,727	40,440	1,518,674
2017	275,320	179,605	143,868	2,468,806	85,696	807,274	5,007,697	40,440	1,518,674
2018	275,404	179,652	143,905	2,469,044	85,696	969,440	5,170,492	40,440	1,518,674
2019	276,617	180,338	144,443	2,473,390	85,696	707,382	4,918,423	40,440	1,518,674
2020(a	278,196	181,231	145,144	2,478,050	85,696	1,061,864	5,284,912	40,440	1,518,674

TABLE B-11: MINIMUM OMP&R COSTS OF EACH AQUEDUCT REACH TO BE

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	SANTA ANA DIVISION (continued)				WEST BRANCH				
	Reach 28G	Reach 28H	Reach 28J	Subtotal	Reach 29A	Reach 29F	Reach 29G	Reach 29H	Reach 29J
	(55)	(56)	(57)	(58)	(59)	(60)	(61)	(62)	(63)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0
1972	105	29	0	714	702,099	157,501	192,865	228,136	92,089
1973	127,071	75	0	777,826	784,295	339,419	123,414	263,218	135,268
1974	140,997	31,493	780,868	1,706,298	921,188	168,628	118,957	241,901	42,274
1975	98,804	62,558	643,906	1,630,582	1,099,764	185,019	202,609	822,592	106,111
1976	123,793	90,011	564,027	1,815,269	1,307,434	229,238	215,048	675,855	114,879
1977	114,666	83,267	741,357	2,285,758	1,325,761	122,751	220,446	709,337	28,208
1978	148,971	68,543	800,494	2,314,285	1,362,067	273,285	239,279	514,357	45,546
1979	92,067	67,395	761,373	2,309,278	1,799,378	181,612	790,618	734,605	667,653
1980	87,219	90,544	993,117	2,751,080	1,871,510	237,103	819,033	710,582	648,481
1981	100,250	97,193	165,906	1,618,013	1,684,981	257,173	511,179	788,073	313,934
1982	101,744	98,856	1,807,055	3,625,032	1,715,531	248,437	915,817	768,949	337,771
1983	101,150	98,643	348,021	1,524,717	1,639,336	345,823	823,225	1,103,974	41,229
1984	101,093	98,553	3,176,334	4,966,125	1,713,436	379,947	958,801	1,179,008	252,746
1985	100,896	98,360	740,019	2,527,586	1,710,892	380,611	958,073	1,196,864	255,954
1986	100,922	98,453	2,075,473	3,852,579	1,705,548	386,385	943,122	1,221,978	232,568
1987	100,817	98,425	1,441,510	3,229,081	1,711,502	385,678	957,290	1,232,757	253,609
1988	100,735	98,342	1,797,565	3,584,691	1,711,497	393,591	957,970	1,266,126	255,357
1989	100,513	98,084	1,598,268	3,381,745	1,708,124	393,342	956,666	1,304,980	263,521
1990	99,735	97,309	2,985,767	4,756,611	1,695,768	392,549	950,760	1,316,254	263,783
1991	99,769	97,342	1,953,063	3,725,394	1,696,403	394,131	951,181	1,329,378	263,815
1992	94,669	95,625	2,370,827	4,107,445	1,662,793	379,134	946,725	1,301,518	254,504
1993	93,992	94,939	1,274,559	2,999,965	1,652,194	374,881	942,404	1,293,675	255,379
1994	94,486	95,442	1,313,689	3,048,143	1,661,537	383,688	947,125	1,285,938	258,606
1995	94,374	95,328	2,508,628	4,244,531	1,661,611	382,652	950,573	1,288,146	265,286
1996	95,150	96,112	2,015,182	3,763,796	1,674,027	382,693	956,674	1,289,575	266,906
1997	95,351	96,314	862,468	2,613,562	1,676,929	385,695	957,411	1,307,768	267,518
1998	95,351	96,314	1,663,091	3,414,187	1,676,879	384,805	957,386	1,305,760	267,517
1999	95,323	96,286	2,212,347	3,951,714	1,669,413	386,723	941,231	1,312,299	245,664
2000	95,323	96,286	1,187,293	2,933,017	1,673,565	384,821	950,704	1,305,018	258,690
2001	95,323	96,286	1,877,167	3,625,339	1,675,079	386,299	953,990	1,311,444	263,994
2002	95,323	96,286	2,291,205	4,040,306	1,675,158	387,729	954,122	1,322,667	263,994
2003	95,323	96,286	1,445,936	3,196,659	1,676,139	388,351	957,236	1,327,573	269,681
2004	95,323	96,286	1,466,184	3,216,907	1,677,122	389,291	957,294	1,332,445	268,752
2005	95,323	96,286	1,894,615	3,645,338	1,676,111	387,854	956,329	1,329,384	268,752
2006	95,323	96,286	1,617,432	3,368,155	1,676,055	386,792	956,300	1,326,859	269,681
2007	95,323	96,286	1,847,259	3,598,807	1,677,588	388,995	958,409	1,335,248	270,229
2008	95,323	96,286	1,845,207	3,631,793	1,697,101	388,309	1,004,430	1,340,105	334,723
2009	95,323	96,286	1,877,155	3,788,915	1,771,229	388,729	1,168,635	1,339,748	560,364
2010	95,323	96,286	1,557,486	3,398,717	1,729,019	387,800	1,075,151	1,336,914	434,276
2011	95,323	96,286	1,904,530	3,785,380	1,752,168	387,600	1,127,126	1,337,220	505,105
2012	95,323	96,286	1,964,214	3,837,807	1,748,983	389,889	1,118,684	1,349,797	492,130
2013	95,323	96,286	1,771,975	3,611,101	1,728,857	390,346	1,073,503	1,352,765	430,511
2014	95,323	96,286	1,987,939	3,738,662	1,677,082	388,583	957,492	1,349,318	271,539
2015	95,323	96,286	1,749,253	3,499,976	1,676,120	387,998	956,481	1,342,308	272,468
2016	95,323	96,286	1,781,787	3,532,510	1,677,190	390,549	957,529	1,352,560	272,468
2017	95,323	96,286	1,843,786	3,594,509	1,676,127	388,115	956,504	1,344,309	272,468
2018	95,323	96,286	1,824,911	3,575,634	1,676,123	388,057	956,492	1,343,176	270,610
2019	95,323	96,286	1,896,044	3,646,767	1,677,172	390,194	957,516	1,351,377	272,468
2020(a	95,323	96,286	1,869,010	3,619,733	1,677,324	392,974	957,654	1,363,241	272,468

REIMBURSED THRU MINIMUM OMP&R COMPONENT OF TRANSPORTATION CHARGE

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)							TOTAL	GRAND TOTAL
	WEST BRANCH (continued)		COASTAL BRANCH						
	Reach 30	Subtotal	Reach 31A[b]	Reach 33A	Reach 34	Reach 35	Subtotal		
	(64)	(65)	(66)	(67)	(68)	(69)	(70)	(71)	(72)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	42,918
1963	0	0	0	0	0	0	0	0	168,358
1964	0	0	0	0	0	0	0	0	184,729
1965	0	0	0	0	0	0	0	0	378,874
1966	0	0	0	0	0	0	0	0	408,397
1967	0	0	0	0	0	0	0	0	634,505
1968	0	0	0	0	0	0	0	2,076,564	2,661,176
1969	0	0	509,728	0	0	0	509,728	3,214,070	3,964,291
1970	0	0	609,988	0	0	0	609,988	3,849,336	4,542,556
1971	0	0	699,052	0	0	0	699,052	5,418,082	5,989,783
1972	412,058	1,784,748	697,460	0	0	0	697,460	11,895,813	12,541,215
1973	588,193	2,233,807	641,497	0	0	0	641,497	14,006,261	14,609,659
1974	741,590	2,234,538	669,126	0	0	0	669,126	15,845,223	16,618,819
1975	869,813	3,285,908	806,283	0	0	0	806,283	18,800,855	19,748,092
1976	96,571-	2,445,883	841,115	0	0	0	841,115	18,755,941	19,780,432
1977	5,683,631	8,090,134	872,615	0	0	0	872,615	27,439,630	28,388,038
1978	3,390,966	5,825,500	933,683	0	0	0	933,683	26,716,710	27,906,368
1979	885,110	5,058,976	924,409	0	0	0	924,409	28,241,070	29,493,662
1980	1,111,012	5,397,721	1,100,775	0	0	0	1,100,775	31,247,391	32,684,186
1981	2,445,781	6,001,121	1,199,856	0	0	0	1,199,856	29,348,850	30,847,173
1982	1,288,302	5,274,807	1,219,239	0	0	0	1,219,239	30,592,213	32,110,618
1983	1,160,829	5,114,416	1,226,690	0	0	0	1,226,690	27,473,840	28,987,371
1984	3,038,392	7,522,330	1,244,623	0	0	0	1,244,623	34,826,125	36,647,795
1985	2,017,981	6,520,375	1,242,963	0	0	0	1,242,963	31,790,106	33,707,077
1986	1,920,406	6,410,007	1,240,985	197,956	9,237	19,556	1,467,734	33,543,462	35,453,265
1987	1,702,844	6,243,680	1,240,625	189,604	8,098	17,046	1,455,373	32,538,211	34,442,416
1988	1,204,735	5,789,276	1,240,939	183,037	7,569	15,406	1,446,951	32,672,391	34,577,570
1989	1,690,504	6,317,137	1,238,159	182,162	7,269	14,968	1,442,558	33,376,743	35,277,926
1990	2,715,076	7,334,190	1,229,273	181,345	7,231	14,935	1,432,784	34,475,453	36,363,205
1991	1,602,111	6,237,019	1,230,493	181,575	7,368	15,215	1,434,651	33,060,371	34,948,480
1992	1,741,201	6,285,875	1,206,079	176,586	7,390	15,235	1,405,290	33,104,283	34,920,926
1993	1,804,694	6,323,227	1,198,290	176,299	7,397	15,291	1,397,277	31,974,879	33,779,460
1994	2,180,523	6,717,417	1,205,393	178,204	7,749	16,000	1,407,346	31,693,614	33,507,991
1995	1,434,008	5,982,276	1,204,414	178,944	7,737	15,979	1,407,074	33,451,698	35,264,783
1996	1,342,675	5,912,550	1,213,107	178,576	7,768	15,998	1,415,449	32,511,832	34,337,816
1997	4,723,708	9,319,029	1,216,461	179,784	7,944	16,350	1,420,539	34,696,804	36,526,338
1998	17,193-	4,575,154	1,215,411	179,755	7,923	16,308	1,419,397	30,973,534	32,802,976
1999	4,301,077	8,856,407	1,215,033	176,753	8,033	16,537	1,416,356	34,875,295	36,701,875
2000	2,651,376	7,224,174	1,214,623	178,513	7,955	16,375	1,417,466	33,360,785	35,188,741
2001	1,058,311	5,649,117	1,215,955	179,253	8,028	16,526	1,419,762	31,273,886	33,102,808
2002	3,204,183	7,807,853	1,216,042	179,116	7,937	16,335	1,419,430	35,067,752	36,897,910
2003	253,379-	4,365,601	1,216,240	179,791	8,108	16,694	1,420,833	30,649,864	32,480,489
2004	5,395,589	10,020,493	1,216,296	179,903	8,184	16,851	1,421,234	35,357,455	37,188,227
2005	348,246	4,966,676	1,216,210	179,717	8,059	16,591	1,420,577	32,098,661	33,929,205
2006	3,130,077	7,745,764	1,216,145	179,638	8,006	16,479	1,420,268	33,915,298	35,744,845
2007	2,940,891	7,571,360	1,216,361	180,020	8,120	16,715	1,421,216	33,526,747	35,357,819
2008	1,649,274	6,413,942	1,219,740	188,998	8,089	16,649	1,433,476	33,253,291	35,092,100
2009	1,647,963	6,876,668	1,231,983	221,319	8,140	16,755	1,478,197	36,444,082	38,310,958
2010	2,411,557	7,374,717	1,225,047	203,033	8,059	16,591	1,452,730	34,518,338	36,369,294
2011	2,992,223	8,101,442	1,228,901	213,235	8,056	16,587	1,466,779	36,604,170	38,463,743
2012	764,150	5,863,633	1,228,333	211,579	8,199	16,884	1,464,995	33,869,085	35,727,389
2013	2,837,642	7,813,624	1,225,000	202,691	8,194	16,871	1,452,756	35,559,017	37,409,689
2014	151,701-	4,492,313	1,216,258	179,922	8,195	16,872	1,421,247	31,503,068	33,333,688
2015	4,115,663	8,751,038	1,216,224	179,746	8,078	16,630	1,420,678	34,483,186	36,313,714
2016	3,175,969	7,826,265	1,216,378	179,976	8,232	16,950	1,421,536	34,801,636	36,632,697
2017	1,505,058-	3,132,465	1,216,227	179,798	8,112	16,703	1,420,840	29,309,117	31,139,800
2018	4,359,891	8,994,349	1,216,228	179,751	8,081	16,636	1,420,696	35,314,889	37,145,563
2019	3,043,856	7,692,583	1,216,355	179,951	8,215	16,915	1,421,436	33,844,863	35,675,865
2020 (a	2,224,223	6,887,884	1,216,616	180,034	8,270	17,029	1,421,949	33,396,912	35,228,276

b) Includes certain costs to be assigned directly to Kern County Water Agency. Refer to Appendix B text "Project Water Charges, Minimum OMP&R Components".

TABLE B-12: VARIABLE OMP&R COSTS TO BE REIMBURSED

(in dollars)

Calendar Year	NORTH BAY AQUEDUCT			SOUTH BAY AQUEDUCT	CALIFORNIA AQUEDUCT							
	Reach 1 Calhoun and Travis Pumping Plants	Reach 3 Cordelia Pumping Plant (a	Total	Reach 1 South Bay and Del Valle Pumping Plants (b	Reach 1 Delta Pumping Plant	Reach 4 Dos Amigos Pumping Plant (c	Reach 14A Buena Vista Pumping Plant	Reach 15A Wheeler Ridge Pumping Plant	Reach 16A Wind Gap Pumping Plant	Reach 17E A.D. Edmonston (Tehachapi) Pumping Plant	Reach 18A Cottonwood Powerplant	Reach 22B Pear-blossom Pumping Plant
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	36,970	0	0	0	0	0	0	0	0
1963	0	0	0	57,711	0	0	0	0	0	0	0	0
1964	0	0	0	74,134	0	0	0	0	0	0	0	0
1965	0	0	0	142,609	0	0	0	0	0	0	0	0
1966	0	0	0	192,605	0	0	0	0	0	0	0	0
1967	0	0	0	223,117	13,881	0	0	0	0	0	0	0
1968	0	6,989	6,989	336,671	449,932	202,095	0	0	0	0	0	0
1969	0	8,551	8,551	257,579	291,043	133,714	0	0	0	0	0	0
1970	0	13,598	13,598	396,358	343,517	209,486	1	0	0	0	0	0
1971	0	10,609	10,609	381,662	571,317	223,477	136,425	16,592	0	0	0	0
1972	0	14,434	14,434	598,702	924,688	496,855	231,676	87,635	163,135	489,226	0	21,952
1973	0	14,449	14,449	493,490	682,392	377,642	300,158	272,133	431,162	1,512,539	0	217,727
1974	0	17,473	17,473	565,575	767,187	437,319	341,710	347,690	585,437	2,046,673	0	313,857
1975	0	14,779	14,779	349,758	1,327,457	512,549	539,732	582,789	1,126,459	3,928,523	0	575,535
1976	0	20,856	20,856	571,361	1,470,517	561,606	607,013	598,520	1,219,366	4,225,813	0	866,328
1977	0	22,586	22,586	511,808	797,097	204,245	163,637	170,409	347,159	1,143,952	0	292,871
1978	0	20,682	20,682	543,163	1,904,613	663,959	644,511	553,136	1,144,504	3,998,101	0	950,057
1979	0	18,803	18,803	572,640	3,587,239	1,089,520	1,107,681	1,007,620	2,274,603	8,036,001	0	2,067,344
1980	0	22,818	22,818	636,736	2,429,994	1,853,368	1,495,231	1,434,184	2,828,631	9,583,398	0	2,730,490
1981	0	21,383	21,383	663,491	3,713,408	1,875,059	1,675,766	1,634,016	3,455,674	11,786,101	0	2,903,464
1982	0	21,391	21,391	654,101	3,095,408	2,025,765	1,768,905	1,731,066	3,652,160	12,407,431	0	2,919,063
1983	0	132,338	132,338	2,488,923	14,644,398	6,804,743	7,337,541	7,058,964	15,871,349	55,517,061	0	11,330,985
1984	164,984	154,266	319,250	2,894,401	18,878,802	8,517,776	9,408,850	9,051,492	20,463,414	72,158,045	-1,905,484	13,870,674
1985	180,030	171,993	352,023	2,956,970	19,340,231	8,724,922	9,472,772	9,029,391	20,378,558	71,551,853	-1,786,115	13,073,381
1986	208,934	183,997	392,931	3,104,620	21,022,688	9,488,685	10,203,777	9,690,692	21,878,313	76,648,023	-2,069,714	13,902,551
1987	237,958	192,004	429,962	3,138,114	21,939,122	9,923,568	10,676,561	10,101,399	22,811,809	79,754,105	-1,935,968	13,921,912
1988	310,809	208,004	518,813	3,331,515	23,819,573	10,759,919	11,580,390	10,915,516	24,676,971	86,120,938	-2,363,927	14,817,956
1989	373,805	219,005	592,810	3,431,887	25,993,365	12,052,532	13,544,483	12,911,492	29,331,817	102,731,138	-2,366,894	14,988,040
1990	436,797	225,000	661,797	3,539,317	27,658,495	12,862,166	14,619,151	13,974,888	31,801,678	111,369,500	-2,172,672	15,172,157
1991	445,764	241,002	686,766	3,686,759	28,376,290	13,154,743	15,054,693	14,417,332	32,832,092	115,094,491	-2,575,802	15,422,087
1992	450,800	256,200	707,000	3,817,727	28,193,035	12,170,952	14,971,566	14,326,993	32,985,417	116,791,893	-2,266,095	15,262,535
1993	449,823	265,205	715,028	3,877,964	28,096,147	12,124,744	14,980,150	14,353,129	33,062,320	117,139,370	-2,201,041	14,905,891
1994	474,691	290,197	764,888	4,147,417	29,745,418	12,806,124	15,898,304	15,256,973	35,164,215	124,668,371	-2,325,020	15,435,987
1995	477,724	303,199	780,923	4,176,800	30,105,382	12,920,204	16,128,080	15,497,950	35,737,900	126,794,932	-2,284,780	15,598,319
1996	480,753	317,196	797,949	4,182,024	29,960,538	12,906,984	16,146,935	15,529,011	35,817,580	127,117,570	-2,144,472	15,475,692
1997	493,708	338,198	831,906	4,289,032	30,588,247	13,183,826	16,532,332	15,910,740	36,708,256	130,327,558	-2,478,883	15,460,054
1998	498,689	352,208	850,897	4,268,352	30,489,349	13,126,310	16,452,835	15,832,301	36,533,301	129,698,969	-2,360,004	15,571,577
1999	509,683	373,196	882,879	4,312,531	31,307,465	13,474,961	16,994,476	16,381,746	37,821,342	134,390,126	-2,191,903	15,678,817
2000	511,724	384,203	895,927	4,270,420	31,169,740	13,430,686	16,968,009	16,367,247	37,794,026	134,331,607	-2,342,754	15,473,444
2001	517,695	393,202	910,897	4,300,124	31,492,006	13,569,479	17,154,511	16,551,182	38,220,810	135,860,713	-2,597,120	15,612,483
2002	523,643	400,192	923,835	4,335,280	32,137,955	13,857,007	17,608,418	17,010,072	39,305,563	139,806,663	-2,540,580	15,861,678
2003	527,644	406,193	933,837	4,349,944	32,108,741	13,844,014	17,542,385	16,940,787	39,136,701	139,167,134	-2,293,344	15,821,018
2004	531,605	413,193	944,798	4,371,564	32,743,560	14,119,516	18,004,250	17,409,887	40,242,524	143,211,109	-2,162,419	15,778,469
2005	529,664	415,205	944,869	4,338,289	32,569,734	14,051,859	17,921,828	17,335,798	40,073,713	142,623,942	-2,514,661	15,871,554
2006	529,693	420,203	949,896	4,314,788	32,811,765	14,160,112	18,159,531	17,587,051	40,678,330	144,866,100	-2,184,163	15,732,859
2007	538,639	433,193	971,832	4,364,795	33,382,004	14,412,123	18,527,593	17,957,090	41,538,787	147,966,029	-2,251,494	15,879,342
2008	540,615	440,202	980,817	4,349,004	33,443,373	14,437,615	18,605,115	18,038,628	41,733,935	148,703,923	-2,229,820	15,888,245
2009	544,616	449,207	993,823	4,358,780	33,725,439	14,570,828	18,824,671	18,264,457	42,266,535	150,647,425	-2,701,913	15,944,802
2010	545,661	455,194	1,000,855	4,337,349	33,800,798	14,599,927	18,916,854	18,363,715	42,511,468	151,564,097	-2,222,510	15,752,249
2011	547,673	463,200	1,010,873	4,333,400	34,026,716	14,701,749	19,112,441	18,565,413	42,992,145	153,332,597	-2,595,052	15,850,980
2012	557,633	477,204	1,034,837	4,385,288	34,451,389	14,884,394	19,349,509	18,799,212	43,529,376	155,252,438	-2,557,984	15,982,422
2013	563,609	487,207	1,050,816	4,395,064	34,946,491	15,101,454	19,726,607	19,187,882	44,446,284	158,612,111	-2,362,810	16,063,105
2014	561,608	491,191	1,052,799	4,355,960	34,354,897	14,846,942	19,332,319	18,788,903	43,517,330	155,234,793	-2,521,524	15,933,279
2015	563,657	498,204	1,061,861	4,342,236	34,486,095	14,906,139	19,467,976	18,932,243	43,857,036	156,501,038	-2,237,419	15,771,059
2016	574,595	514,199	1,088,794	4,399,951	34,987,692	15,126,451	19,766,083	19,226,623	44,537,094	158,938,650	-2,288,189	16,078,122
2017	571,623	517,205	1,088,828	4,345,056	34,101,990	14,737,882	19,149,571	18,604,234	43,078,081	153,639,023	-2,349,008	15,855,412
2018	574,620	526,207	1,100,827	4,343,176	34,579,272	14,937,466	19,523,779	18,989,467	43,992,873	156,994,844	-2,244,822	15,880,231
2019	584,611	542,197	1,126,808	4,392,056	34,915,279	15,097,868	19,727,546	19,187,564	44,451,934	158,628,558	-2,287,102	16,007,591
2020(f	589,213	551,264	1,140,477	4,394,124	36,640,644	15,223,112	19,953,469	19,422,085	45,000,323	160,643,015	-2,316,747	16,039,017

a) Costs for the period 1968 through 1983 are for an interim facility.

b) The relatively minor estimated costs of Del Valle Pumping Plant have been combined with those of South Bay Pumping Plant to simplify the allocation procedure.

c) Includes extra peaking costs assigned directly to Kern County Water Agency and to Hacienda Water District. Refer to Appendix B text "Project Water Charges, Variable OMP&R Components".

THRU VARIABLE OMP&R COMPONENT OF TRANSPORTATION CHARGE

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)											GRAND TOTAL
	Reach 24 Silverwood Lake (d	Reach 26A Devil Canyon Powerplant	Reach 28J Lake Perris (d	Reach 29A Oso Pumping Plant	Reach 29G Pyramid Powerplant	Reach 29H Pyramid Lake (d	Reach 29J Castaic Powerplant	Reach 30 Castaic Lake (d	Reach 31A Las Perillas and Badger Hill Pumping Plants (e	Reach 33A Devil's Den Sawtooth and Polonio PP's and San Luis Obispo Pwp	Total	
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	36,970
1963	0	0	0	0	0	0	0	0	0	0	0	57,711
1964	0	0	0	0	0	0	0	0	0	0	0	74,134
1965	0	0	0	0	0	0	0	0	0	0	0	142,609
1966	0	0	0	0	0	0	0	0	0	0	0	192,605
1967	0	0	0	0	0	0	0	0	0	0	13,881	236,998
1968	0	0	0	0	0	0	0	0	118,676	0	770,703	1,114,363
1969	0	0	0	0	0	0	0	0	78,350	0	503,107	769,237
1970	0	0	0	0	0	0	0	0	136,429	0	689,433	1,099,389
1971	0	0	0	0	0	0	0	0	166,296	0	1,114,107	1,506,378
1972	4,056	-3,024	0	91,724	0	3,532	-193,058	71,472	237,638	0	2,627,507	3,240,643
1973	47,486	-438,508	0	155,530	0	7,281	-905,940	0	120,913	0	2,780,515	3,288,454
1974	97,590	-498,163	52,000	186,988	0	42,087	-1,296,188	6,595	118,582	0	3,549,364	4,132,412
1975	25,861	-1,034,732	65,520	346,468	0	0	-2,304,962	10,729	94,848	0	5,796,776	6,161,313
1976	122,099	-1,463,181	103,811	243,678	0	59,956	-2,240,125	915,591	141,229	0	7,432,221	8,024,438
1977	258,082	-1,118,254	48,809	17,635	0	0	-1,457,247	-5,614,431	62,737	0	-4,683,299	-4,148,905
1978	0	-3,062,243	0	67,605	0	1,115,875	-921,870	0	178,315	0	7,236,563	7,800,408
1979	187,098	-3,946,687	80,139	233,857	0	0	-2,918,415	138,289	185,611	0	13,129,900	13,721,343
1980	0	-4,542,579	0	359,892	0	0	-2,838,565	159,682	210,946	0	15,704,672	16,364,226
1981	0	-3,038,283	1,207,083	471,427	0	0	-1,880,252	0	218,884	0	24,022,347	24,707,221
1982	0	-4,048,460	0	569,873	-902,142	0	-2,398,090	102,273	216,605	0	21,139,857	21,815,349
1983	22,085	-18,671,662	1,249,944	1,980,865	-6,372,429	0	-9,015,586	650,928	722,490	0	89,131,676	91,752,937
1984	463,908	-25,505,615	0	2,774,358	-10,614,877	0	-13,314,838	0	859,850	0	105,106,355	108,320,006
1985	69,795	-23,093,500	1,026,275	2,973,173	-10,461,416	0	-13,252,497	0	863,759	0	107,910,582	111,219,575
1986	0	-23,574,370	0	3,196,040	-10,884,371	0	-13,308,885	8,080	1,046,180	855,420	118,103,109	121,600,660
1987	81,508	-23,292,657	354,856	3,539,536	-11,176,127	0	-14,708,690	259,356	1,054,181	898,112	124,202,583	127,770,659
1988	0	-23,613,860	19,333	3,875,635	-11,757,330	0	-15,590,286	850,050	1,114,471	1,012,163	136,237,512	140,087,840
1989	0	-23,650,051	218,610	5,881,210	-13,609,103	0	-20,362,571	456,765	1,130,515	1,078,030	160,329,378	164,354,075
1990	683,597	-23,116,651	0	6,853,479	-14,189,815	0	-23,455,880	0	1,147,294	1,143,986	174,351,373	178,552,487
1991	0	-23,307,757	0	7,159,703	-13,879,800	0	-22,925,706	602,515	1,173,245	1,265,433	181,863,559	186,237,084
1992	0	-23,920,110	0	7,050,307	-14,557,788	0	-24,937,950	391,419	1,196,108	1,384,136	179,042,418	183,567,145
1993	0	-22,038,631	576,759	7,242,948	-13,967,171	0	-24,722,253	327,851	1,194,632	1,503,955	182,578,800	187,171,792
1994	711,712	-23,554,536	571,698	7,894,285	-21,032,546	0	-26,972,863	0	1,261,884	1,674,437	187,204,443	192,116,748
1995	0	-23,605,120	0	8,084,641	-20,687,607	0	-26,183,456	714,763	1,273,313	1,776,654	191,871,175	196,828,898
1996	0	-22,777,407	0	8,176,868	-20,649,897	0	-28,326,472	802,820	1,281,599	1,890,280	191,207,629	196,187,602
1997	43,431	-22,584,503	1,072,329	8,550,716	-20,370,023	0	-29,279,726	0	1,318,804	2,045,633	197,028,791	202,149,729
1998	0	-22,687,575	209,202	8,428,635	-19,900,833	0	-27,770,368	2,307,665	1,323,683	2,109,139	199,364,186	204,483,435
1999	629,534	-23,037,216	0	8,938,735	-21,160,504	0	-28,514,927	0	1,355,656	2,256,937	204,325,245	209,520,655
2000	0	-23,103,375	710,480	9,018,909	-21,435,248	0	-28,288,370	0	1,359,940	2,348,267	203,802,608	208,968,955
2001	830,511	-22,529,860	0	9,135,988	-21,516,503	0	-31,664,846	1,139,226	1,383,278	2,444,628	205,086,486	210,297,507
2002	0	-23,526,181	0	9,502,849	-21,320,778	0	-31,472,762	0	1,405,517	2,467,598	210,103,019	215,362,134
2003	0	-23,004,356	444,785	9,430,986	-20,701,324	0	-31,195,980	2,590,886	1,422,883	2,616,478	213,871,794	219,155,575
2004	773,631	-23,183,952	438,230	9,927,832	-21,530,215	0	-30,367,207	0	1,441,092	2,721,444	219,567,751	224,884,113
2005	0	-22,976,671	0	9,823,557	-20,918,454	0	-30,853,665	1,970,961	1,443,428	2,742,701	219,165,624	224,448,782
2006	246	-22,852,000	249,816	10,158,009	-21,384,349	0	-32,993,376	0	1,436,750	2,736,330	219,163,011	224,427,695
2007	530,616	-23,115,565	16,220	10,463,485	-21,955,330	0	-35,383,016	0	1,455,995	2,793,345	222,217,224	227,553,851
2008	105,569	-22,319,657	23,161	10,552,191	-20,729,886	0	-33,551,633	582,156	1,453,315	2,795,036	227,531,266	232,861,087
2009	0	-23,349,143	0	10,763,794	-21,517,957	0	-34,347,474	578,270	1,458,659	2,832,229	227,960,622	233,313,225
2010	319,562	-22,548,697	323,356	10,956,996	-21,791,573	0	-33,456,500	0	1,454,811	2,811,383	231,355,936	236,694,140
2011	0	-22,273,741	0	11,134,001	-21,931,526	0	-35,394,097	0	1,452,894	2,811,383	231,785,903	237,130,176
2012	365,015	-21,129,203	0	11,300,555	-21,410,989	0	-36,389,356	1,532,766	1,469,955	2,869,713	238,299,212	243,719,337
2013	0	-22,669,998	71,573	11,674,670	-21,851,049	0	-36,481,502	0	1,474,750	2,868,236	240,807,804	246,253,684
2014	0	-21,951,465	0	11,326,714	-20,561,481	0	-34,459,820	2,542,379	1,460,557	2,880,536	240,724,359	246,133,118
2015	624,733	-22,705,619	77,307	11,549,501	-21,985,472	0	-35,524,480	0	1,456,529	2,824,141	238,000,807	243,404,904
2016	0	-22,085,849	79,238	11,706,134	-22,113,107	0	-36,835,617	0	1,475,709	2,886,686	241,485,720	246,974,465
2017	251,200	-22,769,497	0	11,165,552	-20,936,584	0	-34,155,100	3,984,712	1,456,529	2,841,546	238,655,543	244,089,427
2018	65,780	-22,519,857	0	11,564,825	-21,882,285	0	-34,511,430	0	1,456,529	2,825,186	239,651,858	245,095,861
2019	373,301	-22,222,262	0	11,699,034	-22,070,265	0	-36,765,198	0	1,472,640	2,880,536	241,097,024	246,615,888
2020(f	0	-22,254,990	0	11,933,819	-22,062,056	0	-36,737,531	0	1,472,640	2,881,520	245,838,320	251,372,921

d) These values represent a proportionate allocation of the total variable OMP&R costs of pumping and power recovery plants (Table B-3) associated with net annual withdrawals from reservoir storage for the project transportation facilities. The allocation is determined annually by applying the following ratio, calculated from the data shown in Table B-6: "Reservoir Storage Changes" (withdrawals, as a positive value) conveyed through each plant, in acre-feet ÷ "Total" annual quantity conveyed through each plant, in acre-feet. The costs so determined are accumulated for all upstream plants for each year, for each respective reservoir.

e) Includes extra peaking costs assigned directly to Kern County Water Agency. Refer to Appendix B text "Project Water Charges, Variable OMP&R Components".

f) And each year thereafter for the remainder of the project repayment period.

TABLE B-13: CAPITAL AND OPERATING COSTS OF PROJECT CONSERVATION

(in

Calendar Year	INITIAL PROJECT CONSERVATION FACILITIES (Portions of Upper Feather Lakes, Oroville-Thermalito Facilities Delta Facilities and California Aqueduct)					ADDITIONAL PROJECT		
	Capital Costs (a	Capital Cost Credits (b	Operating Costs (c	Application of Oroville Power Revenues to:		Planning and Pre-operating Costs (a & (d	Ground Water Storage	
				Capital Costs	Operating Costs		Capital Costs	Operating Costs
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1952	171,322	0	0	0	0	0	0	0
1953	312,190	0	0	0	0	0	0	0
1954	308,624	0	0	0	0	0	0	0
1955	194,645	0	0	0	0	0	0	0
1956	1,357,077	0	0	0	0	0	0	0
1957	6,210,803	0	0	0	0	0	0	0
1958	9,511,018	0	0	0	0	0	0	0
1959	11,391,123	0	0	0	0	0	0	0
1960	14,439,800	-4,850,000	0	0	0	0	0	0
1961	18,514,555	-431,527	0	0	0	0	0	0
1962	8,713,889	-479,280	0	0	0	0	0	0
1963	72,428,832	-478,743	-14,000	0	0	0	0	0
1964	62,421,968	-751,330	-14,000	0	0	107,780	0	0
1965	70,751,205	-763,541	-14,000	0	0	551,850	0	0
1966	130,514,493	-748,649	-14,000	0	0	1,081,023	0	0
1967	93,615,331	-812,145	-11,282	0	0	1,189,212	0	0
1968	39,262,202	-409,386	1,307,480	-951,000	0	793,399	0	0
1969	4,848,969	-245,732	2,894,677	-11,007,000	0	601,867	0	0
1970	3,841,837	-192,432	4,823,805	-14,650,000	-1,500,000	516,659	0	0
1971	3,588,029	-187,320	6,030,992	-14,650,000	-1,500,000	408,754	0	0
1972	4,238,598	-196,361	5,383,280	-14,650,000	-1,500,000	287,321	0	0
1973	3,515,321	-136,203	6,081,341	-14,650,000	-1,500,000	203,335	0	0
1974	5,454,533	-134,426	6,922,713	-17,950,000	-1,500,000	206,251	0	0
1975	6,423,165	-232,065	7,666,106	-14,650,000	-1,500,000	149,940	0	0
1976	4,523,340	-132,788	7,129,690	-14,650,000	-1,500,000	57,051	0	0
1977	20,311,968	0	11,451,781	-14,650,000	-1,500,000	3,036	0	0
1978	5,931,761	0	15,994,015	-14,650,000	-1,500,000	4,546	0	0
1979	7,988,633	0	13,286,101	-14,650,000	-1,500,000	3,099,135	0	0
1980	4,574,456	0	15,211,267	-14,650,000	-1,500,000	3,397,685	0	0
1981	7,843,683	0	14,442,247	-14,650,000	-1,500,000	3,204,981	1,141,859	0
1982	9,566,574	0	13,162,938	-14,650,000	-1,500,000	2,576,624	2,143,139	0
1983	23,536,620	0	7,060,427	-29,163,000	-3,720,000	2,131,248	6,061,481	0
1984	53,430,707	0	13,953,705	-15,427,000	-4,604,000	1,609,364	11,885,875	0
1985	47,172,523	0	11,789,767	-15,427,000	-4,605,000	1,088,095	17,760,000	2,486,839
1986	30,915,906	0	9,476,823	-15,427,000	-4,614,000	570,689	15,460,000	2,474,725
1987	16,955,427	0	15,764,630	-15,427,000	-4,613,000	519,375	1,630,000	2,352,416
1988	15,772,803	0	22,684,126	-15,427,000	-4,626,000	518,933	23,880,000	2,360,186
1989	28,434,042	0	13,185,462	-15,426,000	-4,627,000	517,735	30,640,000	2,404,049
1990	34,218,009	0	13,462,567	-15,427,000	-4,628,000	513,550	44,120,000	2,452,117
1991	19,022,239	0	15,165,500	-15,427,000	-4,630,000	513,735	41,350,000	2,434,363
1992	4,596,700	0	14,983,975	-15,427,000	-4,630,000	514,665	26,910,000	2,382,280
1993	1,347,190	0	14,181,111	-15,427,000	-4,626,000	510,980	26,990,000	2,349,037
1994	1,339,020	0	18,653,526	-15,427,000	-4,638,000	513,674	10,790,000	2,342,430
1995	1,336,010	0	16,690,358	-15,427,000	-4,637,000	513,069	0	5,879,766
1996	8,600	0	15,036,871	-15,427,000	-4,634,000	0	0	5,928,096
1997	5,590	0	10,127,236	-15,427,000	-4,639,000	0	0	5,940,560
1998	4,300	0	15,915,248	-15,427,000	-4,637,000	0	0	5,940,568
1999	0	0	16,815,761	-15,427,000	-4,640,000	0	0	5,938,867
2000	0	0	15,846,301	-15,427,000	-4,637,000	0	0	5,938,867
2001	0	0	16,761,374	-15,427,000	-4,640,000	0	0	5,938,867
2002	0	0	15,813,858	-15,427,000	-4,642,000	0	0	5,938,867
2003	0	0	15,315,195	-15,427,000	-4,643,000	0	0	5,938,867
2004	0	0	14,137,386	-15,427,000	-4,644,000	0	0	5,938,867
2005	0	0	15,574,667	-15,427,000	-4,642,000	0	0	5,938,867
2006	0	0	19,148,370	-15,427,000	-4,640,000	0	0	5,938,867
2007	0	0	17,909,681	-15,427,000	-4,644,000	0	0	5,938,867
2008	0	0	14,628,174	-15,427,000	-4,643,000	0	0	5,938,867
2009	0	0	16,816,479	-15,427,000	-4,643,000	0	0	5,938,867
2010	0	0	17,156,771	-15,427,000	-4,642,000	0	0	5,938,867
2011	0	0	23,185,045	-15,427,000	-4,642,000	0	0	5,938,867
2012	0	0	17,957,591	-15,427,000	-4,645,000	0	0	5,938,867
2013	0	0	19,005,509	-15,427,000	-4,646,000	0	0	5,938,867
2014	0	0	16,347,934	-15,427,000	-4,643,000	0	0	5,938,867
2015	0	0	19,670,605	-15,427,000	-4,642,000	0	0	5,938,867
2016	0	0	16,715,640	-15,427,000	-4,646,000	0	0	5,938,867
2017	0	0	17,377,513	-15,427,000	-4,642,000	0	0	5,938,867
2018	0	0	21,080,110	-15,427,000	-4,642,000	0	0	5,938,867
2019	0	0	14,849,781	-15,427,000	-4,646,000	0	0	5,938,867
2020	0	0	17,258,025	-15,427,000	-4,646,000	0	0	5,938,867
2021	0	0	17,258,025	-15,427,000	-4,646,000	0	0	5,938,867
2022	0	0	16,889,073	-15,427,000	-4,646,000	0	0	5,938,867
2023	0	0	16,889,073	-15,427,000	-4,646,000	0	0	5,938,867
2024	0	0	16,889,073	-15,427,000	-4,646,000	0	0	5,938,867
2025	0	0	16,889,073	-15,427,000	-4,646,000	0	0	5,938,867
2026	0	0	16,889,073	-15,427,000	-4,646,000	0	0	5,938,867
2027	0	0	16,558,336	-15,427,000	-4,646,000	0	0	5,938,867
2028	0	0	16,558,336	-15,427,000	-4,646,000	0	0	5,938,867
2029	0	0	16,558,336	-15,427,000	-4,646,000	0	0	5,938,867
2030	0	0	16,558,336	-15,427,000	-4,646,000	0	0	5,938,867
2031	0	0	16,558,336	-15,427,000	-4,646,000	0	0	5,938,867
2032	0	0	15,625,955	-15,427,000	-4,646,000	0	0	5,938,867
2033	0	0	15,625,955	-15,427,000	-4,646,000	0	0	5,938,867
2034	0	0	15,625,955	-15,427,000	-4,646,000	0	0	5,938,867
2035	0	0	15,625,955	-15,427,000	-4,646,000	0	0	5,938,867
TOTAL 1952-2035	910,865,630	-11,181,928	986,223,143	-1,037,074,000	-264,438,000	28,475,561	260,762,354	267,465,511

a) Reimbursed thru payments of the capital cost component of the Delta Water Charge, except for a portion of the costs of the Initial Project Conservation Facilities that will be reimbursed through project power revenues shown in column 4.

b) Negotiated settlements as to the magnitude of project planning costs from 1952 through 1976 to be reimbursed through water charges. Credits are applied to the reimbursable capital costs of the Initial Conservation Facilities.

FACILITIES TO BE REIMBURSED THRU DELTA WATER CHARGE

dollars)

CONSERVATION FACILITIES						Total	Calendar Year
Los Vaqueros Reservoir		Glenn Reservoir Complex		Cottonwood Creek Project			
Capital Costs	Operating Costs	Capital Costs	Operating Costs	Capital Costs	Operating Costs		
(9)	(10)	(11)	(12)	(13)	(14)	(15)	
0	0	0	0	0	0	171,322	1952
0	0	0	0	0	0	312,190	1953
0	0	0	0	0	0	308,624	1954
0	0	0	0	0	0	194,645	1955
0	0	0	0	0	0	1,357,077	1956
0	0	0	0	0	0	6,210,803	1957
0	0	0	0	0	0	9,511,018	1958
0	0	0	0	0	0	11,391,123	1959
0	0	0	0	0	0	9,589,800	1960
0	0	0	0	0	0	18,083,028	1961
0	0	0	0	0	0	8,234,609	1962
0	0	0	0	0	0	71,936,089	1963
0	0	0	0	0	0	61,764,418	1964
0	0	0	0	0	0	70,525,514	1965
0	0	0	0	0	0	130,832,867	1966
0	0	0	0	0	0	93,981,116	1967
0	0	0	0	0	0	40,002,695	1968
0	0	0	0	0	0	-2,907,219	1969
0	0	0	0	0	0	-7,160,131	1970
0	0	0	0	0	0	-6,309,545	1971
0	0	0	0	0	0	-6,437,162	1972
0	0	0	0	0	0	-6,486,206	1973
0	0	0	0	0	0	-7,000,929	1974
0	0	0	0	0	0	-2,142,854	1975
0	0	0	0	0	0	-4,572,707	1976
0	0	0	0	0	0	15,616,785	1977
0	0	0	0	0	0	5,780,322	1978
0	0	0	0	0	0	8,223,869	1979
0	0	0	0	0	0	7,033,408	1980
0	0	0	0	0	0	10,482,770	1981
2,916,478	0	0	0	0	0	14,215,753	1982
3,627,264	0	0	0	0	0	9,534,040	1983
9,520,283	0	0	0	0	0	70,368,934	1984
19,913,711	0	5,510,000	0	0	0	85,688,935	1985
28,524,723	0	11,132,852	0	0	0	78,514,718	1986
36,927,252	0	20,824,344	0	0	0	74,933,444	1987
36,773,292	0	58,909,595	0	0	813,685	141,659,620	1988
2,819,125	2,459,957	140,637,627	0	29,983,000	811,809	231,839,806	1989
1,045,000	2,376,190	148,461,727	0	29,983,000	805,247	257,382,407	1990
486,875	2,388,892	153,653,247	0	29,983,000	805,538	245,746,389	1991
0	2,386,098	278,395,339	0	29,983,000	806,994	340,902,051	1992
0	2,349,758	155,515,000	9,689,312	29,983,000	801,217	223,663,605	1993
0	2,435,940	164,350,000	9,434,814	29,983,000	805,440	220,582,844	1994
0	2,429,511	169,100,000	11,682,204	29,983,000	804,492	218,354,410	1995
0	2,418,058	57,000,000	11,372,217	29,983,000	811,104	102,496,946	1996
0	2,449,378	57,000,000	11,295,220	29,983,000	812,810	97,547,794	1997
0	2,440,380	6,365,000	29,594,252	29,983,000	812,812	70,991,560	1998
0	2,455,517	2,470,000	29,902,520	29,983,000	812,578	68,311,243	1999
0	2,436,878	0	28,303,770	29,983,000	812,578	63,257,394	2000
0	2,455,007	0	29,111,612	29,983,000	812,578	64,995,438	2001
0	2,470,007	0	34,544,612	29,983,000	812,578	69,493,922	2002
0	2,477,756	0	35,160,461	29,983,000	812,578	69,617,857	2003
0	2,486,756	0	36,145,461	29,983,000	812,578	69,433,048	2004
0	2,472,756	0	36,065,461	29,983,000	812,578	70,778,329	2005
0	2,461,756	0	30,625,461	29,983,000	812,578	68,903,032	2006
0	2,484,136	0	25,469,455	29,983,000	812,578	62,526,717	2007
0	2,493,299	0	25,541,959	29,983,000	812,578	59,327,877	2008
0	2,556,044	0	26,153,552	29,983,000	812,578	62,190,520	2009
0	2,513,508	0	25,787,338	29,983,000	812,578	62,123,062	2010
0	2,530,785	0	25,973,013	29,983,000	812,578	68,354,288	2011
0	2,550,437	0	25,858,900	29,983,000	812,578	63,029,373	2012
0	2,538,536	0	25,847,149	29,983,000	812,578	64,052,639	2013
0	2,480,756	0	25,371,461	29,983,000	812,578	60,864,596	2014
0	2,473,756	0	25,354,461	29,983,000	812,578	64,164,267	2015
0	2,500,756	0	25,422,461	29,983,000	812,578	61,300,302	2016
0	2,475,756	0	25,358,461	29,983,000	812,578	61,877,175	2017
0	2,473,756	0	25,357,461	29,983,000	812,578	65,576,772	2018
0	2,496,756	0	25,413,461	29,983,000	812,578	59,421,443	2019
0	2,497,756	0	25,416,461	29,983,000	812,578	61,833,687	2020
0	2,497,756	0	25,416,461	29,983,000	812,578	61,833,687	2021
0	2,497,756	0	25,416,461	29,983,000	812,578	61,464,735	2022
0	2,497,756	0	25,416,461	29,983,000	812,578	61,464,735	2023
0	2,497,756	0	25,416,461	29,983,000	812,578	61,464,735	2024
0	2,497,756	0	25,416,461	29,983,000	812,578	61,464,735	2025
0	2,497,756	0	25,416,461	29,983,000	812,578	61,464,735	2026
0	2,497,756	0	25,416,461	29,983,000	812,578	61,133,998	2027
0	2,497,756	0	25,416,461	29,983,000	812,578	61,133,998	2028
0	2,497,756	0	25,416,461	29,983,000	812,578	61,133,998	2029
0	2,497,756	0	25,416,461	29,983,000	812,578	61,133,998	2030
0	2,497,756	0	25,416,461	29,983,000	812,578	61,133,998	2031
0	2,497,756	0	25,416,461	29,983,000	812,578	60,201,617	2032
0	2,497,756	0	25,416,461	29,983,000	812,578	60,201,617	2033
0	2,497,756	0	25,416,461	29,983,000	812,578	60,201,617	2034
0	2,497,756	0	25,416,461	29,983,000	812,578	60,201,617	2035
142,554,003	116,382,972	1,429,324,731	1,082,499,885	1,409,201,000	38,956,534	5,360,017,396	

c) Reimbursed through payments of the minimum OMP&R component of the Delta Water Charge, except for those costs that will be reimbursed through project power revenues shown in column 5. San Luis power credits are included in these costs.

d) Under the long-term amendments of Articles 22(e) and 22(g), those planning and pre-operating costs of Additional Project Conservation Facilities which are incurred through the previous year (1978) will be included in current calculations of the Delta Water Charge.

TABLE B-14: CAPITAL COSTS OF TRANSPORTATION

(in dollars)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC & WCD	Solano County FC & WCD	Total	Alameda County FC & WCD Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC & WCD	Santa Barbara County FC & WCD	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1952	0	0	0	83	99	410	592	122	287	409
1953	0	0	0	324	407	1,809	2,540	340	795	1,135
1954	0	0	0	819	1,089	5,151	7,059	427	996	1,423
1955	0	0	0	977	1,322	6,298	8,597	213	499	712
1956	0	0	0	8,845	12,070	63,816	84,731	228	534	762
1957	16,594	10,040	26,634	21,564	29,314	649,599	700,477	295	688	983
1958	35,437	14,574	50,011	67,765	67,956	733,416	869,137	731	1,704	2,435
1959	21,488	5,800	27,288	154,259	142,963	493,061	790,283	22,750	59,632	82,382
1960	10,049	7,878	17,927	296,499	274,644	1,018,678	1,589,821	32,669	86,183	118,852
1961	7,250	7,145	14,395	853,511	797,754	1,914,724	3,565,989	14,610	36,575	51,185
1962	-197	-923	-1,120	545,147	576,593	1,686,095	2,807,835	19,304	46,087	65,391
1963	1,559	871	2,430	657,505	1,077,966	3,244,012	4,979,483	72,916	171,998	244,914
1964	42,604	31,255	73,859	712,837	1,244,232	7,247,341	9,204,410	145,893	343,988	489,881
1965	206,465	54,589	261,054	361,014	468,339	3,414,971	4,244,324	260,537	612,496	873,033
1966	467,845	43,691	511,536	593,057	562,541	2,245,949	3,401,547	599,873	1,403,927	2,003,800
1967	1,574,452	35,425	1,609,877	797,382	772,456	2,402,710	3,972,548	945,807	2,211,809	3,157,616
1968	867,044	54,260	921,304	736,727	681,581	1,998,485	3,416,793	357,494	837,236	1,194,730
1969	81,172	52,534	133,706	269,840	258,284	765,262	1,293,386	82,761	194,974	277,735
1970	49,950	61,288	111,238	58,767	56,935	135,765	251,467	53,273	126,052	179,325
1971	29,314	31,501	60,815	12,090	14,389	84,098	110,577	35,878	86,109	121,987
1972	21,397	17,145	38,542	12,297	11,729	63,626	87,652	23,035	54,787	77,822
1973	58,812	28,607	87,419	10,511	10,543	39,451	60,505	26,095	62,005	88,100
1974	173,332	57,771	231,103	16,012	18,107	74,517	108,636	28,073	66,207	94,280
1975	101,539	78,418	179,957	16,865	15,725	42,039	74,629	21,352	52,840	74,192
1976	64,198	75,754	139,952	41,284	39,689	127,493	208,466	52,819	131,484	184,303
1977	73,511	67,649	141,160	39,392	37,058	119,228	195,678	118,756	279,503	398,259
1978	68,366	65,244	133,610	58,211	53,764	146,758	258,733	28,006	66,740	94,746
1979	493,153	378,233	871,386	19,529	17,892	44,990	82,411	119,224	361,334	480,558
1980	550,307	404,171	954,478	27,353	25,029	63,192	115,574	425,306	1,270,565	1,695,871
1981	550,093	446,182	996,275	34,042	31,183	76,382	141,607	655,576	1,978,938	2,634,514
1982	2,729,502	2,918,923	5,648,425	13,810	12,626	30,088	56,524	2,473,246	6,421,357	8,894,603
1983	6,408,005	6,893,229	13,301,234	28,246	25,825	61,540	115,611	9,279,327	25,589,899	34,869,226
1984	1,774,947	1,843,053	3,618,000	61,361	56,103	133,690	251,154	11,370,747	32,101,753	43,472,500
1985	298,268	293,732	592,000	48,529	44,370	105,733	198,632	7,273,743	20,147,789	27,421,532
1986	51,410	59,590	111,000	12,570	11,493	27,387	51,450	960,570	2,640,282	3,600,852
1987	15,545	17,455	33,000	217	199	473	889	402,357	1,110,261	1,512,618
1988	3,981	6,019	10,000	6	6	14	26	21,271	61,043	82,314
1989	2,786	4,214	7,000	51	47	111	209	5,766	17,575	23,341
1990	398	602	1,000	64	58	139	261	2,517	5,879	8,396
1991	0	0	0	64	58	139	261	1,465	3,423	4,888
TOTAL	16,850,576	14,065,919	30,916,495	6,589,426	7,452,438	29,268,640	43,310,504	35,935,372	98,646,233	134,581,605

FACILITIES ALLOCATED TO EACH CONTRACTOR

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA									
	Devil's Den Water District[a]	Dudley Ridge Water District	Empire West Side Irrigation District[b]	Hacienda Water District	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
					Municipal and Industrial	Agricultural				
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1952	87	397	19	60	956	9,434	19	13	739	11,724
1953	243	1,094	55	160	2,953	28,322	57	33	2,032	34,949
1954	303	1,374	68	203	3,447	33,457	70	43	2,559	41,524
1955	153	686	37	100	1,529	15,200	37	22	1,292	19,056
1956	163	738	34	109	2,772	25,118	34	26	1,330	30,324
1957	209	950	38	139	6,222	51,819	39	30	1,596	61,042
1958	521	2,348	103	347	14,790	123,516	105	61	4,098	145,889
1959	3,719	7,471	367	1,100	26,825	261,557	375	383	13,823	315,620
1960	5,426	13,076	636	1,926	34,699	362,119	650	500	24,023	443,055
1961	5,932	22,225	1,081	3,273	52,538	556,639	1,104	601	40,833	684,226
1962	11,799	49,971	2,439	7,361	96,477	1,047,126	2,495	1,887	92,030	1,311,585
1963	48,348	211,737	10,837	31,193	369,721	4,051,314	11,087	6,015	400,165	5,140,417
1964	96,788	332,515	17,178	48,984	609,318	6,822,402	17,572	11,993	631,660	8,588,410
1965	175,614	545,155	27,831	80,308	1,116,746	12,332,924	28,474	21,895	1,028,866	15,357,813
1966	415,524	1,126,322	53,409	165,921	2,259,670	25,635,224	54,630	39,056	2,042,412	31,792,168
1967	656,115	865,066	40,071	127,435	2,049,601	24,276,703	40,989	34,923	1,549,313	29,640,216
1968	243,825	200,784	9,821	29,577	1,121,662	11,790,735	10,043	12,290	370,180	13,788,917
1969	52,257	95,129	4,822	14,013	629,008	6,577,828	4,934	7,333	178,849	7,564,173
1970	31,960	54,852	2,735	8,079	428,336	4,281,514	2,797	4,016	102,193	4,916,482
1971	17,859	25,986	1,314	3,827	198,394	1,686,582	1,344	542	48,804	1,984,652
1972	12,226	11,544	584	1,699	85,609	743,146	597	345	21,686	877,436
1973	14,597	5,221	259	768	38,735	442,967	263	222	9,678	512,710
1974	15,837	7,939	387	1,169	44,218	467,712	396	331	14,624	552,613
1975	7,774	12,765	646	1,879	36,228	382,831	661	428	23,977	467,189
1976	21,587	29,888	1,474	4,402	74,328	896,837	1,506	2,323	55,338	1,087,683
1977	66,969	-2,658	-207	-391	17,212	674,051	-213	-695	-6,478	747,590
1978	-9,895	8,621	-31,182	1,269	21,442	245,530	415	639	15,556	252,395
1979	5,575	17,202	878	2,534	35,639	371,883	897	1,229	32,451	468,288
1980	7,849	30,818	1,594	4,541	61,527	581,246	1,629	2,684	58,580	750,468
1981	14,068	59,600	3,092	8,780	127,089	1,091,341	3,161	4,858	113,489	1,425,478
1982	14,473	51,775	2,687	7,628	120,794	969,650	2,747	2,441	98,600	1,270,795
1983	36,589	113,795	5,908	16,763	200,750	2,146,720	6,039	4,966	216,751	2,748,281
1984	91,297	212,947	11,057	31,371	346,251	4,187,085	11,302	10,772	405,642	5,307,724
1985	119,064	209,286	10,866	30,832	338,202	4,344,016	11,108	8,525	398,667	5,470,566
1986	47,071	135,545	7,039	19,969	218,388	2,572,866	7,194	2,211	258,200	3,268,483
1987	21,443	85,945	4,463	12,662	138,221	1,563,511	4,560	42	163,710	1,994,557
1988	7,080	23,011	1,195	3,392	37,135	430,120	1,222	2	43,818	546,975
1989	1,753	261	14	39	777	21,145	15	14	498	24,516
1990	1,764	313	17	48	953	23,008	17	17	598	26,735
1991	1,027	313	17	48	953	17,253	17	17	598	20,243
TOTAL	2,264,993	4,572,007	193,683	673,517	10,970,115	122,142,451	230,388	183,033	8,462,780	149,692,967

a) Costs from Table B-10 allocated to Devil's Den are reduced herein by $14,088 in 1978 in accordance with a letter of agreement with the District.

b) Costs from Table B-10 allocated to Empire are reduced by $31,588 in 1978 in accordance with a letter of agreement with the District.

TABLE B-14: CAPITAL COSTS OF TRANSPORTATION

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley County Water District	Crestline-Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
1952	3,244	806	875	258	1,441	72	1,742	428	6,253	1,592
1953	10,312	2,586	2,744	826	4,526	230	5,470	1,366	19,603	4,991
1954	13,106	3,264	3,564	1,062	5,879	295	7,105	1,742	25,312	6,466
1955	5,566	1,459	1,413	413	2,331	120	2,835	737	9,495	2,441
1956	10,071	2,809	2,260	631	3,732	196	4,583	1,305	13,528	3,542
1957	27,128	7,321	6,540	1,871	10,781	554	13,157	3,557	41,869	10,852
1958	50,727	13,878	11,933	3,390	19,682	1,021	24,075	6,614	74,887	19,469
1959	72,215	21,667	16,320	4,746	26,918	1,386	32,664	9,285	101,409	26,246
1960	86,618	28,267	22,663	6,981	37,378	1,588	44,422	11,055	151,214	38,494
1961	129,452	40,991	35,229	12,770	58,103	2,291	64,817	16,788	240,703	58,801
1962	202,857	65,142	44,596	14,147	73,546	3,413	86,383	25,474	258,710	65,656
1963	585,525	185,721	114,845	32,332	189,405	9,846	231,593	73,527	595,663	157,219
1964	1,118,298	362,734	214,139	56,692	353,155	18,851	439,152	140,810	1,049,407	282,372
1965	1,945,282	682,117	393,423	105,924	648,838	33,471	802,979	249,425	1,953,640	523,648
1966	4,044,754	1,532,453	830,731	220,717	1,370,046	70,833	1,701,452	528,483	4,033,126	1,086,422
1967	5,050,981	2,879,589	1,093,455	300,523	1,803,328	89,639	2,214,625	663,137	5,921,280	1,576,699
1968	5,991,070	3,029,536	1,370,961	374,011	2,260,983	108,731	2,778,289	793,682	8,033,357	2,135,566
1969	5,949,545	2,457,717	1,729,472	552,777	2,852,298	124,064	3,331,211	884,983	11,092,836	2,817,639
1970	5,215,444	2,680,278	2,105,299	713,025	3,472,149	109,802	3,977,000	761,202	14,068,704	3,525,236
1971	2,691,316	1,806,063	1,109,436	350,101	1,829,708	50,392	2,161,942	362,040	8,372,955	2,042,599
1972	1,016,760	325,027	344,080	95,427	567,458	19,943	693,520	140,161	2,817,913	731,293
1973	364,020	809,651	162,763	84,459	268,455	6,472	244,219	47,323	1,808,824	414,599
1974	464,752	238,308	266,309	76,169	439,198	8,383	532,660	60,913	1,662,582	437,880
1975	259,312	196,960	198,711	54,200	327,717	5,081	402,404	34,865	1,575,184	419,037
1976	268,192	201,049	144,797	39,386	238,799	4,769	294,262	34,880	1,010,017	268,882
1977	177,841	236,055	88,820	25,280	146,485	3,427	178,092	24,349	585,031	153,676
1978	146,908	324,926	44,457	12,779	73,318	2,632	88,983	19,197	262,418	67,534
1979	435,084	912,269	92,052	28,040	151,810	6,220	180,560	44,988	687,920	177,022
1980	650,112	1,043,352	120,757	34,459	199,157	9,176	241,576	67,643	686,253	179,342
1981	1,961,095	798,508	328,833	84,410	542,311	29,797	677,209	223,266	1,513,598	411,645
1982	2,975,076	555,402	477,663	121,269	787,754	43,756	986,430	328,144	2,156,719	589,959
1983	2,290,111	399,642	223,057	56,501	367,861	20,455	461,369	153,401	1,000,681	274,512
1984	8,227,107	153,830	83,204	21,151	137,219	7,513	172,872	56,229	376,267	103,227
1985	9,488,165	115,377	70,577	17,940	116,398	6,364	146,812	47,624	319,461	87,673
1986	1,484,990	72,772	43,939	11,150	72,466	4,021	91,467	30,115	198,035	54,400
1987	165,718	45,502	27,218	6,911	44,889	2,517	56,666	18,846	122,700	33,716
1988	49,507	12,322	7,407	1,891	12,216	684	15,405	5,109	33,766	9,262
1989	7,962	1,006	929	244	1,531	56	1,899	407	4,663	1,249
1990	7,701	1,310	1,151	302	1,902	69	2,368	511	5,676	1,529
1991	5,701	1,310	1,151	302	1,902	69	2,368	511	5,676	1,529
TOTAL	63,649,625	22,248,976	11,837,773	3,525,467	19,523,073	808,199	23,396,637	5,874,122	72,897,335	18,803,916

FACILITIES ALLOCATED TO EACH CONTRACTOR

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (Continued)				FEATHER RIVER AREA				FUTURE CONTRACTOR	GRAND TOTAL
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California(c	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC & WCD	Total	South Bay	
	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)
1952	986	71,025	381	89,103	0	0	0	0	75	101,903
1953	3,098	223,994	1,224	280,970	0	0	0	0	336	319,930
1954	4,017	288,144	1,538	361,494	0	0	0	0	984	412,484
1955	1,515	114,821	690	143,836	0	0	0	0	1,218	173,419
1956	2,192	184,790	1,342	230,981	0	0	0	0	11,563	358,361
1957	6,721	532,115	3,476	665,942	0	0	0	0	29,099	1,484,177
1958	12,052	974,948	6,596	1,219,272	0	0	2	2	36,650	2,323,396
1959	16,264	1,404,034	10,186	1,743,340	0	0	14	14	58,693	3,017,620
1960	23,949	1,967,797	13,156	2,433,582	0	0	28	28	124,177	4,727,442
1961	36,840	3,310,914	19,195	4,026,894	0	0	10	10	321,149	8,663,848
1962	40,838	3,633,667	29,729	4,544,158	0	0	32	32	266,781	8,994,662
1963	97,114	11,493,086	87,340	13,853,216	0	0	51	51	731,899	24,952,410
1964	173,870	18,488,075	168,517	22,866,072	0	0	7,791	7,791	1,093,823	42,324,246
1965	322,738	34,500,339	314,060	42,475,884	0	0	3,139	3,139	470,666	63,685,913
1966	668,987	76,251,069	697,929	93,037,002	0	0	-48	-48	814,221	131,560,226
1967	974,805	133,810,225	1,310,821	157,689,107	0	0	47	47	1,511,409	197,580,820
1968	1,322,484	150,101,533	1,389,831	179,690,034	0	0	51,573	51,573	1,269,011	200,332,362
1969	1,756,748	143,391,608	1,112,140	178,053,038	0	0	234,232	234,232	433,354	187,989,624
1970	2,202,452	167,528,791	1,188,177	207,547,559	0	0	16,227	16,227	78,407	213,100,705
1971	1,271,971	138,351,752	768,277	161,168,552	0	0	27,204	27,204	16,299	163,490,086
1972	455,310	46,024,199	69,394	53,300,485	0	0	9	9	14,224	54,396,170
1973	263,728	40,835,732	298,683	45,608,928	0	0	26	26	9,730	46,367,418
1974	271,772	19,330,008	88,053	23,876,987	0	0	58	58	35,688	24,899,365
1975	260,766	17,054,080	85,620	20,873,937	0	0	27	27	8,686	21,678,617
1976	166,883	14,173,647	89,738	16,935,301	0	0	54	54	21,719	18,577,478
1977	95,414	11,792,228	111,569	13,618,267	0	0	16	16	20,926	15,121,896
1978	41,839	13,426,023	154,777	14,665,791	0	0	27	27	24,369	15,429,671
1979	110,332	36,482,757	431,580	39,740,634	0	0	0	0	16,417	41,659,694
1980	111,139	40,892,903	496,137	44,732,006	0	0	0	0	21,631	48,270,028
1981	253,177	36,249,857	383,266	43,456,972	0	0	0	0	18,406	48,673,252
1982	362,576	31,189,651	259,908	40,834,307	0	0	0	0	4,954	56,709,608
1983	168,613	19,508,371	179,389	25,103,963	0	0	0	0	10,133	76,148,448
1984	63,302	7,444,852	71,726	16,918,499	0	0	0	0	22,012	69,589,889
1985	53,741	5,770,269	55,535	16,295,936	0	0	0	0	17,409	49,996,075
1986	33,340	3,620,412	35,040	5,752,147	0	0	0	0	4,509	12,788,441
1987	20,661	2,256,589	21,916	2,823,849	0	0	0	0	78	6,364,991
1988	5,678	615,510	5,931	774,688	0	0	0	0	2	1,414,005
1989	769	61,364	476	82,555	0	0	0	0	18	137,639
1990	942	77,520	621	101,602	0	0	0	0	23	138,017
1991	942	77,520	621	99,602	0	0	0	0	23	125,017
TOTAL	11,680,565	1,233,506,219	9,964,585	1,497,716,492	0	0	340,519	340,519	7,520,771	1,864,079,353

c) Costs from Table B-10, allocated to MWD, are reduced herein by $16,421,217 in 1972 under provisions of Contract Amendment No. 7.

TABLE B-15: CAPITAL COST COMPONENT OF

(in dollars)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC & WCD	Solano County FC & WCD	Total	Alameda County FC & WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC & WCD	Santa Barbara County FC & WCD	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1963	0	0	0	102,379	99,968	356,370	558,717	0	0	0
1964	0	0	0	119,339	153,587	517,731	790,657	8,164	20,282	28,446
1965	0	0	0	150,799	215,476	878,220	1,244,495	13,769	33,538	47,307
1966	18,560	0	18,560	166,731	238,772	1,048,084	1,453,587	22,819	54,876	77,695
1967	41,831	0	41,831	192,905	266,753	1,159,799	1,619,457	40,834	97,106	137,940
1968	120,146	0	120,146	228,096	305,176	1,279,312	1,812,584	54,849	130,013	184,862
1969	163,273	0	163,273	260,610	339,078	1,378,719	1,978,407	58,460	138,573	197,033
1970	167,311	0	167,311	272,519	351,926	1,416,784	2,041,229	60,358	143,092	203,450
1971	169,795	0	169,795	275,112	354,758	1,423,537	2,053,407	61,599	146,073	207,672
1972	171,254	0	171,254	324,300	355,473	1,427,720	2,107,493	62,523	148,347	210,870
1973	172,318	26,950	199,268	324,911	356,057	1,430,885	2,111,853	62,981	149,467	212,448
1974	175,243	28,373	203,616	325,434	356,581	1,432,847	2,114,862	63,324	150,321	213,645
1975	183,865	31,246	215,111	326,230	357,482	1,436,554	2,120,266	63,719	151,278	214,997
1976	188,916	35,147	224,063	327,069	358,264	1,438,645	2,123,978	166,666	391,763	558,429
1977	192,109	38,915	231,024	329,123	360,238	1,444,986	2,134,347	169,293	398,303	567,596
1978	195,765	42,280	238,045	331,082	362,081	1,450,917	2,144,080	175,200	412,206	587,406
1979	199,166	45,525	244,691	333,978	364,756	1,458,217	2,156,951	176,593	415,526	592,119
1980	223,696	64,339	288,035	334,949	365,646	1,460,455	2,161,050	182,523	433,499	616,022
1981	251,069	84,443	335,512	336,310	366,891	1,463,598	2,166,799	203,678	496,698	700,376
1982	278,431	106,636	385,067	338,003	368,442	1,467,397	2,173,842	236,287	595,132	831,419
1983	414,199	251,826	666,025	338,690	369,070	1,468,894	2,176,654	359,309	914,536	1,273,845
1984	732,939	594,702	1,327,641	340,095	370,354	1,471,955	2,182,404	820,871	2,187,402	3,008,273
1985	821,226	686,377	1,507,603	343,147	373,145	1,478,605	2,194,897	1,386,463	3,784,173	5,170,636
1986	836,062	700,988	1,537,050	345,561	375,352	1,483,864	2,204,777	1,748,265	4,786,342	6,534,607
1987	838,634	703,969	1,542,603	346,190	375,927	1,485,234	2,207,351	1,796,318	4,918,421	6,714,739
1988	839,416	704,847	1,544,263	346,201	375,937	1,485,258	2,207,396	1,816,566	4,974,294	6,790,860
1989	839,618	705,152	1,544,770	346,201	375,937	1,485,258	2,207,396	1,817,643	4,977,386	6,795,029
1990	839,760	705,367	1,545,127	346,204	375,940	1,485,264	2,207,408	1,817,937	4,978,282	6,796,219
1991	839,781	705,397	1,545,178	346,207	375,943	1,485,271	2,207,421	1,818,066	4,978,583	6,796,649
1992	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
1993	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
1994	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
1995	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
1996	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
1997	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
1998	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
1999	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
2000	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
2001	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
2002	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
2003	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
2004	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
2005	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
2006	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
2007	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
2008	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
2009	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
2010	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
2011	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
2012	839,781	705,397	1,545,178	346,210	375,946	1,485,278	2,207,434	1,818,142	4,978,760	6,796,902
2013	839,781	705,397	1,545,178	237,781	275,978	1,128,908	1,642,667	1,818,142	4,978,760	6,796,902
2014	839,781	705,397	1,545,178	203,242	222,359	967,548	1,393,149	1,809,978	4,958,478	6,768,456
2015	839,781	705,397	1,545,178	166,098	160,469	607,058	933,625	1,804,373	4,945,222	6,749,595
2016	821,221	705,397	1,526,618	147,431	137,174	437,195	721,800	1,795,323	4,923,884	6,719,207
2017	797,949	705,397	1,503,346	116,988	109,192	325,479	551,659	1,777,308	4,881,655	6,658,963
2018	719,635	705,397	1,425,032	76,340	70,770	205,966	353,076	1,763,293	4,848,747	6,612,040
2019	676,507	705,397	1,381,904	39,031	36,867	106,559	182,457	1,759,682	4,840,188	6,599,870
2020	672,470	705,397	1,377,867	25,452	24,020	68,495	117,967	1,757,784	4,835,668	6,593,452
2021	669,985	705,397	1,375,382	22,512	21,188	61,742	105,442	1,756,543	4,832,687	6,589,230
2022	668,527	705,397	1,373,924	21,911	20,472	57,558	99,941	1,755,619	4,830,414	6,586,033
2023	667,463	678,448	1,345,911	21,299	19,889	54,394	95,582	1,755,161	4,829,293	6,584,454
2024	664,537	677,025	1,341,562	20,776	19,364	52,431	92,571	1,754,818	4,828,440	6,583,258
2025	655,916	674,151	1,330,067	19,980	18,464	48,725	87,169	1,754,422	4,827,483	6,581,905
2026	650,865	670,250	1,321,115	19,141	17,682	46,634	83,457	1,651,476	4,586,997	6,238,473
2027	647,672	666,482	1,314,154	17,087	15,707	40,292	73,086	1,648,849	4,580,457	6,229,306
2028	644,015	663,117	1,307,132	15,128	13,864	34,362	63,354	1,642,942	4,566,554	6,209,496
2029	640,615	659,872	1,300,487	12,232	11,190	27,062	50,484	1,641,549	4,563,235	6,204,784
2030	616,085	641,058	1,257,143	11,261	10,300	24,824	46,385	1,635,619	4,545,261	6,180,880
2031	588,712	620,955	1,209,667	9,900	9,055	21,681	40,636	1,614,464	4,482,062	6,096,526
2032	561,350	598,761	1,160,111	8,207	7,504	17,881	33,592	1,581,855	4,383,628	5,965,483
2033	425,582	453,571	879,153	7,520	6,876	16,385	30,781	1,458,833	4,064,224	5,523,057
2034	106,842	110,696	217,538	6,115	5,591	13,324	25,030	997,271	2,791,359	3,788,630
2035	18,554	19,020	37,574	3,063	2,801	6,674	12,538	431,679	1,194,588	1,626,267
TOTAL	41,983,629	35,263,192	77,246,821	16,997,280	18,796,652	74,262,395	110,056,327	90,813,042	248,678,756	339,491,798

a) Unadjusted for prior overpayments or underpayments of charges.
b) Determined at the current project interest rate of 4.462 percent per annum.

TRANSPORTATION CHARGE FOR EACH CONTRACTOR[a][b]

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA									
	Devil's Den Water District	Dudley Ridge Water District	Empire West Side Irrigation District	Hacienda Water District	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
					Municipal and Industrial	Agricultural				
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	63,717	0	0	0	0	63,717
1966	0	0	0	0	119,265	0	0	0	0	119,265
1967	0	0	0	0	231,663	0	0	0	0	231,663
1968	32,760	69,456	3,014	0	333,612	385,581	8,402	4,013	56,168	893,006
1969	44,270	69,577	9,042	12,285	389,404	791,849	8,901	4,362	201,518	1,531,208
1970	50,468	76,256	9,042	12,797	420,692	963,126	9,147	4,536	145,808	1,691,872
1971	59,322	86,941	9,042	11,773	441,998	1,279,204	9,286	4,885	156,813	2,059,264
1972	68,177	97,141	9,042	13,309	451,866	1,915,496	9,353	9,362	504,369	3,078,115
1973	77,031	106,855	9,042	14,844	456,124	2,209,233	9,383	5,408	186,396	3,074,316
1974	85,885	162,177	9,042	16,892	458,051	2,474,010	9,396	6,056	316,326	3,537,835
1975	94,739	196,978	9,042	19,236	460,250	2,963,185	9,415	6,239	378,276	4,137,360
1976	103,593	150,185	9,042	19,963	462,052	3,194,286	9,448	7,047	265,055	4,220,671
1977	112,447	147,654	9,042	21,499	465,750	3,500,020	9,523	6,455	251,267	4,523,657
1978	112,447	157,854	9,042	23,546	466,606	3,890,566	9,513	6,804	269,149	4,945,527
1979	112,447	168,054	9,042	25,082	467,672	4,272,011	9,533	6,978	287,032	5,357,851
1980	112,447	178,254	9,042	26,617	469,445	4,661,729	9,578	7,327	304,914	5,779,353
1981	112,447	188,454	9,042	28,665	472,505	5,101,921	9,659	7,502	322,796	6,252,991
1982	112,447	199,139	9,042	30,200	478,827	5,508,188	9,816	7,851	340,678	6,696,188
1983	112,447	208,367	9,042	31,736	484,835	5,970,720	9,953	8,025	358,560	7,193,685
1984	112,447	219,053	9,042	33,272	494,821	6,387,744	10,253	8,374	376,442	7,651,448
1985	112,447	229,253	9,042	35,319	512,044	6,794,011	10,815	8,549	394,325	8,105,805
1986	112,447	239,453	9,042	36,855	528,866	7,196,968	11,368	8,898	412,665	8,556,562
1987	112,447	249,652	9,042	38,390	539,791	7,607,373	11,728	9,072	430,547	9,008,042
1988	112,447	259,852	9,042	39,926	546,747	7,990,472	11,957	9,421	448,430	9,428,294
1989	112,447	270,052	9,042	41,973	548,627	8,266,833	12,019	9,770	466,312	9,737,075
1990	112,447	280,252	9,042	43,509	548,667	8,553,950	12,020	9,944	504,369	10,074,200
1991	112,447	280,252	9,042	43,509	548,716	8,553,950	12,021	9,944	504,369	10,074,250
1992	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
1993	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
1994	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
1995	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
1996	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
1997	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
1998	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
1999	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
2000	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
2001	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
2002	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
2003	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
2004	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
2005	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
2006	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
2007	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
2008	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
2009	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
2010	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
2011	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
2012	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
2013	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
2014	112,447	280,252	9,042	43,509	548,765	8,553,950	12,021	9,944	504,369	10,074,299
2015	112,447	280,252	9,042	43,509	485,048	8,553,950	12,021	9,944	504,369	10,010,582
2016	112,447	280,252	9,042	43,509	429,500	8,553,950	12,021	9,944	504,369	9,955,034
2017	112,447	280,252	9,042	43,509	317,102	8,553,950	12,021	9,944	504,369	9,842,636
2018	112,447	280,252	9,042	43,509	215,153	8,553,950	3,620	9,944	504,369	9,732,286
2019	112,447	280,252	9,042	43,509	159,361	8,553,950	3,120	9,944	504,369	9,675,994
2020	112,447	280,252	9,042	43,509	128,073	8,553,950	2,875	9,944	504,369	9,644,461
2021	112,447	280,252	9,042	43,509	106,767	8,553,950	2,736	9,944	504,369	9,623,016
2022	112,447	280,252	9,042	43,509	96,899	8,553,950	2,669	9,944	504,369	9,613,081
2023	112,447	280,252	9,042	43,509	92,641	8,553,950	2,639	9,944	504,369	9,608,793
2024	112,447	280,252	9,042	43,509	90,714	8,553,950	2,626	9,944	504,369	9,606,853
2025	112,447	280,252	9,042	43,509	88,515	8,553,950	2,606	9,944	504,369	9,604,634
2026	112,447	280,252	9,042	43,509	86,713	8,553,950	2,573	9,944	504,369	9,602,799
2027	112,447	280,252	9,042	43,509	83,016	8,553,950	2,498	9,944	504,369	9,599,027
2028	112,447	280,252	9,042	43,509	82,159	8,553,950	2,509	9,944	504,369	9,598,181
2029	112,447	280,252	9,042	43,509	81,093	8,553,950	2,488	9,944	504,369	9,597,094
2030	112,447	280,252	9,042	43,509	79,320	8,553,950	2,444	9,944	504,369	9,595,277
2031	112,447	280,252	9,042	43,509	76,260	8,553,950	2,363	9,944	504,369	9,592,136
2032	112,447	280,252	9,042	43,509	69,938	8,553,950	2,205	9,944	504,369	9,585,656
2033	112,447	280,252	9,042	43,509	63,930	8,553,950	2,069	9,944	504,369	9,579,512
2034	112,447	280,252	9,042	43,509	53,944	8,553,950	1,768	9,944	504,369	9,569,225
2035	112,447	280,252	9,042	43,509	36,721	8,553,950	1,206	9,944	504,369	9,551,440
TOTAL	7,250,618	16,622,249	608,828	2,535,593	27,407,075	486,806,226	600,047	614,358	30,074,820	572,519,814

TABLE B-15: CAPITAL COST COMPONENT OF

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley County Water District	Crestline Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
1963	33,256	0	0	0	0	0	0	0	51,586	0
1964	62,381	19,863	14,151	4,278	36,661	1,129	27,914	8,116	81,215	34,530
1965	118,006	37,905	24,803	7,098	40,310	2,067	49,758	15,120	133,413	34,929
1966	214,766	71,834	44,372	12,367	72,584	3,732	89,698	27,527	230,589	60,976
1967	415,956	148,060	85,693	23,346	140,731	7,255	174,330	53,814	431,200	115,015
1968	667,197	291,294	140,083	38,294	230,431	11,714	284,488	86,799	725,730	193,442
1969	965,198	441,985	208,275	56,898	342,894	17,122	422,682	126,277	1,125,317	299,667
1970	1,261,134	564,235	294,301	84,393	484,770	23,293	588,380	170,297	1,677,085	439,819
1971	1,520,555	697,554	399,020	119,860	657,478	28,755	786,200	208,160	2,376,875	615,167
1972	1,654,423	787,389	454,205	137,274	748,489	31,262	893,737	226,168	2,793,354	716,768
1973	1,704,998	803,556	471,320	142,021	776,715	32,254	928,233	233,140	2,933,519	753,143
1974	1,723,105	843,829	479,416	146,222	790,068	32,576	940,381	235,494	3,023,492	773,766
1975	1,746,222	855,683	492,662	150,011	811,914	32,993	966,876	238,524	3,106,190	795,546
1976	1,759,120	865,480	502,546	152,707	828,215	33,245	986,892	240,258	3,184,541	816,390
1977	1,772,460	875,480	509,749	154,666	840,094	33,482	1,001,528	241,993	3,234,781	829,764
1978	1,781,306	887,222	514,167	155,923	847,380	33,653	1,010,387	243,204	3,263,881	837,408
1979	1,788,614	903,384	516,378	156,559	851,027	33,784	1,014,813	244,159	3,276,933	840,767
1980	1,810,255	948,761	520,957	157,953	858,578	34,093	1,023,794	246,397	3,311,151	849,573
1981	1,842,592	1,000,658	526,963	159,667	868,484	34,550	1,035,810	249,762	3,345,286	858,493
1982	1,940,139	1,040,377	543,320	163,866	895,459	36,032	1,069,495	260,867	3,420,574	878,969
1983	2,088,122	1,068,003	567,079	169,898	934,643	38,208	1,118,561	277,189	3,527,851	908,314
1984	2,202,034	1,087,882	578,174	172,709	952,941	39,226	1,141,510	284,819	3,577,626	921,968
1985	2,611,258	1,095,533	582,313	173,761	959,766	39,599	1,150,109	287,616	3,596,342	927,103
1986	3,083,208	1,101,272	585,823	174,653	965,556	39,916	1,157,412	289,985	3,612,232	931,464
1987	3,157,494	1,104,913	588,021	175,211	969,181	40,117	1,161,987	291,492	3,622,139	934,185
1988	3,165,834	1,107,203	589,391	175,559	971,440	40,244	1,164,839	292,440	3,628,313	935,882
1989	3,168,341	1,107,827	589,766	175,654	972,058	40,278	1,165,619	292,699	3,630,023	936,351
1990	3,168,747	1,107,878	589,814	175,667	972,136	40,281	1,165,716	292,720	3,630,261	936,415
1991	3,169,142	1,107,945	589,873	175,682	972,234	40,285	1,165,837	292,746	3,630,552	936,493
1992	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
1993	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
1994	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
1995	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
1996	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
1997	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
1998	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
1999	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
2000	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
2001	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
2002	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
2003	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
2004	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
2005	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
2006	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
2007	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
2008	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
2009	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
2010	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
2011	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
2012	3,169,437	1,108,013	589,932	175,698	972,332	40,288	1,165,960	292,772	3,630,846	936,572
2013	3,136,181	1,108,013	589,932	175,698	959,010	40,288	1,165,960	292,772	3,579,260	923,509
2014	3,107,056	1,088,150	575,781	171,419	949,588	39,159	1,138,046	284,656	3,549,631	915,689
2015	3,051,431	1,070,107	565,130	168,600	932,022	38,221	1,116,202	277,652	3,497,433	901,643
2016	2,954,671	1,036,178	545,560	163,331	899,748	36,556	1,076,261	265,246	3,400,257	875,597
2017	2,753,481	959,953	504,239	152,352	831,601	33,033	991,630	238,958	3,199,646	821,557
2018	2,502,240	816,719	449,850	137,404	741,902	28,574	881,472	205,973	2,905,116	743,130
2019	2,204,239	666,027	381,657	118,800	629,438	23,166	743,277	166,495	2,505,529	636,905
2020	1,908,303	543,778	295,631	91,305	487,562	16,995	577,580	122,475	1,953,761	496,753
2021	1,648,882	410,459	190,912	55,838	314,855	11,533	379,760	84,612	1,253,971	321,405
2022	1,515,014	320,623	135,727	38,424	223,843	9,027	272,223	66,604	837,492	219,804
2023	1,464,439	304,456	118,612	33,677	195,617	8,035	237,727	59,632	697,327	183,429
2024	1,446,332	264,184	110,516	29,476	182,264	7,713	225,579	57,278	607,354	162,806
2025	1,423,215	252,330	97,270	25,687	160,418	7,296	199,084	54,248	524,656	141,026
2026	1,410,317	242,533	87,386	22,991	144,117	7,043	179,068	52,514	446,305	120,183
2027	1,396,977	232,533	80,184	21,032	132,239	6,806	164,431	50,779	396,065	106,808
2028	1,388,131	220,791	75,766	19,775	124,953	6,635	155,573	49,568	366,965	99,164
2029	1,380,823	204,629	73,554	19,139	121,306	6,505	151,147	48,613	353,912	95,805
2030	1,359,182	159,252	68,976	17,744	113,755	6,195	142,166	46,375	319,695	87,000
2031	1,326,845	107,354	62,969	16,030	103,848	5,739	130,149	43,011	285,560	78,079
2032	1,229,298	67,636	46,612	11,832	76,873	4,257	96,464	31,905	210,272	57,603
2033	1,081,315	40,010	22,853	5,800	37,690	2,080	47,399	15,583	102,995	28,258
2034	967,403	20,131	11,758	2,989	19,392	1,063	24,450	7,953	53,220	14,604
2035	558,179	12,479	7,619	1,937	12,566	689	15,851	5,156	34,504	9,469
TOTAL	158,367,994	55,389,603	29,489,701	8,783,135	48,605,816	2,013,801	58,283,645	14,634,052	181,510,743	46,820,545

TRANSPORTATION CHARGE FOR EACH CONTRACTOR[a][b]

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				FUTURE CONTRACTOR	GRAND TOTAL
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC & WCD	Total	South Bay	
	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)
1963	0	691,858	0	776,700	0	0	0	0	45,086	1,380,503
1964	21,451	1,263,535	9,291	1,584,515	0	0	0	0	81,491	2,485,109
1965	21,608	2,183,149	17,673	2,685,839	0	0	395	395	135,899	4,177,652
1966	37,661	3,899,227	33,294	4,798,627	0	0	551	551	159,310	6,627,595
1967	70,937	7,692,026	68,010	9,426,373	0	0	549	549	199,811	11,657,624
1968	119,425	14,347,871	133,211	17,269,979	0	0	551	551	274,989	20,556,117
1969	185,206	21,814,060	202,343	26,207,924	0	0	3,116	3,116	338,111	30,419,072
1970	272,589	28,946,492	257,662	35,064,450	0	0	14,767	14,767	359,667	39,542,746
1971	382,141	37,279,529	316,763	45,388,057	0	0	15,575	15,575	363,567	50,257,337
1972	445,410	44,161,273	354,978	53,404,730	0	0	16,928	16,928	364,377	59,353,767
1973	468,057	46,450,560	358,429	56,055,945	0	0	16,928	16,928	365,085	62,035,843
1974	481,175	48,481,767	373,286	58,324,577	0	0	16,929	16,929	365,569	64,777,033
1975	494,693	49,443,259	377,666	59,512,239	0	0	16,932	16,932	367,344	66,584,249
1976	507,664	50,291,545	381,925	60,550,528	0	0	16,934	16,934	367,776	68,062,379
1977	515,965	50,996,555	386,388	61,392,905	0	0	16,936	16,936	368,856	69,235,321
1978	520,711	51,583,112	391,938	62,070,292	0	0	16,937	16,937	369,897	70,372,184
1979	522,792	52,250,935	399,637	62,799,782	0	0	16,938	16,938	371,109	71,539,441
1980	528,280	54,065,621	421,104	64,776,517	0	0	16,938	16,938	371,926	74,009,841
1981	533,808	56,099,672	445,782	67,001,527	0	0	16,938	16,938	373,002	76,847,145
1982	546,402	57,902,773	464,846	69,163,119	0	0	16,938	16,938	373,918	79,640,491
1983	564,437	59,454,175	477,774	71,194,254	0	0	16,938	16,938	374,164	82,895,565
1984	572,823	60,424,540	486,697	72,442,949	0	0	16,938	16,938	374,668	87,004,321
1985	575,972	60,794,853	490,265	73,284,490	0	0	16,938	16,938	375,763	90,656,132
1986	578,645	61,081,872	493,027	74,095,065	0	0	16,938	16,938	376,629	93,321,628
1987	580,313	61,262,981	494,780	74,382,814	0	0	16,938	16,938	376,854	94,249,341
1988	581,353	61,376,543	495,883	74,524,924	0	0	16,938	16,938	376,858	94,889,533
1989	581,640	61,407,713	496,183	74,564,152	0	0	16,938	16,938	376,858	95,242,218
1990	581,680	61,410,841	496,208	74,568,364	0	0	16,938	16,938	376,859	95,585,115
1991	581,728	61,414,820	496,240	74,573,577	0	0	16,938	16,938	376,860	95,590,873
1992	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
1993	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
1994	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
1995	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
1996	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
1997	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
1998	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
1999	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
2000	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
2001	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
2002	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
2003	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
2004	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
2005	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
2006	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
2007	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
2008	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
2009	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
2010	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
2011	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
2012	581,777	61,418,829	496,272	74,578,728	0	0	16,938	16,938	376,862	95,596,341
2013	573,648	60,726,971	496,272	73,767,514	0	0	16,938	16,938	331,776	94,175,274
2014	568,817	60,155,294	486,981	73,030,267	0	0	16,938	16,938	295,370	93,123,657
2015	560,169	59,235,680	478,599	71,892,889	0	0	16,543	16,543	240,963	91,389,375
2016	544,116	57,519,601	462,977	69,780,099	0	0	16,387	16,387	217,551	88,936,696
2017	510,840	53,726,802	428,262	65,152,354	0	0	16,390	16,390	177,051	83,902,399
2018	462,352	47,070,958	363,060	57,308,750	0	0	16,387	16,387	101,872	75,549,443
2019	396,570	39,604,769	293,929	48,370,801	0	0	13,822	13,822	38,750	66,263,598
2020	309,188	32,472,337	238,610	39,514,278	0	0	2,171	2,171	17,195	57,267,391
2021	199,636	24,139,300	179,509	29,190,672	0	0	1,364	1,364	13,295	46,898,401
2022	136,367	17,257,555	141,294	21,173,997	0	0	11	11	12,484	38,859,471
2023	113,719	14,968,269	137,842	18,522,781	0	0	10	10	11,777	36,169,308
2024	100,601	12,937,062	122,986	16,254,151	0	0	9	9	11,293	33,889,697
2025	87,083	11,975,570	118,606	15,066,489	0	0	6	6	9,518	32,679,788
2026	74,112	11,127,284	114,347	14,028,200	0	0	5	5	9,086	31,283,135
2027	65,812	10,422,273	109,883	13,185,822	0	0	2	2	8,005	30,409,402
2028	61,066	9,835,717	104,334	12,508,438	0	0	1	1	6,964	29,693,566
2029	58,984	9,167,894	96,635	11,778,946	0	0	0	0	5,752	28,937,547
2030	53,496	7,353,208	75,168	9,802,212	0	0	0	0	4,936	26,886,833
2031	47,968	5,319,157	50,490	7,577,199	0	0	0	0	3,860	24,520,024
2032	35,375	3,516,056	31,425	5,415,608	0	0	0	0	2,944	22,163,394
2033	17,340	1,964,654	18,497	3,384,474	0	0	0	0	2,698	19,399,675
2034	8,953	994,289	9,574	2,135,779	0	0	0	0	2,194	15,738,396
2035	5,805	623,975	6,007	1,294,236	0	0	0	0	1,099	12,523,154
TOTAL	29,083,900	3,070,383,241	24,808,282	3,728,174,458	0	0	846,904	846,904	18,842,838	4,847,178,960

TABLE B-16: MINIMUM OMP&R COMPONENT OF

(in dollars)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC & WCD	Solano County FC & WCD	Total	Alameda County FC & WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC & WCD	Santa Barbara County FC & WCD	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1962	0	0	0	9,699	8,868	0	18,567	0	0	0
1963	0	0	0	38,048	34,788	82,896	155,732	0	0	0
1964	0	0	0	41,148	38,323	91,320	170,791	0	0	0
1965	0	0	0	78,529	75,616	195,792	349,937	0	0	0
1966	0	0	0	79,753	78,779	218,544	377,076	0	0	0
1967	0	0	0	127,896	123,666	335,224	586,786	0	0	0
1968	130	0	130	125,685	120,222	332,693	578,600	11,301	26,385	37,686
1969	80,875	0	80,875	145,063	137,733	371,827	654,623	62,339	145,535	207,874
1970	94,872	0	94,872	128,629	119,913	319,871	568,413	73,342	171,231	244,573
1971	45,579	0	45,579	112,657	107,968	295,103	515,728	73,201	170,897	244,098
1972	37,890	0	37,890	121,971	117,083	333,400	572,454	78,438	183,116	261,554
1973	32,982	0	32,982	122,278	116,364	324,707	563,349	74,963	175,006	249,969
1974	46,478	0	46,478	153,919	146,454	401,934	702,307	75,878	177,145	253,023
1975	37,695	0	37,695	188,600	181,557	512,546	882,703	91,809	214,334	306,143
1976	60,923	0	60,923	202,432	192,853	523,409	918,694	93,957	219,352	313,309
1977	80,022	0	80,022	179,483	168,712	499,332	847,527	108,147	252,479	360,626
1978	63,465	0	63,465	237,879	227,075	642,197	1,107,151	113,630	265,281	378,911
1979	76,362	0	76,362	252,645	240,720	648,260	1,141,625	119,103	278,057	397,160
1980	89,119	0	89,119	291,273	277,454	743,462	1,312,189	139,421	325,487	464,908
1981	91,936	0	91,936	297,610	284,139	770,014	1,351,763	147,216	343,684	490,900
1982	92,016	0	92,016	297,817	284,681	772,206	1,354,704	146,860	342,854	489,714
1983	95,058	0	95,058	293,311	280,610	762,688	1,336,609	147,614	344,617	492,231
1984	211,382	164,604	375,986	300,921	287,566	779,247	1,367,734	150,704	351,830	502,534
1985	270,813	202,728	473,541	300,712	287,350	778,571	1,366,633	150,481	351,310	501,791
1986	265,568	200,868	466,436	300,770	287,426	778,874	1,367,070	224,831	537,711	762,542
1987	264,622	199,778	464,400	300,134	286,782	776,966	1,363,882	221,697	528,770	750,467
1988	265,079	199,243	464,322	300,341	286,965	777,357	1,364,663	219,385	522,372	741,757
1989	264,649	198,723	463,372	299,716	286,368	775,720	1,361,804	218,615	520,256	738,871
1990	263,244	197,052	460,296	297,580	284,323	770,133	1,352,036	217,181	516,887	734,068
1991	263,302	197,120	460,422	297,652	284,395	770,329	1,352,376	217,479	517,768	735,247
1992	259,177	193,393	452,570	284,568	271,756	735,851	1,292,175	212,701	506,624	719,325
1993	258,014	192,008	450,022	282,627	269,899	730,783	1,283,309	211,561	503,992	715,553
1994	258,921	193,085	452,006	284,223	271,423	734,893	1,290,539	213,317	508,565	721,882
1995	258,802	192,871	451,673	284,076	271,275	734,441	1,289,792	213,424	508,798	722,222
1996	260,127	194,414	454,541	286,167	273,280	739,929	1,299,376	214,424	511,149	725,573
1997	260,468	194,837	455,305	286,734	273,823	741,416	1,301,973	215,355	513,558	728,913
1998	260,465	194,831	455,296	286,713	273,804	741,370	1,301,887	215,216	513,209	728,425
1999	260,128	194,719	454,847	286,003	273,151	739,788	1,298,942	214,201	510,985	725,186
2000	260,296	194,746	455,042	286,371	273,488	740,590	1,300,449	214,711	512,072	726,783
2001	260,368	194,777	455,145	286,576	273,675	741,047	1,301,298	215,159	513,217	728,376
2002	260,378	194,793	455,171	286,841	273,919	741,635	1,302,395	215,098	512,950	728,048
2003	260,423	194,810	455,233	286,949	274,018	741,869	1,302,836	215,431	513,968	729,399
2004	260,428	194,818	455,246	286,977	274,043	741,934	1,302,954	215,527	514,291	729,818
2005	260,419	194,802	455,221	286,938	274,007	741,842	1,302,787	215,379	513,775	729,154
2006	260,410	194,791	455,201	286,707	273,795	741,338	1,301,840	215,305	513,531	728,836
2007	260,446	194,817	455,263	287,042	274,102	742,075	1,303,219	215,545	514,240	729,785
2008	261,311	195,026	456,337	289,006	275,899	746,361	1,311,266	218,985	522,236	741,221
2009	264,418	195,785	460,203	296,120	282,401	761,882	1,340,403	231,521	551,567	783,088
2010	262,663	195,351	458,014	292,095	278,720	753,094	1,323,909	224,398	534,829	759,227
2011	263,641	195,586	459,227	294,306	280,742	757,915	1,332,963	228,339	544,030	772,369
2012	263,478	195,564	459,042	293,953	280,420	757,151	1,331,524	227,798	542,960	770,758
2013	262,629	195,365	457,994	292,014	278,648	752,926	1,323,588	224,369	534,945	759,314
2014	260,423	194,810	455,233	286,956	274,024	741,883	1,302,863	215,529	514,313	729,842
2015	260,420	194,804	455,224	286,936	274,005	741,837	1,302,778	215,399	513,853	729,252
2016	260,437	194,829	455,266	287,025	274,088	742,048	1,303,161	215,599	514,526	730,125
2017	260,420	194,806	455,226	286,959	274,025	741,889	1,302,873	215,434	513,980	729,414
2018	260,419	194,802	455,221	286,957	274,024	741,889	1,302,870	215,404	513,868	729,272
2019	260,433	194,824	455,257	287,018	274,081	742,026	1,303,125	215,577	514,453	730,030
2020	260,434	194,827	455,261	287,076	274,134	742,166	1,303,376	215,713	514,840	730,553
2021	260,434	194,827	455,261	287,076	274,134	742,166	1,303,376	215,713	514,840	730,553
2022	260,434	194,827	455,261	287,076	274,134	742,166	1,303,376	215,713	514,840	730,553
2023	260,434	194,827	455,261	287,076	274,134	742,166	1,303,376	215,713	514,840	730,553
2024	260,434	194,827	455,261	287,076	274,134	742,166	1,303,376	215,713	514,840	730,553
2025	260,434	194,827	455,261	287,076	274,134	742,166	1,303,376	215,713	514,840	730,553
2026	260,434	194,827	455,261	287,076	274,134	742,166	1,303,376	215,713	514,840	730,553
2027	260,434	194,827	455,261	287,076	274,134	742,166	1,303,376	215,713	514,840	730,553
2028	260,434	194,827	455,261	287,076	274,134	742,166	1,303,376	215,713	514,840	730,553
2029	260,434	194,827	455,261	287,076	274,134	742,166	1,303,376	215,713	514,840	730,553
2030	260,434	194,827	455,261	287,076	274,134	742,166	1,303,376	215,713	514,840	730,553
2031	260,434	194,827	455,261	287,076	274,134	742,166	1,303,376	215,713	514,840	730,553
2032	260,434	194,827	455,261	287,076	274,134	742,166	1,303,376	215,713	514,840	730,553
2033	260,434	194,827	455,261	287,076	274,134	742,166	1,303,376	215,713	514,840	730,553
2034	260,434	194,827	455,261	287,076	274,134	742,166	1,303,376	215,713	514,840	730,553
2035	260,434	194,827	455,261	287,076	274,134	742,166	1,303,376	215,713	514,840	730,553
TOTAL	14,560,967	10,127,412	24,688,379	18,572,224	17,731,432	48,070,980	84,374,636	12,709,706	30,220,288	42,929,994

a) Unadjusted for prior overpayments or underpayments of charges.

TRANSPORTATION CHARGE FOR EACH CONTRACTOR[a]

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA									
	Devil's Den Water District	Dudley Ridge Water District	Empire West Side Irrigation District	Hacienda Water District	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
					Municipal and Industrial	Agricultural				
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	8,041	36,338	1,887	5,353	58,341	651,729	1,931	1,991	69,223	834,834
1969	43,785	43,699	2,147	6,436	77,386	1,162,361	2,197	2,004	80,785	1,420,800
1970	51,492	45,124	2,202	6,646	92,839	1,341,498	2,253	2,073	83,091	1,627,218
1971	51,397	46,117	2,222	6,791	102,427	1,596,212	2,274	2,198	84,367	1,894,005
1972	55,068	47,895	2,320	7,055	117,419	1,677,052	2,372	2,165	87,819	1,999,165
1973	52,635	48,024	2,290	7,075	120,515	1,666,295	2,344	2,218	87,369	1,988,765
1974	53,286	50,715	2,453	7,471	130,198	1,765,689	2,511	2,429	92,976	2,107,728
1975	64,481	64,289	3,112	9,471	156,176	2,164,461	3,184	3,065	117,900	2,586,139
1976	65,983	63,623	3,185	9,374	152,287	2,142,067	3,256	2,789	118,789	2,561,353
1977	75,950	72,875	3,672	10,735	182,633	2,423,863	3,755	3,576	136,552	2,913,611
1978	79,797	75,145	3,742	11,069	186,348	2,497,931	3,827	3,815	139,909	3,001,583
1979	83,693	94,348	4,705	13,899	226,502	2,913,618	4,812	4,854	175,796	3,522,227
1980	97,946	104,059	5,183	15,329	250,330	3,269,324	5,299	5,445	193,735	3,946,650
1981	103,381	98,327	4,863	14,485	240,439	3,238,434	4,972	4,921	182,348	3,892,170
1982	103,108	92,001	4,531	13,554	231,676	3,149,654	4,634	4,254	170,242	3,773,654
1983	103,632	90,329	4,430	13,307	225,916	3,108,668	4,533	3,980	166,811	3,721,606
1984	105,814	96,065	4,726	14,151	240,332	3,261,441	4,834	4,293	177,670	3,909,326
1985	105,662	96,343	4,740	14,193	240,679	3,265,211	4,849	4,330	178,204	3,914,211
1986	112,798	96,748	4,760	14,252	241,065	3,228,636	4,870	4,363	178,963	3,886,455
1987	112,782	96,800	4,763	14,260	241,502	3,231,591	4,873	4,364	179,057	3,889,992
1988	112,787	96,719	4,758	14,248	241,540	3,231,854	4,868	4,367	178,892	3,890,033
1989	112,519	96,431	4,745	14,206	240,882	3,223,309	4,852	4,357	178,362	3,879,663
1990	111,694	95,665	4,707	14,092	239,098	3,199,302	4,814	4,328	176,934	3,850,634
1991	111,808	95,766	4,712	14,107	239,331	3,202,506	4,817	4,331	177,120	3,854,498
1992	109,496	93,442	4,599	13,765	233,686	3,129,229	4,704	4,213	172,860	3,765,994
1993	108,749	92,656	4,562	13,649	231,868	3,105,449	4,664	4,184	171,409	3,737,190
1994	109,457	93,497	4,601	13,773	233,815	3,130,022	4,708	4,212	172,960	3,767,045
1995	109,381	93,475	4,600	13,770	233,804	3,128,988	4,706	4,215	172,925	3,765,864
1996	110,151	94,068	4,631	13,859	235,286	3,149,630	4,735	4,244	174,025	3,790,629
1997	110,490	94,482	4,651	13,917	236,139	3,160,686	4,755	4,253	174,798	3,804,171
1998	110,408	94,455	4,650	13,914	236,072	3,159,422	4,755	4,251	174,751	3,802,678
1999	110,284	94,025	4,628	13,850	234,973	3,148,884	4,732	4,223	173,926	3,789,525
2000	110,299	94,240	4,638	13,883	235,525	3,153,693	4,743	4,239	174,339	3,795,599
2001	110,434	94,394	4,647	13,906	235,913	3,158,293	4,753	4,247	174,629	3,801,216
2002	110,453	94,453	4,649	13,914	236,046	3,159,756	4,754	4,248	174,737	3,803,010
2003	110,485	94,529	4,653	13,926	236,243	3,161,771	4,758	4,252	174,881	3,805,498
2004	110,498	94,581	4,656	13,933	236,355	3,162,913	4,760	4,254	174,974	3,806,924
2005	110,479	94,520	4,652	13,924	236,216	3,161,480	4,757	4,252	174,864	3,805,144
2006	110,463	94,470	4,651	13,917	236,112	3,160,369	4,756	4,251	174,774	3,803,763
2007	110,508	94,605	4,657	13,937	236,421	3,163,578	4,762	4,256	175,024	3,807,748
2008	111,052	95,927	4,725	14,131	239,830	3,197,846	4,833	4,338	177,545	3,850,227
2009	113,038	100,837	4,980	14,854	252,400	3,324,379	5,093	4,639	186,898	4,007,118
2010	111,909	98,046	4,835	14,444	245,259	3,252,451	4,945	4,468	181,578	3,917,935
2011	112,535	99,583	4,916	14,670	249,201	3,292,140	5,026	4,563	184,512	3,967,146
2012	112,452	99,396	4,906	14,642	248,695	3,287,229	5,018	4,548	184,146	3,961,032
2013	111,914	98,075	4,837	14,447	245,302	3,253,108	4,947	4,466	181,631	3,918,727
2014	110,494	94,565	4,655	13,930	236,318	3,162,549	4,760	4,254	174,950	3,806,475
2015	110,483	94,525	4,652	13,925	236,233	3,161,660	4,757	4,252	174,876	3,805,363
2016	110,519	94,636	4,659	13,941	236,483	3,164,376	4,765	4,255	175,078	3,808,712
2017	110,484	94,526	4,652	13,926	236,240	3,161,713	4,758	4,252	174,880	3,805,431
2018	110,484	94,529	4,653	13,926	236,243	3,161,749	4,758	4,253	174,883	3,805,478
2019	110,515	94,628	4,659	13,939	236,461	3,164,141	4,764	4,255	175,063	3,808,425
2020	110,572	94,800	4,666	13,965	236,882	3,168,642	4,772	4,259	175,380	3,813,938
2021	110,572	94,800	4,666	13,965	236,882	3,168,642	4,772	4,259	175,380	3,813,938
2022	110,572	94,800	4,666	13,965	236,882	3,168,642	4,772	4,259	175,380	3,813,938
2023	110,572	94,800	4,666	13,965	236,882	3,168,642	4,772	4,259	175,380	3,813,938
2024	110,572	94,800	4,666	13,965	236,882	3,168,642	4,772	4,259	175,380	3,813,938
2025	110,572	94,800	4,666	13,965	236,882	3,168,642	4,772	4,259	175,380	3,813,938
2026	110,572	94,800	4,666	13,965	236,882	3,168,642	4,772	4,259	175,380	3,813,938
2027	110,572	94,800	4,666	13,965	236,882	3,168,642	4,772	4,259	175,380	3,813,938
2028	110,572	94,800	4,666	13,965	236,882	3,168,642	4,772	4,259	175,380	3,813,938
2029	110,572	94,800	4,666	13,965	236,882	3,168,642	4,772	4,259	175,380	3,813,938
2030	110,572	94,800	4,666	13,965	236,882	3,168,642	4,772	4,259	175,380	3,813,938
2031	110,572	94,800	4,666	13,965	236,882	3,168,642	4,772	4,259	175,380	3,813,938
2032	110,572	94,800	4,666	13,965	236,882	3,168,642	4,772	4,259	175,380	3,813,938
2033	110,572	94,800	4,666	13,965	236,882	3,168,642	4,772	4,259	175,380	3,813,938
2034	110,572	94,800	4,666	13,965	236,882	3,168,642	4,772	4,259	175,380	3,813,938
2035	110,572	94,800	4,666	13,965	236,882	3,168,642	4,772	4,259	175,380	3,813,938
TOTAL	6,846,605	6,025,410	296,765	887,611	14,929,112	200,288,482	303,509	274,991	11,150,910	241,003,395

TABLE B-16: MINIMUM OMP&R COMPONENTS OF

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley County Water District	Crestline Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	62,545	18,955	11,243	2,845	18,543	1,046	23,432	7,855	50,282	13,841
1969	82,943	25,138	14,912	3,771	24,590	1,388	31,075	10,417	66,688	18,355
1970	103,526	31,373	18,620	4,710	30,709	1,732	38,786	13,001	83,282	22,917
1971	171,665	52,026	30,938	7,828	51,023	2,875	64,320	21,561	138,370	38,049
1972	348,454	142,290	101,814	29,522	167,912	6,316	203,233	46,060	522,520	137,406
1973	387,103	165,037	114,621	32,700	189,039	7,004	229,966	51,503	681,799	179,034
1974	415,820	177,407	122,384	34,571	201,832	7,312	246,453	53,746	730,827	192,708
1975	482,623	222,954	140,823	40,087	232,249	8,640	282,969	62,513	836,914	221,036
1976	533,561	209,597	149,709	41,248	246,903	9,519	303,613	69,652	889,679	236,933
1977	648,834	393,677	173,998	44,875	286,963	11,376	359,002	83,680	998,957	270,859
1978	668,597	339,759	195,356	56,569	322,183	11,784	389,862	86,522	1,200,561	314,806
1979	797,749	350,798	215,844	57,895	355,971	14,231	440,427	104,261	1,235,064	331,531
1980	870,441	379,053	235,642	66,202	388,618	15,392	474,475	113,098	1,410,928	373,897
1981	801,920	371,877	224,768	63,022	370,687	14,308	453,024	104,903	1,356,058	359,652
1982	805,895	353,557	226,618	63,639	373,740	14,387	456,515	105,466	1,371,668	363,624
1983	742,521	326,392	225,446	65,976	371,807	13,602	448,432	98,915	1,317,552	344,758
1984	820,605	412,436	241,671	66,953	398,563	14,983	488,691	109,083	1,426,135	379,480
1985	820,295	385,974	245,754	71,986	405,302	14,977	488,598	109,049	1,515,313	396,849
1986	884,143	381,527	248,528	75,812	409,882	14,922	487,666	108,603	1,581,748	409,533
1987	887,092	378,747	246,473	72,221	406,490	15,012	489,976	109,259	1,519,476	397,895
1988	887,953	366,927	249,561	74,954	411,576	15,061	492,182	109,590	1,567,966	407,733
1989	884,251	380,443	253,536	80,190	418,142	15,037	491,381	109,397	1,660,532	425,618
1990	872,140	405,877	240,477	65,487	396,590	14,948	488,685	108,753	1,397,636	373,745
1991	873,094	377,099	247,812	74,224	408,693	14,963	489,166	108,855	1,553,069	404,166
1992	851,259	374,028	243,645	74,012	401,822	14,659	478,717	106,674	1,544,890	400,482
1993	839,680	373,719	242,938	74,759	400,655	14,556	475,263	105,937	1,556,697	402,083
1994	850,778	385,538	235,936	63,999	389,112	14,688	479,996	106,878	1,366,625	365,897
1995	850,680	366,492	249,165	80,064	410,934	14,705	480,191	106,978	1,652,368	421,697
1996	862,387	365,925	245,027	73,856	404,105	14,785	482,667	107,569	1,543,701	401,048
1997	866,213	456,206	244,354	72,363	402,992	14,824	484,101	107,853	1,517,462	396,195
1998	865,954	331,060	246,578	75,182	406,662	14,817	483,877	107,815	1,567,623	405,942
1999	859,045	441,843	237,445	65,239	391,599	14,715	481,291	107,010	1,389,181	370,560
2000	862,584	399,981	248,885	78,649	410,468	14,766	482,488	107,424	1,628,474	417,516
2001	864,581	358,989	236,568	63,113	390,146	14,802	483,540	107,684	1,352,661	363,915
2002	865,168	416,004	249,192	78,266	410,976	14,816	484,119	107,778	1,622,061	416,585
2003	866,408	325,540	247,892	76,332	408,833	14,840	484,855	107,952	1,587,987	410,078
2004	866,875	474,744	238,053	64,121	392,593	14,850	485,251	108,025	1,370,992	367,816
2005	866,195	341,379	251,920	81,369	415,478	14,834	484,607	107,910	1,677,455	427,491
2006	865,908	414,609	244,862	72,867	403,830	14,828	484,348	107,871	1,526,402	397,978
2007	867,260	410,297	240,436	66,995	396,529	14,856	485,346	108,066	1,422,125	377,815
2008	887,998	386,030	248,756	72,914	410,257	15,200	494,415	110,656	1,532,497	401,282
2009	963,364	420,856	273,753	87,894	451,485	16,457	527,660	120,087	1,817,025	463,852
2010	920,706	421,204	253,659	72,179	418,338	15,746	508,787	114,742	1,527,418	403,350
2011	944,347	447,508	263,148	78,947	433,990	16,137	519,093	117,691	1,653,504	430,149
2012	940,931	387,333	257,738	72,857	425,060	16,086	517,976	117,295	1,544,222	408,557
2013	920,428	432,564	257,809	77,122	425,185	15,747	509,056	114,741	1,614,960	420,452
2014	866,559	328,943	249,758	78,594	411,905	14,842	484,888	107,967	1,628,166	417,923
2015	866,339	441,189	239,111	65,640	394,343	14,839	484,781	107,939	1,397,969	372,993
2016	867,353	416,967	251,685	80,566	415,088	14,864	485,701	108,095	1,663,221	424,903
2017	866,334	293,023	242,690	70,019	400,249	14,838	484,770	107,937	1,475,762	388,168
2018	866,368	447,607	244,370	72,052	403,018	14,840	484,804	107,943	1,511,911	395,227
2019	867,244	413,428	242,038	68,863	399,172	14,859	485,534	108,077	1,455,203	384,289
2020	868,367	392,392	246,098	73,407	405,874	14,882	486,423	108,256	1,535,966	400,203
2021	868,367	392,392	246,098	73,407	405,874	14,882	486,423	108,256	1,535,966	400,203
2022	868,367	392,392	246,098	73,407	405,874	14,882	486,423	108,256	1,535,966	400,203
2023	868,367	392,392	246,098	73,407	405,874	14,882	486,423	108,256	1,535,966	400,203
2024	868,367	392,392	246,098	73,407	405,874	14,882	486,423	108,256	1,535,966	400,203
2025	868,367	392,392	246,098	73,407	405,874	14,882	486,423	108,256	1,535,966	400,203
2026	868,367	392,392	246,098	73,407	405,874	14,882	486,423	108,256	1,535,966	400,203
2027	868,367	392,392	246,098	73,407	405,874	14,882	486,423	108,256	1,535,966	400,203
2028	868,367	392,392	246,098	73,407	405,874	14,882	486,423	108,256	1,535,966	400,203
2029	868,367	392,392	246,098	73,407	405,874	14,882	486,423	108,256	1,535,966	400,203
2030	868,367	392,392	246,098	73,407	405,874	14,882	486,423	108,256	1,535,966	400,203
2031	868,367	392,392	246,098	73,407	405,874	14,882	486,423	108,256	1,535,966	400,203
2032	868,367	392,392	246,098	73,407	405,874	14,882	486,423	108,256	1,535,966	400,203
2033	868,367	392,392	246,098	73,407	405,874	14,882	486,423	108,256	1,535,966	400,203
2034	868,367	392,392	246,098	73,407	405,874	14,882	486,423	108,256	1,535,966	400,203
2035	868,367	392,392	246,098	73,407	405,874	14,882	486,423	108,256	1,535,966	400,203
TOTAL	53,296,588	24,000,198	15,041,527	4,430,632	24,806,815	919,723	29,852,819	6,700,432	92,837,042	24,271,916

TRANSPORTATION CHARGE FOR EACH CONTRACTOR[a]

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				FUTURE CONTRACTOR	GRAND TOTAL
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC & WCD	Total	South Bay	
	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)
1962	0	0	0	0	0	0	0	0	0	18,567
1963	0	0	0	0	0	0	0	0	12,626	168,358
1964	0	0	0	0	0	0	0	0	13,938	184,729
1965	0	0	0	0	0	0	0	0	28,937	378,874
1966	0	0	0	0	0	0	0	0	31,321	408,397
1967	0	0	0	0	0	0	0	0	47,719	634,505
1968	8,478	934,915	9,135	1,163,115	0	0	0	0	46,811	2,661,176
1969	11,245	1,244,643	12,116	1,547,281	0	0	0	0	52,838	3,964,291
1970	14,042	1,560,046	15,122	1,937,866	0	0	0	0	69,614	4,542,556
1971	23,330	2,607,877	25,073	3,234,935	0	0	54	54	55,384	5,989,783
1972	84,980	7,733,302	66,053	9,589,862	0	0	41	41	80,250	12,541,216
1973	110,880	9,495,694	76,165	11,720,545	0	0	1	1	54,048	14,609,659
1974	119,280	11,048,626	81,582	13,432,548	0	0	143	143	76,592	16,618,819
1975	136,838	13,081,490	100,871	15,850,007	0	0	1,068	1,068	84,337	19,748,092
1976	146,485	12,883,637	98,914	15,819,450	0	0	139	139	106,564	19,780,432
1977	167,070	20,483,647	163,926	24,086,864	0	0	892	892	98,496	28,388,038
1978	195,122	19,322,987	148,013	23,252,121	0	0	63	63	103,074	27,906,368
1979	204,841	19,944,262	162,742	24,215,616	0	0	200	200	140,472	29,493,662
1980	231,583	21,982,223	175,525	26,717,077	0	0	200	200	154,043	32,684,186
1981	222,718	20,352,473	166,338	24,861,748	0	0	200	200	158,456	30,847,173
1982	225,207	21,718,945	162,298	26,241,559	0	0	200	200	158,771	32,110,618
1983	213,683	18,863,186	148,493	23,180,763	0	0	200	200	160,904	28,987,371
1984	234,849	25,551,893	182,025	30,327,367	0	0	200	200	164,648	36,647,795
1985	246,228	22,412,515	173,371	27,286,211	0	0	200	200	164,490	33,707,077
1986	254,575	23,777,335	171,533	28,805,807	0	0	200	200	164,755	35,453,265
1987	246,884	22,868,469	171,040	27,809,034	0	0	200	200	164,441	34,442,416
1988	253,270	22,947,817	167,253	27,951,843	0	0	200	200	164,752	34,577,570
1989	265,018	23,514,436	171,642	28,669,623	0	0	200	200	164,393	35,277,926
1990	231,104	25,027,634	179,678	29,802,754	0	0	200	200	163,217	36,363,205
1991	251,029	23,410,104	170,300	28,382,574	0	0	200	200	163,163	34,948,480
1992	248,905	23,625,869	168,355	28,533,317	0	0	200	200	157,345	34,920,926
1993	250,051	22,532,725	167,977	27,437,040	0	0	200	200	156,146	33,779,460
1994	226,219	22,461,217	172,170	27,119,053	0	0	200	200	157,266	33,507,991
1995	262,775	23,815,824	166,024	28,877,897	0	0	200	200	157,135	35,264,783
1996	249,167	22,992,963	166,120	27,909,320	0	0	200	200	158,177	34,337,816
1997	245,950	25,072,956	195,774	30,077,243	0	0	200	200	158,533	36,526,338
1998	252,347	21,443,320	154,805	26,355,982	0	0	200	200	158,508	32,802,976
1999	229,232	25,497,155	190,556	30,274,871	0	0	200	200	158,304	36,701,875
2000	259,970	23,663,932	177,138	28,752,275	0	0	200	200	158,393	35,188,741
2001	224,816	22,033,315	163,859	26,657,989	0	0	200	200	158,584	33,102,808
2002	259,312	25,343,544	182,540	30,450,361	0	0	200	200	158,725	36,897,910
2003	255,033	21,089,758	153,028	26,028,536	0	0	200	200	158,787	32,480,489
2004	227,326	25,921,737	201,871	30,734,254	0	0	200	200	158,831	37,188,227
2005	266,447	22,384,647	158,200	27,477,932	0	0	200	200	158,767	33,929,205
2006	247,109	24,333,528	182,154	29,296,294	0	0	200	200	158,711	35,744,845
2007	233,876	24,098,287	180,816	28,902,704	0	0	200	200	158,900	35,357,819
2008	248,998	23,589,851	174,374	28,573,228	0	0	200	200	159,621	35,092,100
2009	289,062	25,934,958	191,162	31,557,615	0	0	200	200	162,331	38,310,958
2010	249,946	24,654,932	188,228	29,749,235	0	0	200	200	160,774	36,369,294
2011	267,218	26,400,039	198,532	31,770,303	0	0	200	200	161,535	38,463,743
2012	253,101	23,923,626	178,575	29,043,357	0	0	200	200	161,476	35,727,389
2013	261,151	25,547,987	191,906	30,789,108	0	0	200	200	160,758	37,409,689
2014	260,170	21,876,404	154,173	26,880,292	0	0	200	200	158,783	33,333,688
2015	230,733	25,055,378	190,886	29,862,140	0	0	200	200	158,757	36,313,714
2016	264,725	25,000,135	183,008	30,176,311	0	0	200	200	158,922	36,632,697
2017	240,677	19,960,975	142,399	24,687,841	0	0	200	200	158,815	31,139,800
2018	245,303	25,707,285	192,980	30,693,708	0	0	200	200	158,814	37,145,563
2019	238,117	24,361,249	181,848	29,219,921	0	0	200	200	158,907	35,675,865
2020	248,516	23,810,541	175,006	28,765,931	0	0	200	200	159,017	35,228,276
2021	248,516	23,810,541	175,006	28,765,931	0	0	200	200	159,017	35,228,276
2022	248,516	23,810,541	175,006	28,765,931	0	0	200	200	159,017	35,228,276
2023	248,516	23,810,541	175,006	28,765,931	0	0	200	200	159,017	35,228,276
2024	248,516	23,810,541	175,006	28,765,931	0	0	200	200	159,017	35,228,276
2025	248,516	23,810,541	175,006	28,765,931	0	0	200	200	159,017	35,228,276
2026	248,516	23,810,541	175,006	28,765,931	0	0	200	200	159,017	35,228,276
2027	248,516	23,810,541	175,006	28,765,931	0	0	200	200	159,017	35,228,276
2028	248,516	23,810,541	175,006	28,765,931	0	0	200	200	159,017	35,228,276
2029	248,516	23,810,541	175,006	28,765,931	0	0	200	200	159,017	35,228,276
2030	248,516	23,810,541	175,006	28,765,931	0	0	200	200	159,017	35,228,276
2031	248,516	23,810,541	175,006	28,765,931	0	0	200	200	159,017	35,228,276
2032	248,516	23,810,541	175,006	28,765,931	0	0	200	200	159,017	35,228,276
2033	248,516	23,810,541	175,006	28,765,931	0	0	200	200	159,017	35,228,276
2034	248,516	23,810,541	175,006	28,765,931	0	0	200	200	159,017	35,228,276
2035	248,516	23,810,541	175,006	28,765,931	0	0	200	200	159,017	35,228,276
TOTAL	15,062,731	1,442,060,408	10,748,762	1,744,029,593	0	0	13,801	13,801	10,043,931	2,147,083,729

TABLE B-17: UNIT VARIABLE OMP&R COMPONENT

(in dollars per acre-foot) [b]

Calendar Year	NORTH BAY AQUEDUCT				SOUTH BAY AQUEDUCT		CALIFORNIA AQUEDUCT			
	Reach 1 Calhoun and Travis Pumping Plants		Reach 3 Cordelia Pumping Plant [c]		Reach 1 South Bay and Del Valle Pumping Plant [d]		Reach 1 Delta Pumping Plant		Reach 4 Dos Amigos Pumping Plant	
	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1962	0	0	0	0	4.1511341	4.1511341	0	0	0	0
1963	0	0	0	0	4.5639383	4.5639383	0	0	0	0
1964	0	0	0	0	3.5452154	3.5452154	0	0	0	0
1965	0	0	0	0	4.1911773	4.1911773	0	0	0	0
1966	0	0	0	0	3.5074573	3.5074573	0	0	0	0
1967	0	0	0	0	3.9306767	5.1337448	1.2030681	1.2030681	0	0
1968	0	0	5.7570016	5.7570016	3.3315620	4.8658936	1.5343316	1.5343316	1.0686976	2.6030292
1969	0	0	3.1823595	3.1823595	3.6949019	4.7914519	1.0965500	1.0965500	.6939369	1.7904869
1970	0	0	3.7584301	3.7584301	4.4256141	5.3647728	.9391587	.9391587	.7750129	1.7141716
1971	0	0	4.2082507	4.2082507	3.8714396	4.7481431	.8767035	.8767035	.4093968	1.2861003
1972	0	0	3.9577735	3.9577735	4.3250690	5.2255579	.9004889	.9004889	.5535632	1.4540521
1973	0	0	3.8103903	3.8103903	5.2455409	6.1805866	.9350457	.9350457	.5970606	1.5321063
1974	0	0	3.5878850	3.5878850	6.3321503	7.2263003	.8941500	.8941500	.5714959	1.4656459
1975	0	0	2.1606725	2.1606725	3.7365711	4.8305677	1.0939966	1.0939966	.4587400	1.5527366
1976	0	0	2.9283909	2.9283909	4.5191527	5.7245717	1.2054190	1.2054190	.5155282	1.7209472
1977	0	0	2.7456844	2.7456844	4.7519869	6.5112716	1.7592847	1.7592847	.5939005	2.3531852
1978	0	0	3.4275771	3.4275771	4.8249418	6.2100209	1.3850791	1.3850791	.5275326	1.9126117
1979	0	0	2.9356753	2.9356753	4.1435601	5.9609465	1.8173864	1.8173864	.5950846	2.4124710
1980	0	0	3.4572727	3.4572727	4.7235608	5.9513013	1.2277405	1.2277405	1.0071334	2.2348739
1981	0	0	3.1330403	3.1330403	4.8430000	6.6489516	1.8059516	1.8059516	.9791910	2.7851426
1982	0	0	3.0800576	3.0800576	4.6990014	6.0699522	1.3709508	1.3709508	.9581912	2.3291420
1983	0	0	18.4829609	18.4829609	17.6020014	23.8369529	6.2349515	6.2349515	3.0891911	9.3241426
1984	8.4239980	8.4239980	20.6100200	29.0340180	20.1559958	27.8369467	7.6809509	7.6809509	3.6881905	11.3691414
1985	8.5040151	8.5040151	20.7220482	29.2260633	20.2810014	28.0099523	7.7289509	7.7289509	3.7101908	11.4391417
1986	8.7640101	8.7640101	21.3950000	30.1590101	20.9629980	28.9449494	7.9819514	7.9819514	3.8251913	11.8071427
1987	8.7259993	8.7259993	21.4529609	30.1789602	20.8790020	28.8319528	7.9529508	7.9529508	3.8121914	11.7651422
1988	9.0879825	9.0879825	22.3660215	31.4540040	21.8460000	30.1609507	8.3149507	8.3149507	3.9751910	12.2901417
1989	9.0950122	9.0950122	22.4620513	31.5570635	21.9010019	30.0599530	8.1589511	8.1589511	3.9861912	12.1451423
1990	9.1380126	9.1380126	22.5000000	31.6380126	21.9969981	30.1829493	8.1859512	8.1859512	4.0041910	12.1901422
1991	9.2100000	9.2100000	22.7360377	31.9460377	22.1560036	30.4219545	8.2659509	8.2659509	4.0341912	12.3001421
1992	9.2000000	9.2000000	22.8750000	32.0750000	22.2089994	30.2989993	8.0899999	8.0899999	3.6800000	11.7699999
1993	9.0690121	9.0690121	22.4750000	31.5440121	21.8600000	29.8220003	7.9620003	7.9620003	3.6239997	11.5860000
1994	9.4559960	9.4559960	23.4029839	32.8589799	22.7880055	31.1050053	8.3169998	8.3169998	3.7790002	12.0960000
1995	9.4040157	9.4040157	23.3230000	32.7270157	22.7000000	31.0069999	8.3069999	8.3069999	3.7619995	12.0689994
1996	9.3350097	9.3350097	23.1529927	32.4880024	22.4840000	30.6920001	8.2080001	8.2080001	3.7320000	11.9400001
1997	9.4580077	9.4580077	23.4859722	32.9439799	22.8140000	31.1310004	8.3170004	8.3170004	3.7839996	12.1010000
1998	9.4270132	9.4270132	23.3250331	32.7520463	22.7040000	30.9910001	8.2870001	8.2870001	3.7659998	12.0529999
1999	9.5090112	9.5090112	23.6200000	33.1290112	22.9389947	31.3209946	8.3819999	8.3819999	3.8049996	12.1869995
2000	9.4240147	9.4240147	23.2850303	32.7090450	22.7150000	31.0090001	8.2940001	8.2940001	3.7680001	12.0620002
2001	9.4989908	9.4989908	23.5450299	33.0440207	22.8730000	31.2319999	8.3589999	8.3589999	3.7970000	12.1559999
2002	9.5729982	9.5729982	23.6800000	33.2529982	23.0600000	31.4829996	8.4229996	8.4229996	3.8260001	12.2489997
2003	9.6110018	9.6110018	23.7539766	33.3649784	23.1380000	31.5880000	8.4500000	8.4500000	3.8390002	12.2890002
2004	9.6480036	9.6480036	23.8839884	33.5319920	23.2530000	31.7479996	8.4949996	8.4949996	3.8569997	12.3519993
2005	9.5780108	9.5780108	23.7260000	33.3040108	23.0760053	31.5060050	8.4299997	8.4299997	3.8289999	12.2589996
2006	9.5200036	9.5200036	23.5539798	33.0739834	22.9510000	31.3380004	8.3870004	8.3870004	3.8079998	12.1950002
2007	9.6219900	9.6219900	23.8279978	33.4499878	23.2169947	31.6999945	8.4829998	8.4829998	3.8520001	12.3349999
2008	9.5989879	9.5989879	23.7690065	33.3679944	23.1330000	31.5880001	8.4550001	8.4550001	3.8379995	12.2929996
2009	9.6120014	9.6120014	23.8179745	33.4299759	23.1850000	31.6559997	8.4709997	8.4709997	3.8470000	12.3179997
2010	9.5730000	9.5730000	23.7080208	33.2810208	23.0710053	31.5050051	8.4339998	8.4339998	3.8280000	12.2619998
2011	9.5479951	9.5479951	23.6809816	33.2289767	23.0500000	31.4760000	8.4260000	8.4260000	3.8239996	12.2499996
2012	9.6610014	9.6610014	23.9560241	33.6170255	23.3260000	31.8540000	8.5280000	8.5280000	3.8699997	12.3979997
2013	9.7040117	9.7040117	24.0240138	33.7280255	23.3780000	31.9289999	8.5509999	8.5509999	3.8789997	12.4299996
2014	9.6099932	9.6099932	23.7980136	33.4080068	23.1700000	31.6400002	8.4700002	8.4700002	3.8439998	12.3140000
2015	9.5860034	9.5860034	23.7240000	33.3100034	23.0970000	31.5420001	8.4450001	8.4450001	3.8319998	12.2769999
2016	9.7059966	9.7059966	24.0279907	33.7339873	23.4039947	31.9599948	8.5560001	8.5560001	3.8829997	12.4389998
2017	9.5909899	9.5909899	23.7250000	33.3159899	23.1120000	31.5599999	8.4479999	8.4479999	3.8350000	12.2829999
2018	9.5770000	9.5770000	23.7030180	33.2800180	23.1020000	31.5550005	8.4530005	8.4530005	3.8330001	12.2860006
2019	9.6789901	9.6789901	23.9910177	33.6700078	23.3620000	31.9010000	8.5390000	8.5390000	3.8759997	12.4149997
2020 (e	9.6910033	9.6910033	23.9680000	33.6590033	23.3730000	32.3261201	8.9531201	8.9531201	3.9045635	12.8576836

a) Unit rates as shown constitute the rate for the indicated pumping plants, powerplants, and reservoirs. Cumulative unit rates as shown constitute the total rate, cumulative from the Sacramento-San Joaquin Delta, applicable to deliveries from or downstream of the indicated pumping plants and powerplants. Excludes extra peaking service costs.

b) Metric conversion is dollars per acre-foot times .8107 equals dollars per cubic dekametre.

c) For the period 1968 through 1983, rates are for an interim facility.

OF TRANSPORTATION CHARGE[a]

(in dollars per acre-foot)[b]

Calendar Year	CALIFORNIA AQUEDUCT (Continued)											
	Reach 14A Buena Vista Pumping Plant		Reach 15A Wheeler Ridge Pumping Plant		Reach 16A Wind Gap Pumping Plant		Reach 17E A.D. Edmonston (Tehachapi) Pumping Plant		Reach 18A Cottonwood Powerplant		Reach 22B Pearblossom Pumping Plant	
	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	.3333333	2.0475049	0	0	0	0	0	0	0	0	0	0
1971	1.3439298	2.6300301	4.6711712	7.3012013	0	0	0	0	0	0	0	0
1972	1.0672954	2.5213475	1.1178389	3.6391864	2.2553270	5.8945134	7.2408159	13.1353293	0	13.1353293	13.3773690	26.5126983
1973	.9749081	2.5070144	1.2016196	3.7086340	2.0873866	5.7960206	7.3928434	13.1888640	0	13.1888640	4.3984406	17.5873046
1974	.9145106	2.3801565	1.0834746	3.4636311	1.9327526	5.3963837	6.8602256	12.2566093	0	12.2566093	3.4230204	15.6796297
1975	.8145662	2.3673028	.9526191	3.3199219	1.9544540	5.2743759	6.9742716	12.2486475	0	12.2486475	3.1630777	15.4117252
1976	.9591213	2.6800685	1.0173467	3.6974152	2.2220234	5.9194386	7.9194844	13.8389230	0	13.8389230	3.9261131	17.7650361
1977	1.0774240	3.4306092	1.3494189	4.7800281	2.8899834	7.6700115	9.8599536	17.5299651	0	17.5299651	3.4540000	20.9839651
1978	.9404889	2.8531006	.9977706	3.8508712	2.1874068	6.0382780	7.7847675	13.8230455	0	13.8230455	2.5345329	16.3575784
1979	.9888391	3.4013101	.9725507	4.3738608	2.2793278	6.6531886	8.2455623	14.8987509	0	14.8987509	3.2784958	18.1772467
1980	1.2368105	3.4716844	1.2588946	4.7305790	2.5685850	7.2991640	8.8962432	16.1954072	0	16.1954072	3.7225037	19.9179109
1981	1.3536228	4.1387654	1.4120596	5.5508250	3.0931946	8.6440196	10.8041544	19.4481740	0	19.4481740	4.0818657	23.5300397
1982	1.2706236	3.5997656	1.3280593	4.9278249	2.8951968	7.8230217	10.0811544	17.9041761	0	17.9041761	3.6978671	21.6020432
1983	5.1216247	14.4457673	5.3060596	19.7518269	12.3381964	32.0900233	44.2981548	76.3881781	0	76.3881781	14.1178665	90.5060446
1984	6.3046236	17.6737650	6.5430596	24.2168246	15.3012020	39.5180266	55.5971540	95.1151806	-2.0940004	93.0211802	17.0398679	110.0610481
1985	6.3426240	17.7817657	6.5830597	24.3648254	15.3961953	39.7610207	55.9431538	95.7041745	-2.0630015	93.6411730	17.1458674	110.7870404
1986	6.5496239	18.3567666	6.7970608	25.1538274	15.9031958	41.0570232	57.8031542	98.8601774	-2.3120000	96.5481774	17.7138665	114.2620439
1987	6.5246236	18.2897658	6.7710598	25.0608256	15.8431957	40.9040213	57.5821538	98.4861751	-2.1360004	96.3501747	17.6468656	113.9970403
1988	6.8196243	19.1097660	7.0760602	26.1858262	16.5661951	42.7520213	60.2371534	102.9891747	-2.5489993	100.4401754	18.4578653	118.8980407
1989	6.8386241	18.9837664	7.0950607	26.0788271	16.6111959	42.6900230	60.4021541	103.0921771	-2.5140009	100.5781762	18.5078665	119.0860427
1990	6.8686238	19.0587660	7.1260601	26.1848261	16.6841955	42.8690216	60.6622051	103.5312267	-2.2749996	101.2562271	18.5888648	119.8450919
1991	6.9226242	19.2227663	7.1820602	26.4048265	16.8161959	43.2210224	61.1486242	104.3696466	-2.6580007	101.7116459	18.7388663	120.4505122
1992	6.7470000	18.5169999	6.9829999	25.4999998	16.5199995	42.0199993	60.6239996	102.6439989	-2.3359998	100.3079991	18.5450000	118.8529991
1993	6.6429996	18.2289996	6.8749995	25.1039991	16.2649995	41.3689986	59.6879993	101.0569979	-2.2819998	98.7749981	18.2570000	117.0319981
1994	6.9249998	19.0209998	7.1679996	26.1889994	16.9589998	43.1479992	62.2320001	105.3799993	-2.4219993	102.9580000	19.0359988	121.9939988
1995	6.8949998	18.9639992	7.1359999	26.0999991	16.8829997	42.9829988	61.9540000	104.9369988	-2.3479999	102.5889989	18.9530000	121.5419989
1996	6.8400000	18.7800001	7.0800005	25.8600006	16.7500000	42.6100006	61.4639996	104.0740002	-2.2019992	101.8720010	18.8040000	120.6760010
1997	6.9349998	19.0359998	7.1779996	26.2139994	16.9819994	43.1959988	62.3159998	105.5119986	-2.5749999	102.9369987	19.0629988	121.9999975
1998	6.9019999	18.9549998	7.1429994	26.0979992	16.9020002	42.9999994	62.0189993	105.0189987	-2.4249991	102.5939996	18.9730000	121.5669996
1999	6.9729996	19.1599991	7.2170000	26.3769991	17.0760000	43.4529991	62.6619997	106.1149988	-2.2569993	103.8579995	19.1700000	123.0279995
2000	6.9040000	18.9660002	7.1459995	26.1119997	16.9069998	43.0189995	62.0410000	105.0599995	-2.4169997	102.6429998	18.9810000	121.6239998
2001	6.9580002	19.1140001	7.2019997	26.3159998	17.0389993	43.3549991	62.5239996	105.8789987	-2.6750004	103.2039983	19.1279988	122.3319971
2002	7.0099996	19.2589993	7.2549996	26.5139989	17.1669999	43.6809988	62.9929995	106.6739983	-2.5969998	104.0769985	19.2729988	123.3499973
2003	7.0319998	19.3210000	7.2789995	26.5999995	17.2229997	43.8229992	63.1959995	107.0189987	-2.3539998	104.6649989	19.3350000	123.9999989
2004	7.0670002	19.4189995	7.3139997	26.7329992	17.3059999	44.0389991	63.5040000	107.5429991	-2.2319994	105.3109997	19.4279988	124.7389985
2005	7.0139995	19.2729991	7.2600000	26.5329991	17.1779996	43.7109987	63.0339995	106.7449982	-2.5649991	104.1799991	19.2849988	123.4649979
2006	6.9750000	19.1700002	7.2190000	26.3890002	17.0830001	43.4720003	62.6849994	106.1569997	-2.2339982	103.9230015	19.1789988	123.1020003
2007	7.0549992	19.3899991	7.3029996	26.6929987	17.2800000	43.9729987	63.4050002	107.3779989	-2.3070009	105.0709980	19.3990000	124.4699980
2008	7.0309996	19.3239992	7.2770004	26.6009996	17.2179998	43.8189994	63.1800000	106.9989994	-2.2770001	104.7219993	19.3310000	124.0529993
2009	7.0459999	19.3639996	7.2929995	26.6569991	17.2559998	43.9129989	63.3190000	107.2319989	-2.7559995	104.4759994	19.3740000	123.8499994
2010	7.0119998	19.2739996	7.2570002	26.5309998	17.1729994	43.7039992	63.0130000	106.7169992	-2.2809996	104.4359996	19.2810000	123.7169996
2011	7.0049996	19.2549992	7.2489996	26.5039988	17.1549998	43.6589986	62.9469999	106.6059985	-2.6469994	103.9589991	19.2600000	123.2189991
2012	7.0879996	19.4859993	7.3359999	26.8219992	17.3589999	44.1809991	63.6959992	107.8769983	-2.6169996	105.2599987	19.4890000	124.7489987
2013	7.1039999	19.5339995	7.3530000	26.8869995	17.3989997	44.2859992	63.8449994	108.1309986	-2.4120005	105.7189981	19.5360000	125.2549981
2014	7.0400000	19.3540000	7.2859998	26.6399998	17.2429993	43.8829991	63.2689998	107.1519989	-2.5719995	104.5799994	19.3599988	123.9399982
2015	7.0190002	19.2960001	7.2640001	26.5600002	17.1900000	43.7500002	63.0769996	106.8269998	-2.2959990	104.5310008	19.3010000	123.8320008
2016	7.1119999	19.5509997	7.3610001	26.9119998	17.4179998	44.3299996	63.9139998	108.2439994	-2.3360000	105.9079994	19.5560000	125.4639994
2017	7.0229996	19.3059995	7.2689998	26.5749993	17.2009998	43.7759991	63.1169998	106.8929989	-2.4009996	104.4919993	19.3129988	123.8049981
2018	7.0209999	19.3070005	7.2660004	26.5730009	17.1949996	43.7680005	63.0939999	106.8620004	-2.2909999	104.5710005	19.3080000	123.8790005
2019	7.0990000	19.5139997	7.3469995	26.8609992	17.3869999	44.2479991	63.7979995	108.0459986	-2.3400005	105.7059981	19.5210000	125.2269981
2020 (e	7.1710580	20.0287416	7.4266156	27.4553572	17.5768780	45.0322352	64.5152671	109.5475023	-2.3631233	107.1843790	19.4884775	126.6728565

d) The relatively minor estimated costs of the Del Valle Pumping Plant have been combined with those of the South Bay Pumping Plant to simplify the allocation procedure.

e) And each year thereafter for the remainder of the project repayment period.

TABLE B-17: UNIT VARIABLE OMP&R COMPONENT OF TRANSPORTATION CHARGE[a]

(in dollars per acre-foot)[b]

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	Reach 26A Devil Canyon Powerplant		Reach 29A Oso Pumping Plant		Reach 29G Pyramid Powerplant		Reach 29J Castaic Powerplant		Reach 31A Las Perillas and Badger Hill Pumping Plants		Reach 33 Devil's Den, Sawtooth, and Polonio Pumping Plants and San Luis Obispo Powerplant	
	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate
	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	1.5014866	4.1045158	0	0
1969	0	0	0	0	0	0	0	0	1.2624065	3.0528934	0	0
1970	0	0	0	0	0	0	0	0	1.6309699	3.3451415	0	0
1971	0	0	0	0	0	0	0	0	1.4985537	2.7846540	0	0
1972	-2.3717647	24.1409336	1.3985359	14.5338652	0	14.5338652	-2.9350830	11.5987822	1.7489056	3.2029577	0	0
1973	-8.4634448	9.1238598	1.0046872	14.1935512	0	14.1935512	-5.8335963	8.3599549	1.4609575	2.9930638	0	0
1974	-5.1212842	10.5583455	.9120198	13.1686291	0	13.1686291	-6.2261065	6.9425226	1.4255635	2.8912094	0	0
1975	-5.6602419	9.7514833	.9294374	13.1780849	0	13.1780849	-6.1837341	6.9943508	1.0379624	2.5906990	0	0
1976	-6.4591343	11.3059018	.8562352	14.6951582	0	14.6951582	-7.7607515	6.9344067	1.5462036	3.2671508	0	0
1977	-11.6603815	9.3235836	.8855260	18.4154911	0	18.4154911	-73.1733321	-54.7578410	1.5460460	3.8992312	0	0
1978	-8.1957922	8.1617862	.7162307	14.5392762	0	14.5392762	-5.3866740	9.1526022	1.9255648	3.8381765	0	0
1979	-6.2126618	11.9645849	.9413365	15.8400874	0	15.8400874	-11.7473850	4.0927024	1.6365504	4.0490214	0	0
1980	-6.2459493	13.6719616	1.3225624	17.5179696	0	17.5179696	-10.4314135	7.0865561	1.9009282	4.1358021	0	0
1981	-4.3800001	19.1500396	1.5610166	21.0091906	0	21.0091906	-6.2260000	14.7831906	1.9040014	4.6891440	0	0
1982	-5.2940007	16.3080425	1.5950143	19.4991904	-2.5249993	16.9741911	-6.7120000	10.2621911	1.8170036	4.1461456	0	0
1983	-24.4029988	66.1030458	5.5030138	81.8911919	-17.7129995	64.1781924	-25.0600000	39.1181924	5.7789954	15.1031380	0	0
1984	-32.8059997	77.2550484	7.1800155	102.2951961	-27.4889991	74.8061970	-34.4809996	40.3251974	6.5990023	17.9681437	0	0
1985	-32.0850000	78.7020404	7.2230137	102.9271882	-25.4350012	77.4921870	-32.2209993	45.2711877	6.6290023	18.0681440	0	0
1986	-31.9090011	82.3530428	7.4480158	106.3081932	-25.3869993	80.9211939	-31.0420005	49.8791934	6.8619966	18.6691393	38.6019856	57.2711249
1987	-31.4339997	82.5630406	7.4220138	105.9081889	-23.4560000	82.4521889	-30.8699979	51.5821910	6.8380047	18.6031469	37.6330191	56.2361660
1988	-31.4189997	87.4790410	7.7450128	110.7341875	-23.5180004	87.2161871	-31.1850010	56.0311861	7.1500032	19.4401449	39.5840047	59.0241496
1989	-31.2910009	87.7950418	7.7660139	110.8581910	-17.9829999	92.8751911	-26.9069988	65.9681923	7.1740013	19.3191436	39.5099872	58.8291308
1990	-30.2059990	89.6390929	7.7980134	111.3292401	-16.1560002	95.1732399	-26.7060002	68.4672397	7.2030010	19.3931432	39.4750173	58.8681605
1991	-30.4120003	90.0385119	7.8580136	112.2276602	-15.2440004	96.9836598	-25.1789999	71.8046599	7.2599998	19.5601419	40.4240033	59.9841452
1992	-31.2109995	87.6419996	7.3869986	110.0309975	-15.2629995	94.7679980	-26.1460000	68.6219980	7.3009986	19.0709985	41.2829874	60.3539859
1993	-29.0039992	88.0279989	7.2719998	108.3289977	-14.0319988	94.2969989	-24.8370003	69.4599986	7.1899947	18.7759947	41.9489847	60.7249794
1994	-30.9879997	91.0059991	7.5810002	112.9609995	-20.2099990	92.7510005	-25.9180004	66.8330001	7.4899926	19.5859926	43.8609860	63.4469786
1995	-30.8000000	90.7419989	7.5449999	112.4819987	-19.3179996	93.1639991	-24.4500000	68.7139991	7.4549941	19.5239935	43.8680000	63.3919935
1996	-29.7199987	90.9560023	7.4860000	111.5600002	-18.9159998	92.6440004	-25.9480004	66.6960000	7.3952626	19.3352627	43.9600000	63.2952627
1997	-29.9229984	92.0769991	7.5890000	113.1009986	-18.0890001	95.0119985	-26.0009999	69.0109986	7.5059989	19.6069989	45.0579956	64.6649945
1998	-29.6909982	91.8760014	7.5519991	112.5709978	-17.8410004	94.7299974	-24.8960000	69.8339974	7.4699944	19.5229943	44.9709808	64.4939751
1999	-30.0589979	92.9690016	7.6299994	113.7449982	-18.0719993	95.6729989	-24.3529994	71.3199995	7.5439955	19.7309950	45.6869838	65.4179788
2000	-30.4549987	91.1690011	7.5539996	112.6139991	-17.9630001	94.6509990	-23.7060002	70.9449988	7.4639956	19.5259958	45.2459923	64.7719881
2001	-29.3969990	92.9349981	7.6130001	113.4919988	-17.9389999	95.5529989	-26.4000000	69.1529989	7.5259956	19.6819955	45.6939813	65.3759768
2002	-30.6970003	92.6529970	7.6689995	114.3429978	-17.2150004	97.1279974	-25.4120000	71.7159974	7.5809978	19.8299975	44.7839927	64.6139902
2003	-30.2029997	93.7969992	7.6929989	114.7119976	-16.8949988	97.8169988	-25.4600167	72.3569821	7.6090000	19.8980002	46.1459965	66.0439967
2004	-30.4349987	94.3039998	7.7299998	115.2729989	-16.7719989	98.5010000	-23.6559998	74.8450002	7.6409968	19.9929961	46.6800000	66.6729961
2005	-29.9799987	93.4849992	7.6729996	114.4179978	-16.3469992	98.0709986	-24.1109998	73.9599988	7.5890011	19.8480007	45.7879967	65.6359974
2006	-29.9220003	93.1800000	7.6299994	113.7869991	-16.0700000	97.7169991	-24.7940002	72.9229989	7.5419948	19.7369950	45.4539867	65.1909817
2007	-30.1679984	94.3019996	7.7179996	115.0959985	-16.2019999	98.8939986	-26.1109999	72.7829987	7.6310010	19.9660009	46.1709917	66.1369926
2008	-29.1320003	94.9209990	7.6889999	114.6879993	-15.1120000	99.5759993	-24.4589996	75.1169997	7.6049974	19.8979970	45.9709868	65.8689838
2009	-30.4660008	93.3839986	7.7059995	114.9379984	-15.4120001	99.5259983	-24.6010008	74.9249975	7.6209979	19.9389976	46.3539935	66.2929911
2010	-29.5539992	94.1630004	7.6679994	114.3849986	-15.2569999	99.1279987	-23.4240006	75.7039981	7.5889984	19.8509982	45.7879967	65.6389949
2011	-31.5849986	91.6340005	7.6599997	114.2659982	-15.0950003	99.1709979	-24.3610001	74.8099978	7.5789984	19.8289980	45.7879967	65.6169947
2012	-29.9620009	94.7869978	7.7510001	115.6279984	-14.6919993	100.9359991	-24.9700007	75.9659984	7.6679969	20.0659966	46.7379967	66.8039933
2013	-32.1819994	93.0729987	7.7689997	115.8999983	-14.5470002	101.3529981	-24.2869995	77.0659986	7.6889990	20.1189986	46.6379837	66.7569823
2014	-31.1279991	92.8119991	7.6989997	114.8509986	-13.9819995	100.8689991	-23.4329999	77.4359992	7.6150000	19.9290000	46.8379837	66.7669837
2015	-32.2359983	91.5960025	7.6759997	114.5029995	-14.6180000	99.8849995	-23.6200000	76.2649995	7.5939990	19.8709989	45.9209919	65.7919908
2016	-31.3559997	94.1079997	7.7769995	116.0209989	-14.6970005	101.3239984	-24.4819999	76.8419985	7.6939990	20.1329988	46.9379837	67.0709825
2017	-32.2879991	91.5169990	7.6799993	114.5729982	-14.4070004	100.1659978	-23.5029996	76.6629982	7.5939990	19.8769989	46.2040000	66.0809989
2018	-31.9340003	91.9450002	7.6770002	114.5390006	-14.5319996	100.0070010	-22.9189999	77.0880011	7.5939990	19.8799996	45.9379837	65.8179833
2019	-31.5119994	93.7149987	7.7629993	115.8089979	-14.6509991	101.1579988	-24.4059997	76.7519991	7.6779979	20.0929976	46.8379837	66.9309813
2020(e	-31.5584090	95.1144475	7.9156415	117.4631438	-14.6397186	102.8234252	-24.3779237	78.4455015	7.6779979	20.5356815	46.8539837	67.3896652

TABLE B-18: VARIABLE OMP&R COMPONENT OF TRANSPORTATION CHARGE FOR EACH CONTRACTOR[a]

(in dollars)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC & WCD	Solano County FC & WCD	Total	Alameda County FC & WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC & WCD	Santa Barbara County FC & WCD	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1962	0	0	0	2,051	34,919	0	36,970	0	0	0
1963	0	0	0	7,900	49,811	0	57,711	0	0	0
1964	0	0	0	5,931	68,203	0	74,134	0	0	0
1965	0	0	0	10,918	68,765	62,926	142,609	0	0	0
1966	0	0	0	19,330	52,135	121,140	192,605	0	0	0
1967	0	0	0	19,399	56,949	160,650	236,998	0	0	0
1968	6,989	0	6,989	29,842	120,757	341,124	491,723	0	0	0
1969	8,551	0	8,551	31,792	3,895	298,335	334,022	0	0	0
1970	13,598	0	13,598	49,619	0	430,850	480,469	0	0	0
1971	10,609	0	10,609	23,821	28,304	415,965	468,090	0	0	0
1972	14,434	0	14,434	54,811	144,596	523,945	723,352	0	0	0
1973	14,449	0	14,449	18,387	15,581	547,489	581,457	0	0	0
1974	17,473	0	17,473	9,495	29	635,915	645,439	0	0	0
1975	14,779	0	14,779	22,307	4,763	425,091	452,161	0	0	0
1976	20,856	0	20,856	98,068	121,933	503,762	723,763	0	0	0
1977	22,586	0	22,586	82,328	122,672	496,290	701,290	0	0	0
1978	20,682	0	20,682	68,211	36,410	594,466	699,087	0	0	0
1979	18,803	0	18,803	123,988	155,581	544,234	823,803	0	0	0
1980	22,818	0	22,818	130,928	147,592	523,715	802,235	0	0	0
1981	21,383	0	21,383	152,926	172,873	585,108	910,907	0	0	0
1982	21,391	0	21,391	145,679	165,103	534,156	844,938	0	0	0
1983	132,338	0	132,338	595,924	676,970	2,097,652	3,370,546	0	0	0
1984	217,320	101,930	319,250	723,761	823,973	2,449,652	3,997,386	0	0	0
1985	242,576	109,447	352,023	756,269	862,707	2,464,876	4,083,852	0	0	0
1986	259,367	133,564	392,931	810,459	929,133	2,547,156	4,286,748	318,428	950,700	1,269,128
1987	270,102	159,860	429,962	836,127	960,104	2,537,212	4,333,443	352,319	989,757	1,342,076
1988	292,522	226,291	518,813	904,829	1,040,553	2,654,164	4,599,546	411,399	1,097,849	1,509,248
1989	307,681	285,129	592,810	931,858	1,073,141	2,705,396	4,710,395	452,102	1,153,050	1,605,152
1990	316,380	345,417	661,797	965,854	1,113,751	2,776,832	4,856,437	493,315	1,212,684	1,705,999
1991	338,628	348,138	686,766	1,034,346	1,168,204	2,859,663	5,062,213	564,091	1,313,653	1,877,744
1992	359,240	347,760	707,000	1,090,764	1,208,930	2,908,704	5,208,398	629,372	1,394,177	2,023,549
1993	372,219	342,809	715,028	1,133,236	1,234,631	2,922,556	5,290,423	695,423	1,481,690	2,177,113
1994	407,451	357,437	764,888	1,244,200	1,306,410	3,110,501	5,661,111	791,565	1,630,587	2,422,152
1995	425,451	355,472	780,923	1,302,294	1,302,294	3,100,700	5,705,288	855,791	1,711,584	2,567,375
1996	445,086	352,863	797,949	1,350,448	1,289,064	3,069,200	5,708,712	930,440	1,791,256	2,721,696
1997	474,393	357,513	831,906	1,432,026	1,307,502	3,113,100	5,852,628	1,028,173	1,907,618	2,935,791
1998	494,556	356,341	850,897	1,425,586	1,301,622	3,099,100	5,826,308	1,038,354	1,986,415	3,024,769
1999	523,438	359,441	882,879	1,440,766	1,315,482	3,132,099	5,888,347	1,131,731	2,099,916	3,231,647
2000	539,699	356,228	895,927	1,426,414	1,302,378	3,100,900	5,829,692	1,198,282	2,163,384	3,361,666
2001	551,835	359,062	910,897	1,436,672	1,311,744	3,123,200	5,871,616	1,294,445	2,203,170	3,497,615
2002	561,976	361,859	923,835	1,448,218	1,322,286	3,148,300	5,918,804	1,363,355	2,196,876	3,560,231
2003	570,541	363,296	933,837	1,453,048	1,326,696	3,158,800	5,938,544	1,479,386	2,265,310	3,744,696
2004	580,103	364,695	944,798	1,460,408	1,333,416	3,174,800	5,968,624	1,580,150	2,306,885	3,887,035
2005	582,820	362,049	944,869	1,449,276	1,323,252	3,150,601	5,923,129	1,640,900	2,290,696	3,931,596
2006	590,040	359,856	949,896	1,441,548	1,316,196	3,133,800	5,891,544	1,629,775	2,294,722	3,924,497
2007	608,121	363,711	971,832	1,458,200	1,331,400	3,169,999	5,959,599	1,653,425	2,347,863	4,001,288
2008	617,975	362,842	980,817	1,453,048	1,326,696	3,158,800	5,938,544	1,646,725	2,358,109	4,004,834
2009	630,489	363,334	993,823	1,456,176	1,329,552	3,165,600	5,951,328	1,657,325	2,393,177	4,050,502
2010	638,996	361,859	1,000,855	1,449,230	1,323,210	3,150,501	5,922,941	1,640,975	2,389,260	4,030,235
2011	649,959	360,914	1,010,873	1,447,896	1,321,992	3,147,600	5,917,488	1,640,425	2,388,459	4,028,884
2012	669,651	365,186	1,034,837	1,465,284	1,337,868	3,185,400	5,988,552	1,670,100	2,431,665	4,101,765
2013	684,004	366,812	1,050,816	1,468,734	1,341,018	3,192,900	6,002,652	1,668,925	2,436,628	4,105,553
2014	689,541	363,258	1,052,799	1,455,440	1,328,880	3,164,000	5,948,320	1,669,175	2,436,995	4,106,170
2015	699,510	362,351	1,061,861	1,450,932	1,324,764	3,154,200	5,929,896	1,644,800	2,401,408	4,046,208
2016	721,907	366,887	1,088,794	1,470,160	1,342,320	3,195,999	6,008,479	1,676,775	2,448,090	4,124,865
2017	726,289	362,539	1,088,828	1,451,760	1,325,520	3,156,000	5,933,280	1,652,025	2,411,957	4,063,982
2018	738,816	362,011	1,100,827	1,451,530	1,325,310	3,155,500	5,932,340	1,645,450	2,402,357	4,047,807
2019	760,942	365,866	1,126,808	1,467,446	1,339,842	3,190,100	5,997,388	1,673,275	2,442,980	4,116,255
2020	774,157	366,320	1,140,477	1,487,002	1,357,697	3,232,612	6,077,311	1,684,742	2,459,723	4,144,465
2021	774,157	366,320	1,140,477	1,487,002	1,357,697	3,232,612	6,077,311	1,684,742	2,459,723	4,144,465
2022	774,157	366,320	1,140,477	1,487,002	1,357,697	3,232,612	6,077,311	1,684,742	2,459,723	4,144,465
2023	774,157	366,320	1,140,477	1,487,002	1,357,697	3,232,612	6,077,311	1,684,742	2,459,723	4,144,465
2024	774,157	366,320	1,140,477	1,487,002	1,357,697	3,232,612	6,077,311	1,684,742	2,459,723	4,144,465
2025	774,157	366,320	1,140,477	1,487,002	1,357,697	3,232,612	6,077,311	1,684,742	2,459,723	4,144,465
2026	774,157	366,320	1,140,477	1,487,002	1,357,697	3,232,612	6,077,311	1,684,742	2,459,723	4,144,465
2027	774,157	366,320	1,140,477	1,487,002	1,357,697	3,232,612	6,077,311	1,684,742	2,459,723	4,144,465
2028	774,157	366,320	1,140,477	1,487,002	1,357,697	3,232,612	6,077,311	1,684,742	2,459,723	4,144,465
2029	774,157	366,320	1,140,477	1,487,002	1,357,697	3,232,612	6,077,311	1,684,742	2,459,723	4,144,465
2030	774,157	366,320	1,140,477	1,487,002	1,357,697	3,232,612	6,077,311	1,684,742	2,459,723	4,144,465
2031	774,157	366,320	1,140,477	1,487,002	1,357,697	3,232,612	6,077,311	1,684,742	2,459,723	4,144,465
2032	774,157	366,320	1,140,477	1,487,002	1,357,697	3,232,612	6,077,311	1,684,742	2,459,723	4,144,465
2033	774,157	366,320	1,140,477	1,487,002	1,357,697	3,232,612	6,077,311	1,684,742	2,459,723	4,144,465
2034	774,157	366,320	1,140,477	1,487,002	1,357,697	3,232,612	6,077,311	1,684,742	2,459,723	4,144,465
2035	774,157	366,320	1,140,477	1,487,002	1,357,697	3,232,612	6,077,311	1,684,742	2,459,723	4,144,465
TOTAL	31,327,875	17,655,147	48,983,022	71,939,930	68,742,834	170,192,516	310,875,280	68,374,068	107,086,495	175,460,563

a) Unadjusted for prior overpayments or underpayments of charges.

TABLE B-18: VARIABLE OMP&R COMPONENT OF

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA									
	Devil's Den Water District	Dudley Ridge Water District	Empire West Side Irrigation District	Hacienda Water District (b	Kern County Water Agency (b		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
					Municipal and Industrial	Agricultural				
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	30,299	68,616	5,149	0	0	439,176	2,343	4,732	65,336	615,651
1969	30,438	56,176	100	5,088	0	318,697	179	3,307	12,679	426,664
1970	39,269	69,265	6,757	16,418	0	468,062	0	5,551	0	605,322
1971	34,780	52,798	7,703	8,564	0	763,788	4,759	6,323	148,964	1,027,679
1972	44,537	61,714	8,426	8,518	0	1,118,918	2,036	7,353	367,209	1,618,711
1973	28,188	33,793	4,596	4,443	0	761,398	2,299	3,005	72,874	910,596
1974	28,045	48,938	4,396	4,837	46,540	668,939	2,198	3,104	101,114	908,111
1975	27,721	62,971	4,658	5,835	34,469	840,288	2,484	3,912	128,101	1,110,439
1976	38,226	71,284	5,163	6,712	95,096	968,564	2,754	4,957	94,499	1,287,255
1977	19,788	26,245	1,736	3,954	83,795	485,623	3,601	2,590	38,595	665,927
1978	43,609	98,972	868	4,819	180,031	1,476,075	3,959	5,410	18,233	1,831,976
1979	64,784	83,472	11,579	22,918	137,766	1,952,638	4,825	8,687	230,343	2,517,012
1980	66,173	82,020	6,704	11,621	151,728	1,764,772	4,917	5,157	148,619	2,241,711
1981	64,336	108,064	8,356	15,596	192,108	2,320,386	6,406	7,766	196,074	2,919,092
1982	52,656	95,495	6,988	13,742	172,043	2,168,155	5,822	6,169	173,056	2,694,126
1983	191,810	400,005	27,973	57,810	727,701	9,258,464	26,108	28,681	729,148	11,447,700
1984	228,195	512,748	34,108	73,899	931,977	12,144,049	35,244	36,869	933,406	14,930,495
1985	229,465	539,927	34,318	78,930	1,040,100	12,997,864	38,893	37,872	983,766	15,981,135
1986	237,098	582,092	35,422	85,011	1,175,798	14,197,753	43,686	40,708	1,062,643	17,460,211
1987	236,260	604,729	35,296	88,238	1,273,144	14,959,720	47,061	41,355	1,104,747	18,390,550
1988	246,890	657,523	36,871	95,863	1,436,610	16,405,136	49,161	44,901	1,201,976	20,174,931
1989	245,354	675,270	36,436	99,590	1,532,708	16,839,376	48,581	45,690	1,235,161	20,758,166
1990	246,293	703,371	36,571	103,617	1,638,002	17,524,349	48,761	46,660	1,340,916	21,688,540
1991	248,414	709,718	36,901	104,552	1,651,989	17,677,469	49,201	47,116	1,353,016	21,878,376
1992	242,202	679,129	35,310	100,045	1,597,488	17,025,849	47,080	46,113	1,294,700	21,067,916
1993	238,455	668,512	34,758	98,481	1,572,653	16,760,754	46,344	45,383	1,274,460	20,739,800
1994	248,742	697,939	36,288	102,816	1,640,894	17,491,542	48,384	47,407	1,330,560	21,644,572
1995	247,954	696,381	36,207	102,586	1,635,640	17,442,589	48,276	47,350	1,327,590	21,584,573
1996	245,558	688,938	35,820	101,490	1,620,158	17,268,355	47,760	46,786	1,313,400	21,368,265
1997	249,009	698,228	36,303	102,859	1,642,273	17,503,857	48,404	47,407	1,331,110	21,659,450
1998	247,942	695,458	36,159	102,451	1,635,185	17,430,807	48,212	47,236	1,325,830	21,569,280
1999	250,583	703,189	36,561	103,589	1,652,788	17,620,633	48,748	47,777	1,340,570	21,804,438
2000	247,981	695,978	36,186	102,527	1,636,103	17,440,940	48,248	47,276	1,326,820	21,582,059
2001	249,961	701,401	36,468	103,326	1,648,867	17,577,410	48,624	47,646	1,337,160	21,750,863
2002	251,841	706,767	36,747	104,116	1,661,354	17,710,891	48,996	48,011	1,347,390	21,916,113
2003	252,704	709,075	36,867	104,457	1,666,754	17,768,903	49,156	48,165	1,351,790	21,987,871
2004	253,911	712,710	37,056	104,991	1,675,109	17,858,342	49,408	48,421	1,358,720	22,098,668
2005	252,069	707,344	36,777	104,201	1,662,576	17,724,836	49,036	48,051	1,348,490	21,933,380
2006	250,660	703,652	36,585	103,658	1,653,649	17,630,161	48,780	47,806	1,341,450	21,816,401
2007	253,568	711,729	37,005	104,847	1,672,666	17,832,993	49,340	48,353	1,356,850	22,067,351
2008	252,705	709,307	36,879	104,491	1,666,880	17,771,977	49,172	48,194	1,352,230	21,991,835
2009	253,226	710,749	36,954	104,702	1,670,381	17,808,667	49,272	48,285	1,354,980	22,037,216
2010	252,108	707,518	36,786	104,227	1,662,572	17,726,925	49,048	48,074	1,348,820	21,936,078
2011	251,828	706,825	36,750	104,125	1,660,897	17,709,072	49,000	48,028	1,347,500	21,914,025
2012	254,839	715,365	37,194	105,383	1,680,831	17,922,045	49,592	48,610	1,363,780	22,177,639
2013	255,511	717,211	37,290	105,654	1,684,962	17,967,354	49,720	48,741	1,367,300	22,233,743
2014	253,099	710,518	36,942	104,669	1,669,475	17,800,557	49,256	48,279	1,354,540	22,027,335
2015	252,362	708,383	36,831	104,355	1,664,437	17,747,258	49,108	48,137	1,350,470	21,961,341
2016	255,689	717,730	37,317	105,731	1,686,459	17,981,709	49,756	48,769	1,368,290	22,251,450
2017	252,439	708,730	36,849	104,406	1,665,353	17,755,949	49,132	48,154	1,351,130	21,972,142
2018	252,476	708,902	36,858	104,432	1,665,328	17,757,985	49,144	48,182	1,351,460	21,974,767
2019	255,181	716,345	37,245	105,527	1,683,287	17,947,236	49,660	48,672	1,365,650	22,208,803
2020	260,804	741,888	38,573	109,291	1,724,893	18,462,716	51,430	51,033	1,414,345	22,854,973
2021	260,804	741,888	38,573	109,291	1,724,893	18,462,716	51,430	51,033	1,414,345	22,854,973
2022	260,804	741,888	38,573	109,291	1,724,893	18,462,716	51,430	51,033	1,414,345	22,854,973
2023	260,804	741,888	38,573	109,291	1,724,893	18,462,716	51,430	51,033	1,414,345	22,854,973
2024	260,804	741,888	38,573	109,291	1,724,893	18,462,716	51,430	51,033	1,414,345	22,854,973
2025	260,804	741,888	38,573	109,291	1,724,893	18,462,716	51,430	51,033	1,414,345	22,854,973
2026	260,804	741,888	38,573	109,291	1,724,893	18,462,716	51,430	51,033	1,414,345	22,854,973
2027	260,804	741,888	38,573	109,291	1,724,893	18,462,716	51,430	51,033	1,414,345	22,854,973
2028	260,804	741,888	38,573	109,291	1,724,893	18,462,716	51,430	51,033	1,414,345	22,854,973
2029	260,804	741,888	38,573	109,291	1,724,893	18,462,716	51,430	51,033	1,414,345	22,854,973
2030	260,804	741,888	38,573	109,291	1,724,893	18,462,716	51,430	51,033	1,414,345	22,854,973
2031	260,804	741,888	38,573	109,291	1,724,893	18,462,716	51,430	51,033	1,414,345	22,854,973
2032	260,804	741,888	38,573	109,291	1,724,893	18,462,716	51,430	51,033	1,414,345	22,854,973
2033	260,804	741,888	38,573	109,291	1,724,893	18,462,716	51,430	51,033	1,414,345	22,854,973
2034	260,804	741,888	38,573	109,291	1,724,893	18,462,716	51,430	51,033	1,414,345	22,854,973
2035	260,804	741,888	38,573	109,291	1,724,893	18,462,716	51,430	51,033	1,414,345	22,854,973
TOTAL	13,920,095	37,989,427	2,039,235	5,573,373	86,434,912	937,908,711	2,624,814	2,603,716	71,953,035	1,161,047,318

b) Includes extra peaking service costs. Refer to Appendix B text "Project Water Charges, Variable OMP&R Components".

TRANSPORTATION CHARGE FOR EACH CONTRACTOR[a]

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley County Water District	Crestline Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0
1972	771	0	0	12,302	0	4,439	1,458	0	30,780	0
1973	284	0	102,005	6,841	158,286	3,824	0	0	295,850	0
1974	15,464	0	100,350	9,830	156,797	4,903	220	0	175,320	6,462
1975	98,846	0	107,882	12,715	169,529	6,370	0	0	135,204	53,146
1976	384,493	0	135,013	17,800	213,179	8,152	0	0	138,757	68,638
1977	196,371	0	0	23,272	0	1,946	1,679	0	231,532	83,875
1978	610,108	0	164,951	19,777	250,270	2,876	0	0	33,096	63,424
1979	1,406,025	491	182,918	25,537	272,658	17,954	76,344	0	239,293	119,646
1980	1,120,723	49,606	216,787	34,358	338,605	21,296	89,631	0	758,794	164,065
1981	1,458,613	121,222	284,831	50,261	447,071	26,799	364,715	0	1,120,277	275,761
1982	1,455,609	96,465	287,868	57,570	453,642	24,707	475,244	1,791	1,002,945	273,974
1983	6,700,343	414,651	1,316,591	308,173	2,081,639	114,581	3,104,358	22,915	4,792,470	1,229,516
1984	8,746,309	475,837	1,735,442	446,848	2,751,527	149,763	4,039,241	55,814	6,025,895	1,599,180
1985	9,404,591	588,525	1,882,161	481,923	2,991,250	162,000	4,320,694	140,461	6,414,216	1,715,705
1986	10,305,351	678,358	2,080,711	530,175	3,313,600	177,649	4,730,448	212,406	7,000,009	1,910,590
1987	10,891,631	732,468	2,215,076	562,005	3,590,907	188,846	4,981,671	279,415	7,348,110	2,031,052
1988	11,997,447	829,262	2,455,483	620,647	4,042,532	207,912	5,469,311	361,586	8,135,550	2,274,455
1989	12,648,073	1,015,910	2,604,769	656,165	4,346,642	220,267	5,775,672	432,486	8,516,120	2,405,585
1990	13,381,740	1,095,475	2,768,422	695,101	4,566,100	232,891	6,088,130	506,281	9,098,368	2,581,606
1991	14,083,465	1,191,959	2,782,407	698,613	4,589,165	233,938	6,118,886	610,270	9,237,952	2,593,108
1992	13,888,705	1,180,298	2,745,504	689,347	4,528,299	230,708	6,037,732	702,156	8,992,068	2,524,089
1993	13,676,431	1,236,387	2,703,438	678,785	4,458,918	227,181	5,945,225	790,200	9,031,673	2,535,206
1994	14,255,640	1,229,728	2,818,062	707,565	4,647,972	236,803	6,197,295	926,622	9,337,214	2,620,973
1995	14,204,501	1,305,566	2,807,619	704,944	4,630,749	235,955	6,174,334	1,025,890	9,310,129	2,613,370
1996	14,105,141	1,293,903	2,787,615	699,920	4,597,755	234,305	6,130,340	1,100,217	9,332,085	2,619,532
1997	14,252,833	1,366,418	2,818,200	707,600	4,648,200	236,755	6,197,600	1,194,069	9,447,100	2,651,818
1998	14,205,246	1,410,646	2,808,198	705,089	4,631,703	235,968	6,175,604	1,272,166	9,426,478	2,646,029
1999	14,380,127	1,469,192	2,841,946	713,563	4,687,366	238,874	6,249,823	1,370,925	9,538,620	2,677,508
2000	14,212,023	1,489,845	2,809,514	705,419	4,633,874	236,078	6,178,499	1,437,002	9,353,940	2,625,667
2001	14,289,865	1,493,704	2,825,869	709,525	4,660,849	237,369	6,214,465	1,506,777	9,535,130	2,676,527
2002	14,410,672	1,592,096	2,849,384	715,429	4,699,634	239,377	6,266,179	1,581,971	9,506,199	2,668,405
2003	14,491,916	1,649,739	2,864,401	719,200	4,724,401	240,731	6,299,200	1,664,173	9,623,572	2,701,354
2004	14,581,269	1,751,374	2,881,471	723,486	4,752,556	242,214	6,336,741	1,748,162	9,675,590	2,715,955
2005	14,424,912	1,775,040	2,852,041	716,096	4,704,016	239,614	6,272,021	1,802,314	9,591,560	2,692,367
2006	14,389,109	1,779,321	2,843,657	713,991	4,690,187	239,023	6,253,581	1,797,868	9,560,268	2,683,583
2007	14,548,092	1,805,017	2,875,256	721,925	4,742,306	241,664	6,323,075	1,817,729	9,675,385	2,715,897
2008	14,499,753	1,892,949	2,865,625	719,507	4,726,420	240,860	6,301,892	1,811,690	9,738,896	2,733,724
2009	14,466,016	1,918,081	2,860,935	718,330	4,718,685	240,295	6,291,580	1,807,435	9,581,198	2,689,459
2010	14,460,160	1,968,304	2,857,862	717,558	4,713,617	240,203	6,284,823	1,806,743	9,661,124	2,711,894
2011	14,394,368	1,989,945	2,846,358	714,670	4,694,643	239,105	6,259,525	1,798,490	9,401,648	2,639,059
2012	14,574,463	2,066,276	2,881,703	723,543	4,752,938	242,098	6,337,248	1,820,998	9,725,147	2,729,864
2013	14,637,874	2,142,433	2,893,390	726,478	4,772,215	243,153	6,362,953	1,828,938	9,549,290	2,680,501
2014	14,480,292	2,199,183	2,863,014	718,851	4,722,114	240,534	6,296,151	1,809,234	9,522,511	2,672,985
2015	14,473,324	2,211,685	2,860,519	718,226	4,717,999	240,422	6,290,666	1,808,387	9,397,750	2,637,965
2016	14,663,988	2,274,524	2,898,218	727,691	4,780,178	243,588	6,373,571	1,832,208	9,655,481	2,710,310
2017	14,467,993	2,315,223	2,859,896	718,068	4,716,971	240,332	6,289,293	1,807,712	9,389,644	2,635,689
2018	14,478,855	2,374,310	2,861,604	718,497	4,719,789	240,513	6,293,052	1,809,078	9,433,558	2,648,015
2019	14,636,025	2,410,014	2,892,745	726,317	4,771,150	243,124	6,361,532	1,828,714	9,615,159	2,698,992
2020	14,840,743	2,510,257	2,926,143	734,702	4,826,236	246,523	6,434,982	1,854,289	9,758,743	2,739,296
2021	14,840,743	2,510,257	2,926,143	734,702	4,826,236	246,523	6,434,982	1,854,289	9,758,743	2,739,296
2022	14,840,743	2,510,257	2,926,143	734,702	4,826,236	246,523	6,434,982	1,854,289	9,758,743	2,739,296
2023	14,840,743	2,510,257	2,926,143	734,702	4,826,236	246,523	6,434,982	1,854,289	9,758,743	2,739,296
2024	14,840,743	2,510,257	2,926,143	734,702	4,826,236	246,523	6,434,982	1,854,289	9,758,743	2,739,296
2025	14,840,743	2,510,257	2,926,143	734,702	4,826,236	246,523	6,434,982	1,854,289	9,758,743	2,739,296
2026	14,840,743	2,510,257	2,926,143	734,702	4,826,236	246,523	6,434,982	1,854,289	9,758,743	2,739,296
2027	14,840,743	2,510,257	2,926,143	734,702	4,826,236	246,523	6,434,982	1,854,289	9,758,743	2,739,296
2028	14,840,743	2,510,257	2,926,143	734,702	4,826,236	246,523	6,434,982	1,854,289	9,758,743	2,739,296
2029	14,840,743	2,510,257	2,926,143	734,702	4,826,236	246,523	6,434,982	1,854,289	9,758,743	2,739,296
2030	14,840,743	2,510,257	2,926,143	734,702	4,826,236	246,523	6,434,982	1,854,289	9,758,743	2,739,296
2031	14,840,743	2,510,257	2,926,143	734,702	4,826,236	246,523	6,434,982	1,854,289	9,758,743	2,739,296
2032	14,840,743	2,510,257	2,926,143	734,702	4,826,236	246,523	6,434,982	1,854,289	9,758,743	2,739,296
2033	14,840,743	2,510,257	2,926,143	734,702	4,826,236	246,523	6,434,982	1,854,289	9,758,743	2,739,296
2034	14,840,743	2,510,257	2,926,143	734,702	4,826,236	246,523	6,434,982	1,854,289	9,758,743	2,739,296
2035	14,840,743	2,510,257	2,926,143	734,702	4,826,236	246,523	6,434,982	1,854,289	9,758,743	2,739,296
TOTAL	744,907,738	97,045,542	147,815,999	37,004,765	243,198,679	12,442,327	323,591,414	75,799,917	492,478,843	137,835,261

TABLE B-18: VARIABLE OMP&R COMPONENT OF TRANSPORTATION CHARGE FOR EACH CONTRACTOR[a]

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				FUTURE CONTRACTOR	GRAND TOTAL
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC & WCD	Total	South Bay	
	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)
1962	0	0	0	0	0	0	0	0	0	36,970
1963	0	0	0	0	0	0	0	0	0	57,711
1964	0	0	0	0	0	0	0	0	0	74,134
1965	0	0	0	0	0	0	0	0	0	142,609
1966	0	0	0	0	0	0	0	0	0	192,605
1967	0	0	0	0	0	0	0	0	0	236,998
1968	0	0	0	0	0	0	0	0	0	1,114,363
1969	0	0	0	0	0	0	0	0	0	769,237
1970	0	0	0	0	0	0	0	0	0	1,099,389
1971	0	0	0	0	0	0	0	0	0	1,506,378
1972	0	834,396	0	884,146	0	0	0	0	0	3,240,643
1973	0	1,214,862	0	1,781,952	0	0	0	0	0	3,288,454
1974	0	2,092,043	0	2,561,389	0	0	0	0	0	4,132,412
1975	0	4,000,242	0	4,583,934	0	0	0	0	0	6,161,313
1976	0	5,026,532	0	5,992,564	0	0	0	0	0	8,024,438
1977	0	-6,077,383	0	-5,538,708	0	0	0	0	0	-4,148,905
1978	0	4,104,161	0	5,248,663	0	0	0	0	0	7,800,408
1979	0	8,020,859	0	10,361,725	0	0	0	0	0	13,721,343
1980	0	10,498,283	5,314	13,297,462	0	0	0	0	0	16,364,226
1981	0	16,684,114	22,175	20,855,839	0	0	0	0	0	24,707,221
1982	0	14,101,988	23,091	18,254,894	0	0	0	0	0	21,815,349
1983	0	56,599,761	117,355	76,802,353	0	0	0	0	0	91,752,937
1984	0	62,895,800	151,219	89,072,875	0	0	0	0	0	108,320,006
1985	928,684	61,500,728	271,627	90,802,565	0	0	0	0	0	111,219,575
1986	1,062,354	65,790,957	399,034	98,191,642	0	0	0	0	0	121,600,660
1987	1,155,883	68,781,741	515,823	103,274,628	0	0	0	0	0	127,770,659
1988	1,320,934	74,841,778	728,405	113,285,302	0	0	0	0	0	140,087,840
1989	1,422,279	95,588,094	1,055,490	136,687,552	0	0	0	0	0	164,354,075
1990	1,550,757	105,705,499	1,369,344	149,639,714	0	0	0	0	0	178,552,487
1991	1,557,666	111,598,464	1,436,092	156,731,985	0	0	0	0	0	186,237,084
1992	1,516,207	110,152,729	1,372,440	154,560,282	0	0	0	0	0	183,567,145
1993	1,522,883	114,053,901	1,389,200	158,249,428	0	0	0	0	0	187,171,792
1994	1,574,404	115,735,087	1,336,660	161,624,025	0	0	0	0	0	192,116,748
1995	1,569,837	120,233,565	1,374,280	166,190,739	0	0	0	0	0	196,828,898
1996	1,573,538	119,782,709	1,333,920	165,590,980	0	0	0	0	0	196,187,602
1997	1,592,932	124,376,209	1,380,220	170,869,954	0	0	0	0	0	202,149,729
1998	1,589,457	126,708,917	1,396,680	173,212,181	0	0	0	0	0	204,483,435
1999	1,608,364	130,510,636	1,426,400	177,713,344	0	0	0	0	0	209,520,655
2000	1,577,223	130,621,627	1,418,900	177,299,611	0	0	0	0	0	208,968,955
2001	1,607,775	131,125,601	1,383,060	178,266,516	0	0	0	0	0	210,297,507
2002	1,602,897	135,476,588	1,434,320	183,043,151	0	0	0	0	0	215,362,134
2003	1,622,690	138,502,110	1,447,140	186,550,627	0	0	0	0	0	219,155,575
2004	1,631,458	143,447,812	1,496,900	191,984,988	0	0	0	0	0	224,884,113
2005	1,617,290	143,549,337	1,479,200	191,715,808	0	0	0	0	0	224,448,782
2006	1,612,014	143,824,295	1,458,460	191,845,357	0	0	0	0	0	224,427,695
2007	1,631,426	146,000,349	1,455,660	194,553,781	0	0	0	0	0	227,553,851
2008	1,642,132	151,269,269	1,502,340	199,945,057	0	0	0	0	0	232,861,087
2009	1,615,543	151,874,299	1,498,500	200,280,356	0	0	0	0	0	233,313,225
2010	1,629,020	155,238,643	1,514,080	203,804,031	0	0	0	0	0	236,694,140
2011	1,585,268	156,199,627	1,496,200	204,258,906	0	0	0	0	0	237,130,176
2012	1,639,815	161,403,131	1,519,320	210,416,544	0	0	0	0	0	243,719,337
2013	1,610,162	163,872,213	1,541,320	212,860,920	0	0	0	0	0	246,253,684
2014	1,605,648	164,319,257	1,548,720	212,998,494	0	0	0	0	0	246,133,118
2015	1,584,611	161,938,744	1,525,300	210,405,598	0	0	0	0	0	243,404,904
2016	1,628,068	164,176,212	1,536,840	213,500,877	0	0	0	0	0	246,974,465
2017	1,583,245	162,473,869	1,533,260	211,031,195	0	0	0	0	0	244,089,427
2018	1,590,648	163,330,441	1,541,760	212,040,120	0	0	0	0	0	245,095,861
2019	1,621,269	163,826,553	1,535,040	213,166,634	0	0	0	0	0	246,615,888
2020	1,645,480	167,069,391	1,568,910	217,155,695	0	0	0	0	0	251,372,921
2021	1,645,480	167,069,391	1,568,910	217,155,695	0	0	0	0	0	251,372,921
2022	1,645,480	167,069,391	1,568,910	217,155,695	0	0	0	0	0	251,372,921
2023	1,645,480	167,069,391	1,568,910	217,155,695	0	0	0	0	0	251,372,921
2024	1,645,480	167,069,391	1,568,910	217,155,695	0	0	0	0	0	251,372,921
2025	1,645,480	167,069,391	1,568,910	217,155,695	0	0	0	0	0	251,372,921
2026	1,645,480	167,069,391	1,568,910	217,155,695	0	0	0	0	0	251,372,921
2027	1,645,480	167,069,391	1,568,910	217,155,695	0	0	0	0	0	251,372,921
2028	1,645,480	167,069,391	1,568,910	217,155,695	0	0	0	0	0	251,372,921
2029	1,645,480	167,069,391	1,568,910	217,155,695	0	0	0	0	0	251,372,921
2030	1,645,480	167,069,391	1,568,910	217,155,695	0	0	0	0	0	251,372,921
2031	1,645,480	167,069,391	1,568,910	217,155,695	0	0	0	0	0	251,372,921
2032	1,645,480	167,069,391	1,568,910	217,155,695	0	0	0	0	0	251,372,921
2033	1,645,480	167,069,391	1,568,910	217,155,695	0	0	0	0	0	251,372,921
2034	1,645,480	167,069,391	1,568,910	217,155,695	0	0	0	0	0	251,372,921
2035	1,645,480	167,069,391	1,568,910	217,155,695	0	0	0	0	0	251,372,921
TOTAL	80,112,061	7,430,936,905	72,073,649	9,895,243,100	0	0	0	0	0	11,591,609,283

TABLE B-19: TOTAL TRANSPORTATION CHARGE FOR EACH CONTRACTOR[a]

(in dollars)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC & WCD	Solano County FC & WCD	Total	Alameda County FC & WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC & WCD	Santa Barbara County FC & WCD	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1962	0	0	0	11,750	43,787	0	55,537	0	0	0
1963	0	0	0	148,327	184,567	439,266	772,160	0	0	0
1964	0	0	0	166,418	260,113	609,051	1,035,582	8,164	20,282	28,446
1965	0	0	0	240,246	359,857	1,136,938	1,737,041	13,769	33,538	47,307
1966	18,560	0	18,560	265,814	369,686	1,387,768	2,023,268	22,819	54,876	77,695
1967	41,831	0	41,831	340,200	447,368	1,655,673	2,443,241	40,834	97,106	137,940
1968	127,265	0	127,265	383,623	546,155	1,953,129	2,882,907	66,150	156,398	222,548
1969	252,699	0	252,699	437,465	480,706	2,048,881	2,967,052	120,799	284,108	404,907
1970	275,781	0	275,781	450,767	471,839	2,167,505	3,090,111	133,700	314,323	448,023
1971	225,983	0	225,983	411,590	491,030	2,134,605	3,037,225	134,800	316,970	451,770
1972	223,578	0	223,578	501,082	617,152	2,285,065	3,403,299	140,961	331,463	472,424
1973	219,749	26,950	246,699	465,576	488,002	2,303,081	3,256,659	137,944	324,473	462,417
1974	239,194	28,373	267,567	488,848	503,064	2,470,696	3,462,608	139,202	327,466	466,668
1975	236,339	31,246	267,585	537,137	543,802	2,374,191	3,455,130	155,528	365,612	521,140
1976	270,695	35,147	305,842	627,569	673,050	2,465,816	3,766,435	260,623	611,115	871,738
1977	294,717	38,915	333,632	590,934	651,622	2,440,608	3,683,164	277,440	650,782	928,222
1978	279,912	42,280	322,192	637,172	625,566	2,687,580	3,950,318	288,830	677,487	966,317
1979	294,331	45,525	339,856	710,611	761,057	2,650,711	4,122,379	295,696	693,583	989,279
1980	335,633	64,339	399,972	757,150	790,692	2,727,632	4,275,474	321,944	758,986	1,080,930
1981	364,388	84,443	448,831	786,846	823,903	2,818,720	4,429,469	350,894	840,382	1,191,276
1982	391,838	106,636	498,474	781,499	818,226	2,773,759	4,373,484	383,147	937,986	1,321,133
1983	641,595	251,826	893,421	1,227,925	1,326,650	4,329,234	6,883,809	506,923	1,259,153	1,766,076
1984	1,161,641	861,236	2,022,877	1,364,777	1,481,893	4,700,854	7,547,524	971,575	2,539,232	3,510,807
1985	1,334,615	998,552	2,333,167	1,400,128	1,523,202	4,722,052	7,645,382	1,536,944	4,135,483	5,672,427
1986	1,360,997	1,035,420	2,396,417	1,456,790	1,591,911	4,809,894	7,858,595	2,291,524	6,274,753	8,566,277
1987	1,373,358	1,063,607	2,436,965	1,482,451	1,622,813	4,799,412	7,904,676	2,370,334	6,436,948	8,807,282
1988	1,397,017	1,130,381	2,527,398	1,551,371	1,703,455	4,916,779	8,171,605	2,447,350	6,594,515	9,041,865
1989	1,411,948	1,189,004	2,600,952	1,577,775	1,735,446	4,966,374	8,279,595	2,488,360	6,650,692	9,139,052
1990	1,419,384	1,247,836	2,667,220	1,609,638	1,774,014	5,032,229	8,415,881	2,528,433	6,707,853	9,236,286
1991	1,441,711	1,250,655	2,692,366	1,678,205	1,828,542	5,115,263	8,622,010	2,599,636	6,810,004	9,409,640
1992	1,458,198	1,246,550	2,704,748	1,721,542	1,856,632	5,129,833	8,708,007	2,660,215	6,879,561	9,539,776
1993	1,470,014	1,240,214	2,710,228	1,762,073	1,880,476	5,138,617	8,781,166	2,725,126	6,964,442	9,689,568
1994	1,506,153	1,255,919	2,762,072	1,874,633	1,953,779	5,330,672	9,159,084	2,823,024	7,117,912	9,940,936
1995	1,524,034	1,253,740	2,777,774	1,932,580	1,949,515	5,320,419	9,202,514	2,887,357	7,199,142	10,086,499
1996	1,544,994	1,252,674	2,797,668	1,982,825	1,938,290	5,294,407	9,215,522	2,963,006	7,281,165	10,244,171
1997	1,574,642	1,257,747	2,832,389	2,064,970	1,957,271	5,339,794	9,362,035	3,061,670	7,399,936	10,461,606
1998	1,594,802	1,256,569	2,851,371	2,058,509	1,951,372	5,325,748	9,335,629	3,071,712	7,478,384	10,550,096
1999	1,623,347	1,259,557	2,882,904	2,072,979	1,964,579	5,357,165	9,394,723	3,164,074	7,589,661	10,753,735
2000	1,639,776	1,256,371	2,896,147	2,058,995	1,951,812	5,326,768	9,337,575	3,231,135	7,654,216	10,885,351
2001	1,651,984	1,259,236	2,911,220	2,069,458	1,961,365	5,349,525	9,380,348	3,327,746	7,695,147	11,022,893
2002	1,662,135	1,262,049	2,924,184	2,081,269	1,972,151	5,375,213	9,428,633	3,396,595	7,688,586	11,085,181
2003	1,670,745	1,263,503	2,934,248	2,086,207	1,976,660	5,385,947	9,448,814	3,512,959	7,758,038	11,270,997
2004	1,680,312	1,264,910	2,945,222	2,093,595	1,983,405	5,402,012	9,479,012	3,613,819	7,799,936	11,413,755
2005	1,683,020	1,262,248	2,945,268	2,082,424	1,973,205	5,377,721	9,433,350	3,674,421	7,783,231	11,457,652
2006	1,690,231	1,260,044	2,950,275	2,074,465	1,965,937	5,360,416	9,400,818	3,663,222	7,787,013	11,450,235
2007	1,708,348	1,263,925	2,972,273	2,091,452	1,981,448	5,397,352	9,470,252	3,687,112	7,840,863	11,527,975
2008	1,719,067	1,263,265	2,982,332	2,088,264	1,978,541	5,390,439	9,457,244	3,683,852	7,859,105	11,542,957
2009	1,734,688	1,264,516	2,999,204	2,098,506	1,987,899	5,412,760	9,499,165	3,706,988	7,923,504	11,630,492
2010	1,741,440	1,262,607	3,004,047	2,087,535	1,977,876	5,388,873	9,454,284	3,683,515	7,902,849	11,586,364
2011	1,753,381	1,261,897	3,015,278	2,088,412	1,978,680	5,390,793	9,457,885	3,686,906	7,911,249	11,598,155
2012	1,772,910	1,266,147	3,039,057	2,105,447	1,994,234	5,427,829	9,527,510	3,716,040	7,953,385	11,669,425
2013	1,786,414	1,267,574	3,053,988	1,998,529	1,895,644	5,074,734	8,968,907	3,711,436	7,950,333	11,661,769
2014	1,789,745	1,263,465	3,053,210	1,945,638	1,825,263	4,873,431	8,644,332	3,694,682	7,909,786	11,604,468
2015	1,799,711	1,262,552	3,062,263	1,903,966	1,759,238	4,503,095	8,166,299	3,664,572	7,860,483	11,525,055
2016	1,803,565	1,267,113	3,070,678	1,904,616	1,753,582	4,375,242	8,033,440	3,687,697	7,886,500	11,574,197
2017	1,784,658	1,262,742	3,047,400	1,855,707	1,708,737	4,223,368	7,787,812	3,644,767	7,807,592	11,452,359
2018	1,718,870	1,262,210	2,981,080	1,814,827	1,670,104	4,103,355	7,588,286	3,624,147	7,764,972	11,389,119
2019	1,697,882	1,266,087	2,963,969	1,793,495	1,650,790	4,038,685	7,482,970	3,648,534	7,797,621	11,446,155
2020	1,707,061	1,266,544	2,973,605	1,799,530	1,655,851	4,043,273	7,498,654	3,658,239	7,810,231	11,468,470
2021	1,704,576	1,266,544	2,971,120	1,796,590	1,653,019	4,036,520	7,486,129	3,656,998	7,807,250	11,464,248
2022	1,703,118	1,266,544	2,969,662	1,795,989	1,652,303	4,032,336	7,480,628	3,656,074	7,804,977	11,461,051
2023	1,702,054	1,239,595	2,941,649	1,795,377	1,651,720	4,029,172	7,476,269	3,655,616	7,803,856	11,459,472
2024	1,699,128	1,238,172	2,937,300	1,794,854	1,651,195	4,027,209	7,473,258	3,655,273	7,803,003	11,458,276
2025	1,690,507	1,235,298	2,925,805	1,794,058	1,650,295	4,023,503	7,467,856	3,654,877	7,802,046	11,456,923
2026	1,685,456	1,231,397	2,916,853	1,793,219	1,649,513	4,021,412	7,464,144	3,551,931	7,561,560	11,113,491
2027	1,682,263	1,227,629	2,909,892	1,791,165	1,647,538	4,015,070	7,453,773	3,549,304	7,555,020	11,104,324
2028	1,678,606	1,224,264	2,902,870	1,789,206	1,645,695	4,009,140	7,444,041	3,543,397	7,541,117	11,084,514
2029	1,675,206	1,221,019	2,896,225	1,786,310	1,643,021	4,001,840	7,431,171	3,542,004	7,537,798	11,079,802
2030	1,650,676	1,202,205	2,852,881	1,785,339	1,642,131	3,999,602	7,427,072	3,536,074	7,519,824	11,055,898
2031	1,623,303	1,182,102	2,805,405	1,783,978	1,640,886	3,996,459	7,421,323	3,514,919	7,456,625	10,971,544
2032	1,595,941	1,159,908	2,755,849	1,782,285	1,639,335	3,992,659	7,414,279	3,482,310	7,358,191	10,840,501
2033	1,460,173	1,014,718	2,474,891	1,781,598	1,638,707	3,991,163	7,411,468	3,359,288	7,038,787	10,398,075
2034	1,141,433	671,843	1,813,276	1,780,193	1,637,422	3,988,102	7,405,717	2,897,726	5,765,922	8,663,648
2035	1,053,145	580,167	1,633,312	1,777,141	1,634,632	3,981,452	7,393,225	2,332,134	4,169,151	6,501,285
TOTAL	87,872,471	63,045,751	150,918,222	107,509,434	105,270,918	292,525,891	505,306,243	171,896,816	385,985,539	557,882,355

a) Unadjusted for prior overpayments or underpayments of charges.

TABLE B-19: TOTAL TRANSPORTATION

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA									
	Devil's Den Water District	Dudley Ridge Water District	Empire West Side Irrigation District	Hacienda Water District	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
					Municipal and Industrial	Agricultural				
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	63,717	0	0	0	0	63,717
1966	0	0	0	0	119,265	0	0	0	0	119,265
1967	0	0	0	0	231,663	0	0	0	0	231,663
1968	71,100	174,410	10,050	5,353	391,953	1,476,486	12,676	10,736	190,727	2,343,491
1969	118,493	169,452	11,289	23,809	466,790	2,272,907	11,277	9,673	294,982	3,378,672
1970	141,229	190,645	18,001	35,861	513,531	2,772,686	11,400	12,160	228,899	3,924,412
1971	145,499	185,856	18,967	27,128	544,425	3,639,204	16,319	13,406	390,144	4,980,948
1972	167,782	206,750	19,788	28,882	569,285	4,711,466	13,761	18,880	959,397	6,695,991
1973	157,854	188,672	15,928	26,362	576,639	4,636,926	14,026	10,631	346,639	5,973,677
1974	167,216	261,830	15,891	29,200	634,789	4,908,638	14,105	11,589	510,416	6,553,674
1975	186,941	324,238	16,812	34,542	650,895	5,967,934	15,083	13,216	624,277	7,833,938
1976	207,802	285,092	17,390	36,049	709,435	6,304,917	15,458	14,793	478,343	8,069,279
1977	208,185	246,774	14,450	36,188	732,178	6,409,506	16,879	12,621	426,414	8,103,195
1978	235,853	331,971	13,652	39,434	832,985	7,864,572	17,299	16,029	427,291	9,779,086
1979	260,924	345,874	25,326	61,899	831,940	9,138,267	19,170	20,519	693,171	11,397,090
1980	276,566	364,333	20,929	53,567	871,503	9,695,825	19,794	17,929	647,268	11,967,714
1981	280,164	394,845	22,261	58,746	905,052	10,660,741	21,037	20,189	701,218	13,064,253
1982	268,211	386,635	20,561	57,496	882,546	10,825,997	20,272	18,274	683,976	13,163,968
1983	407,889	698,701	41,445	102,853	1,438,452	18,337,852	40,594	40,686	1,254,519	22,362,991
1984	446,456	827,866	47,876	121,322	1,667,130	21,793,234	50,331	49,536	1,487,518	26,491,269
1985	447,574	865,523	48,100	128,442	1,792,823	23,057,086	54,557	50,751	1,556,295	28,001,151
1986	462,343	918,293	49,224	136,118	1,945,729	24,623,357	59,924	53,969	1,654,271	29,903,228
1987	461,489	951,181	49,101	140,888	2,054,437	25,798,684	63,662	54,791	1,714,351	31,288,584
1988	472,124	1,014,094	50,671	150,037	2,224,897	27,627,462	65,986	58,689	1,829,298	33,493,258
1989	470,320	1,041,753	50,223	155,769	2,322,217	28,329,518	65,452	59,817	1,879,835	34,374,904
1990	470,434	1,079,288	50,320	161,218	2,425,767	29,277,601	65,595	60,932	2,022,219	35,613,374
1991	472,669	1,085,736	50,655	162,168	2,440,036	29,433,925	66,039	61,391	2,034,505	35,807,124
1992	464,145	1,052,823	48,951	157,319	2,379,939	28,709,028	63,805	60,270	1,971,929	34,908,209
1993	459,651	1,041,420	48,362	155,639	2,353,286	28,420,153	63,029	59,511	1,950,238	34,551,289
1994	470,646	1,071,688	49,931	160,098	2,423,474	29,175,514	65,113	61,563	2,007,889	35,485,916
1995	469,782	1,070,108	49,849	159,865	2,418,209	29,125,527	65,003	61,509	2,004,884	35,424,736
1996	468,156	1,063,258	49,493	158,858	2,404,209	28,971,935	64,516	60,974	1,991,794	35,233,193
1997	471,946	1,072,962	49,996	160,285	2,427,177	29,218,493	65,180	61,604	2,010,277	35,537,920
1998	470,797	1,070,165	49,851	159,874	2,420,022	29,144,179	64,988	61,431	2,004,950	35,446,257
1999	473,314	1,077,466	50,231	160,948	2,436,526	29,323,467	65,501	61,944	2,018,865	35,668,262
2000	470,727	1,070,470	49,866	159,919	2,420,393	29,148,583	65,012	61,459	2,005,528	35,451,957
2001	472,842	1,076,047	50,157	160,741	2,433,545	29,289,653	65,398	61,837	2,016,158	35,626,378
2002	474,741	1,081,472	50,438	161,539	2,446,165	29,424,597	65,771	62,203	2,026,496	35,793,422
2003	475,636	1,083,856	50,562	161,892	2,451,762	29,484,624	65,935	62,361	2,031,040	35,867,668
2004	476,856	1,087,543	50,754	162,433	2,460,229	29,575,205	66,189	62,619	2,038,063	35,979,891
2005	474,995	1,082,116	50,471	161,634	2,447,557	29,440,266	65,814	62,247	2,027,723	35,812,823
2006	473,570	1,078,374	50,278	161,084	2,438,526	29,344,480	65,557	62,001	2,020,593	35,694,463
2007	476,523	1,086,586	50,704	162,293	2,457,852	29,550,521	66,123	62,553	2,036,243	35,949,398
2008	476,204	1,085,486	50,646	162,131	2,455,475	29,523,773	66,026	62,476	2,034,144	35,916,361
2009	478,711	1,091,838	50,976	163,065	2,471,546	29,686,996	66,386	62,868	2,046,247	36,118,633
2010	476,464	1,085,816	50,663	162,180	2,456,596	29,533,326	66,014	62,486	2,034,767	35,928,312
2011	476,810	1,086,660	50,708	162,304	2,458,863	29,555,162	66,047	62,535	2,036,381	35,955,470
2012	479,738	1,095,013	51,142	163,534	2,478,291	29,763,224	66,631	63,102	2,052,295	36,212,970
2013	479,872	1,095,538	51,169	163,610	2,479,029	29,774,412	66,688	63,151	2,053,300	36,226,769
2014	476,040	1,085,335	50,639	162,108	2,454,558	29,517,056	66,037	62,477	2,033,859	35,908,109
2015	475,292	1,083,160	50,525	161,789	2,385,718	29,462,868	65,886	62,333	2,029,715	35,777,286
2016	478,655	1,092,618	51,018	163,181	2,352,442	29,700,035	66,542	62,968	2,047,737	36,015,196
2017	475,370	1,083,508	50,543	161,841	2,218,695	29,471,612	65,911	62,350	2,030,379	35,620,209
2018	475,407	1,083,683	50,553	161,867	2,116,724	29,473,684	57,522	62,379	2,030,712	35,512,531
2019	478,143	1,091,225	50,946	162,975	2,079,109	29,665,327	57,544	62,871	2,045,082	35,693,222
2020	483,823	1,116,940	52,281	166,765	2,089,848	30,185,308	59,077	65,236	2,094,094	36,313,372
2021	483,823	1,116,940	52,281	166,765	2,068,542	30,185,308	58,938	65,236	2,094,094	36,291,927
2022	483,823	1,116,940	52,281	166,765	2,058,674	30,185,308	58,871	65,236	2,094,094	36,281,992
2023	483,823	1,116,940	52,281	166,765	2,054,416	30,185,308	58,841	65,236	2,094,094	36,277,704
2024	483,823	1,116,940	52,281	166,765	2,052,489	30,185,308	58,828	65,236	2,094,094	36,275,764
2025	483,823	1,116,940	52,281	166,765	2,050,290	30,185,308	58,808	65,236	2,094,094	36,273,545
2026	483,823	1,116,940	52,281	166,765	2,048,488	30,185,308	58,775	65,236	2,094,094	36,271,710
2027	483,823	1,116,940	52,281	166,765	2,044,791	30,185,308	58,700	65,236	2,094,094	36,267,938
2028	483,823	1,116,940	52,281	166,765	2,043,934	30,185,308	58,711	65,236	2,094,094	36,267,092
2029	483,823	1,116,940	52,281	166,765	2,042,868	30,185,308	58,690	65,236	2,094,094	36,266,005
2030	483,823	1,116,940	52,281	166,765	2,041,095	30,185,308	58,646	65,236	2,094,094	36,264,188
2031	483,823	1,116,940	52,281	166,765	2,038,035	30,185,308	58,565	65,236	2,094,094	36,261,047
2032	483,823	1,116,940	52,281	166,765	2,031,713	30,185,308	58,407	65,236	2,094,094	36,254,567
2033	483,823	1,116,940	52,281	166,765	2,025,705	30,185,308	58,271	65,236	2,094,094	36,248,423
2034	483,823	1,116,940	52,281	166,765	2,015,719	30,185,308	57,970	65,236	2,094,094	36,238,136
2035	483,823	1,116,940	52,281	166,765	1,998,496	30,185,308	57,408	65,236	2,094,094	36,220,351
TOTAL	28,017,318	60,637,086	2,944,828	8,996,577	128,771,099	1,625,003,419	3,528,370	3,493,065	113,178,765	1,974,570,527

CHARGE FOR EACH CONTRACTOR[a]

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley County Water District	Crestline Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
1962	0	0	0	0	0	0	0	0	0	0
1963	33,256	0	0	0	0	0	0	0	51,586	0
1964	62,381	19,863	14,151	4,278	36,661	1,129	27,914	8,116	81,215	34,530
1965	118,006	37,905	24,803	7,098	40,310	2,067	49,758	15,120	133,413	34,929
1966	214,766	71,834	44,372	12,367	72,584	3,732	89,698	27,527	230,589	60,976
1967	415,956	148,060	85,693	23,346	140,731	7,255	174,330	53,814	431,200	115,015
1968	729,742	310,249	151,326	41,139	248,974	12,760	307,920	94,654	776,012	207,283
1969	1,048,141	467,123	223,187	60,669	367,484	18,510	453,757	136,694	1,192,005	318,022
1970	1,364,660	595,608	312,921	89,103	515,479	25,025	627,166	183,298	1,760,367	462,736
1971	1,692,220	749,580	429,958	127,688	708,501	31,630	850,520	229,721	2,515,245	653,216
1972	2,003,648	929,679	556,019	179,098	916,401	42,017	1,098,428	272,228	3,346,654	854,174
1973	2,092,385	968,593	687,946	181,562	1,124,040	43,082	1,158,199	284,643	3,911,168	932,177
1974	2,154,389	1,021,236	702,150	190,623	1,148,697	44,791	1,187,054	289,240	3,929,639	972,936
1975	2,327,691	1,078,637	741,367	202,813	1,213,692	48,003	1,249,845	301,037	4,078,308	1,069,728
1976	2,677,174	1,075,077	787,268	211,755	1,288,297	50,916	1,290,505	309,910	4,212,977	1,121,961
1977	2,617,665	1,269,157	683,747	222,813	1,127,057	46,804	1,362,209	325,673	4,465,270	1,184,498
1978	3,060,011	1,226,981	874,474	232,269	1,419,833	48,313	1,400,249	329,726	4,497,538	1,215,638
1979	3,992,388	1,254,673	915,140	239,991	1,479,656	65,969	1,531,584	348,420	4,751,290	1,291,944
1980	3,801,419	1,377,420	973,386	258,513	1,585,801	70,781	1,587,900	359,495	5,480,873	1,387,535
1981	4,103,125	1,493,757	1,036,562	272,950	1,686,242	75,657	1,853,549	354,665	5,821,621	1,493,906
1982	4,201,643	1,490,399	1,057,806	285,075	1,722,841	75,126	2,001,254	368,124	5,795,187	1,516,567
1983	9,530,986	1,809,046	2,109,116	544,047	3,388,089	166,391	4,671,351	399,019	9,637,873	2,482,588
1984	11,768,948	1,976,155	2,555,287	686,510	4,103,031	203,972	5,669,442	449,716	11,029,656	2,900,628
1985	12,836,144	2,070,032	2,710,228	727,670	4,356,318	216,576	5,959,401	537,126	11,525,871	3,039,657
1986	14,272,702	2,161,157	2,915,062	780,640	4,689,038	232,487	6,375,526	610,994	12,193,989	3,251,587
1987	14,936,217	2,216,128	3,049,570	809,437	4,966,578	243,975	6,633,634	680,166	12,489,725	3,363,132
1988	16,051,234	2,303,392	3,294,435	871,160	5,425,548	263,217	7,126,332	763,616	13,331,829	3,618,070
1989	16,700,665	2,504,180	3,448,071	912,009	5,736,842	275,582	7,432,672	834,582	13,806,675	3,767,554
1990	17,422,627	2,609,230	3,598,713	936,255	5,934,826	288,120	7,742,531	907,754	14,126,265	3,891,766
1991	18,125,701	2,677,003	3,620,092	948,519	5,970,092	289,186	7,773,889	1,011,871	14,421,573	3,933,767
1992	17,909,401	2,662,339	3,579,081	939,057	5,902,453	285,655	7,682,409	1,101,602	14,167,804	3,861,143
1993	17,685,548	2,718,119	3,536,308	929,242	5,831,905	282,025	7,586,448	1,188,909	14,219,216	3,873,861
1994	18,275,855	2,723,279	3,643,930	947,262	6,009,416	291,779	7,843,251	1,326,272	14,334,685	3,923,442
1995	18,224,618	2,780,071	3,646,716	960,706	6,014,015	290,948	7,820,485	1,425,640	14,593,343	3,971,639
1996	18,136,965	2,767,841	3,622,574	949,474	5,974,192	289,378	7,778,967	1,500,558	14,506,632	3,957,152
1997	18,288,483	2,930,637	3,652,486	955,661	6,023,524	291,867	7,847,661	1,594,694	14,595,408	3,984,585
1998	18,240,637	2,849,719	3,644,708	955,969	6,010,697	291,073	7,825,441	1,672,753	14,624,947	3,988,543
1999	18,408,609	3,019,048	3,669,323	954,500	6,051,297	293,877	7,897,074	1,770,707	14,558,647	3,984,640
2000	18,244,044	2,997,839	3,648,331	959,766	6,016,674	291,132	7,826,947	1,837,198	14,613,260	3,979,755
2001	18,323,883	2,960,706	3,652,369	948,336	6,023,327	292,459	7,863,965	1,907,233	14,518,637	3,977,014
2002	18,445,277	3,116,113	3,688,508	969,393	6,082,942	294,481	7,916,258	1,982,521	14,759,106	4,021,562
2003	18,527,761	3,083,292	3,702,225	971,230	6,105,566	295,859	7,950,015	2,064,897	14,842,405	4,048,004
2004	18,617,581	3,334,131	3,709,456	963,305	6,117,481	297,352	7,987,952	2,148,959	14,677,428	4,020,343
2005	18,460,544	3,224,432	3,693,893	973,163	6,091,826	294,736	7,922,588	2,202,996	14,899,861	4,056,430
2006	18,424,454	3,301,943	3,678,451	962,556	6,066,349	294,139	7,903,889	2,198,511	14,717,516	4,018,133
2007	18,584,789	3,323,327	3,705,624	964,618	6,111,167	296,808	7,974,381	2,218,567	14,728,356	4,030,284
2008	18,557,188	3,386,992	3,704,313	968,119	6,109,009	296,348	7,962,267	2,215,118	14,902,239	4,071,578
2009	18,598,817	3,446,950	3,724,620	981,922	6,142,502	297,040	7,985,200	2,220,294	15,029,069	4,089,883
2010	18,550,303	3,497,521	3,701,453	965,435	6,104,287	296,237	7,959,570	2,214,257	14,819,388	4,051,816
2011	18,508,152	3,545,466	3,699,438	969,315	6,100,965	295,530	7,944,578	2,208,953	14,685,998	4,005,780
2012	18,684,831	3,561,622	3,729,373	972,098	6,150,330	298,472	8,021,184	2,231,065	14,900,215	4,074,993
2013	18,694,483	3,683,010	3,741,131	979,298	6,156,410	299,188	8,037,969	2,236,451	14,743,510	4,024,462
2014	18,453,907	3,616,276	3,688,553	968,864	6,083,607	294,535	7,919,085	2,201,857	14,700,308	4,006,597
2015	18,391,094	3,722,981	3,664,760	952,466	6,044,364	293,482	7,891,649	2,193,978	14,293,152	3,912,601
2016	18,486,012	3,727,669	3,695,463	971,588	6,095,014	295,008	7,935,533	2,205,549	14,718,959	4,010,810
2017	18,087,808	3,568,199	3,606,825	940,439	5,948,821	288,203	7,765,693	2,154,607	14,065,052	3,845,414
2018	17,847,463	3,638,636	3,555,824	927,953	5,864,709	283,927	7,659,328	2,122,994	13,850,585	3,786,372
2019	17,707,508	3,489,469	3,516,440	913,980	5,799,760	281,149	7,590,343	2,103,286	13,575,891	3,720,186
2020	17,617,413	3,446,427	3,467,872	899,414	5,719,672	278,400	7,498,985	2,085,020	13,248,470	3,636,252
2021	17,357,992	3,313,108	3,363,153	863,947	5,546,965	272,938	7,301,165	2,047,157	12,548,680	3,460,904
2022	17,224,124	3,223,272	3,307,968	846,533	5,455,953	270,432	7,193,628	2,029,149	12,132,201	3,359,303
2023	17,173,549	3,207,105	3,290,853	841,786	5,427,727	269,440	7,159,132	2,022,177	11,992,036	3,322,928
2024	17,155,442	3,166,833	3,282,757	837,585	5,414,374	269,118	7,146,984	2,019,823	11,902,063	3,302,305
2025	17,132,325	3,154,979	3,269,511	833,796	5,392,528	268,701	7,120,489	2,016,793	11,819,365	3,280,525
2026	17,119,427	3,145,182	3,259,627	831,100	5,376,227	268,448	7,100,473	2,015,059	11,741,014	3,259,682
2027	17,106,087	3,135,182	3,252,425	829,141	5,364,349	268,211	7,085,836	2,013,324	11,690,774	3,246,307
2028	17,097,241	3,123,440	3,248,007	827,884	5,357,063	268,040	7,076,978	2,012,113	11,661,674	3,238,663
2029	17,089,933	3,107,278	3,245,795	827,248	5,353,416	267,910	7,072,552	2,011,158	11,648,621	3,235,304
2030	17,068,292	3,061,901	3,241,217	825,853	5,345,865	267,600	7,063,571	2,008,920	11,614,404	3,226,499
2031	17,035,955	3,010,003	3,235,210	824,139	5,335,958	267,144	7,051,554	2,005,556	11,580,269	3,217,578
2032	16,938,408	2,970,285	3,218,853	819,941	5,308,983	265,662	7,017,869	1,994,450	11,504,981	3,197,102
2033	16,790,425	2,942,659	3,195,094	813,909	5,269,800	263,485	6,968,804	1,978,128	11,397,704	3,167,757
2034	16,676,513	2,922,780	3,183,999	811,098	5,251,502	262,468	6,945,855	1,970,498	11,347,929	3,154,103
2035	16,267,289	2,915,128	3,179,860	810,046	5,244,676	262,094	6,937,256	1,967,701	11,329,213	3,148,968
TOTAL	956,572,320	176,435,343	192,347,227	50,218,532	316,611,310	15,375,851	411,727,878	97,134,401	766,826,628	208,927,722

TABLE B-19: TOTAL TRANSPORTATION CHARGE FOR EACH CONTRACTOR[a]

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				FUTURE CONTRACTOR	GRAND TOTAL
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC & WCD	Total	South Bay	
	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)
1962	0	0	0	0	0	0	0	0	0	55,537
1963	0	691,858	0	776,700	0	0	0	0	57,712	1,606,572
1964	21,451	1,263,535	9,291	1,584,515	0	0	0	0	95,429	2,743,972
1965	21,608	2,183,149	17,673	2,685,839	0	0	395	395	164,836	4,699,135
1966	37,661	3,899,227	33,294	4,798,627	0	0	551	551	190,631	7,228,597
1967	70,937	7,692,026	68,010	9,426,373	0	0	549	549	247,530	12,529,127
1968	127,903	15,282,786	142,346	18,433,094	0	0	551	551	321,800	24,331,656
1969	196,451	23,058,703	214,459	27,755,205	0	0	3,116	3,116	390,949	35,152,600
1970	286,631	30,506,538	272,784	37,002,316	0	0	14,767	14,767	429,281	45,184,691
1971	405,471	39,887,406	341,836	48,622,992	0	0	15,629	15,629	418,951	57,753,498
1972	530,390	52,728,971	421,031	63,878,738	0	0	16,969	16,969	444,627	75,135,626
1973	578,937	57,161,116	434,594	69,558,442	0	0	16,929	16,929	419,133	79,933,956
1974	600,455	61,622,436	454,868	74,318,514	0	0	17,072	17,072	442,161	85,528,264
1975	631,531	66,524,991	478,537	79,946,180	0	0	18,000	18,000	451,681	92,493,654
1976	654,149	68,201,714	480,839	82,362,542	0	0	17,073	17,073	474,340	95,867,249
1977	683,035	65,402,819	550,314	79,941,061	0	0	17,828	17,828	467,352	93,474,454
1978	715,833	75,010,260	539,951	90,571,076	0	0	17,000	17,000	472,971	106,078,960
1979	727,633	80,216,056	562,379	97,377,123	0	0	17,138	17,138	511,581	114,754,446
1980	759,863	86,546,127	601,943	104,791,056	0	0	17,138	17,138	525,969	123,058,253
1981	756,526	93,136,259	634,295	112,719,114	0	0	17,138	17,138	531,458	132,401,539
1982	771,609	93,723,706	650,235	113,659,572	0	0	17,138	17,138	532,689	133,566,458
1983	778,120	134,917,122	743,622	171,177,370	0	0	17,138	17,138	535,068	203,635,873
1984	807,672	148,872,233	819,941	191,843,191	0	0	17,138	17,138	539,316	231,972,122
1985	1,750,884	144,708,096	935,263	191,373,266	0	0	17,138	17,138	540,253	235,582,784
1986	1,895,574	150,650,164	1,063,594	201,092,514	0	0	17,138	17,138	541,384	250,375,553
1987	1,983,080	152,913,191	1,181,643	205,466,476	0	0	17,138	17,138	541,295	256,462,416
1988	2,155,557	159,166,138	1,391,541	215,762,069	0	0	17,138	17,138	541,610	269,554,943
1989	2,268,937	180,510,243	1,723,315	239,921,327	0	0	17,138	17,138	541,251	294,874,219
1990	2,363,541	192,143,974	2,045,230	254,010,832	0	0	17,138	17,138	540,076	310,500,807
1991	2,390,423	196,423,388	2,102,632	259,688,136	0	0	17,138	17,138	540,023	316,776,437
1992	2,346,889	195,197,427	2,037,067	257,672,327	0	0	17,138	17,138	534,207	314,084,412
1993	2,354,711	198,005,455	2,053,449	260,265,196	0	0	17,138	17,138	533,008	316,547,593
1994	2,382,400	199,615,133	2,005,102	263,321,806	0	0	17,138	17,138	534,128	321,221,080
1995	2,414,389	205,468,218	2,036,576	269,647,364	0	0	17,138	17,138	533,997	327,690,022
1996	2,404,482	204,194,501	1,996,312	268,079,028	0	0	17,138	17,138	535,039	326,121,759
1997	2,420,659	210,867,994	2,072,266	275,525,925	0	0	17,138	17,138	535,395	334,272,408
1998	2,423,581	209,571,066	2,047,757	274,146,891	0	0	17,138	17,138	535,370	332,882,752
1999	2,419,373	217,426,620	2,113,228	282,566,943	0	0	17,138	17,138	535,166	341,818,871
2000	2,418,970	215,704,388	2,092,310	280,630,614	0	0	17,138	17,138	535,255	339,754,037
2001	2,414,368	214,577,745	2,043,191	279,503,233	0	0	17,138	17,138	535,446	338,996,656
2002	2,443,986	222,238,961	2,113,132	288,072,240	0	0	17,138	17,138	535,587	347,856,385
2003	2,459,500	221,010,697	2,096,440	287,157,891	0	0	17,138	17,138	535,649	347,232,405
2004	2,440,561	230,788,378	2,195,043	297,297,970	0	0	17,138	17,138	535,693	357,668,681
2005	2,465,514	227,352,813	2,133,672	293,772,468	0	0	17,138	17,138	535,629	353,974,328
2006	2,440,900	229,576,652	2,136,886	295,720,379	0	0	17,138	17,138	535,573	355,768,881
2007	2,447,079	231,517,465	2,132,748	298,035,213	0	0	17,138	17,138	535,762	358,508,011
2008	2,472,907	236,277,949	2,172,986	303,097,013	0	0	17,138	17,138	536,483	363,549,528
2009	2,486,382	239,228,086	2,185,934	306,416,699	0	0	17,138	17,138	539,193	367,220,524
2010	2,460,743	241,312,404	2,198,580	308,131,994	0	0	17,138	17,138	537,636	368,659,775
2011	2,434,263	244,018,495	2,191,004	310,607,937	0	0	17,138	17,138	538,397	371,190,260
2012	2,474,693	246,745,586	2,194,167	314,038,629	0	0	17,138	17,138	538,338	375,043,067
2013	2,444,961	250,147,171	2,229,498	317,417,542	0	0	17,138	17,138	492,534	377,838,647
2014	2,434,635	246,350,955	2,189,874	312,909,053	0	0	17,138	17,138	454,153	372,590,463
2015	2,375,513	246,229,802	2,194,785	312,160,627	0	0	16,743	16,743	399,720	371,107,993
2016	2,436,909	246,695,948	2,182,825	313,457,287	0	0	16,587	16,587	376,473	372,543,858
2017	2,334,762	236,161,646	2,103,921	300,871,390	0	0	16,590	16,590	335,866	359,131,626
2018	2,298,303	236,108,684	2,097,800	300,042,578	0	0	16,587	16,587	260,686	357,790,867
2019	2,255,956	227,792,571	2,010,817	290,757,356	0	0	14,022	14,022	197,657	348,555,351
2020	2,203,184	223,352,269	1,982,526	285,435,904	0	0	2,371	2,371	176,212	343,868,588
2021	2,093,632	215,019,232	1,923,425	275,112,298	0	0	1,564	1,564	172,312	333,499,598
2022	2,030,363	208,137,487	1,885,210	267,095,623	0	0	211	211	171,501	325,460,668
2023	2,007,715	205,848,201	1,881,758	264,444,407	0	0	210	210	170,794	322,770,505
2024	1,994,597	203,816,994	1,866,902	262,175,777	0	0	209	209	170,310	320,490,894
2025	1,981,079	202,855,502	1,862,522	260,988,115	0	0	206	206	168,535	319,280,985
2026	1,968,108	202,007,216	1,858,263	259,949,826	0	0	205	205	168,103	317,884,332
2027	1,959,808	201,302,205	1,853,799	259,107,448	0	0	202	202	167,022	317,010,599
2028	1,955,062	200,715,649	1,848,250	258,430,064	0	0	201	201	165,981	316,294,763
2029	1,952,980	200,047,826	1,840,551	257,700,572	0	0	200	200	164,769	315,538,744
2030	1,947,492	198,233,140	1,819,084	255,723,838	0	0	200	200	163,953	313,488,030
2031	1,941,964	196,199,089	1,794,406	253,498,825	0	0	200	200	162,877	311,121,221
2032	1,929,371	194,395,988	1,775,341	251,337,234	0	0	200	200	161,961	308,764,591
2033	1,911,336	192,844,586	1,762,413	249,306,100	0	0	200	200	161,715	306,000,872
2034	1,902,949	191,874,221	1,753,490	248,057,405	0	0	200	200	161,211	302,339,593
2035	1,899,801	191,503,907	1,749,923	247,215,862	0	0	200	200	160,116	299,124,351
TOTAL	124,258,692	11,943,380,554	107,630,693	15,367,447,151	0	0	860,705	860,705	28,886,769	18,585,871,972

TABLE B-20: CALCULATION OF DELTA WATER RATES

[values in millions of dollars ($) or millions of acre-feet (AF)[a] discounted to 1979 at 4.462 percent per annum]

Procedure	Capital Cost Component		Minimum Operation Maintenance, Power and Replacement Component[b]		Total Delta Water Rate[c]	
In accordance with amendment to Articles 22(e) and 22(g)[d]						
Commencing in 1980:						
Total costs of "initial conservation facilities" to be reimbursed, and project water entitlements to be delivered, during the project repayment period	$1,305.96[e]	91.71 AF	$ 416.05[f]	91.71 AF	$1,722.01	91.71 AF
less, project power revenues to be realized during the project repayment period	$ 527.52		$ 103.84		$ 631.36	
less, Delta Water Charges paid, and project water entitlements, prior to 1980[g]	$ 106.48	14.65 AF	$ 28.90	14.65 AF	$ 135.38	14.65 AF
Subtotal	$ 671.96	77.06 AF	$ 283.31	77.06 AF	$ 955.27	77.06 AF
Rate applicable 1980	$ 8.72 per acre-foot		$ 3.68 per acre-foot		$12.40 per acre-foot	
Commencing in 1981						
Additional costs to be reimbursed during the project repayment period for ground water storage facilities	$ 185.65		$ 72.91		$ 258.56	
less, Delta Water Charges paid, and project water entitlements delivered, during 1980	$ 18.57	2.13 AF	$ 7.84	2.13 AF	$ 26.41	2.13 AF
Cumulative Subtotal	$ 839.04	74.93 AF	$ 348.38	74.93 AF	$1,187.42	74.93 AF
Rate applicable 1981 through 1983	$11.20 per acre-foot		$ 4.65 per acre-foot		$15.85 per acre-foot	
Commencing in 1984						
Additional costs to be reimbursed during the project repayment period for Los Vaqueros Reservoir facilities	$ 103.22		$ 32.41		$ 135.63	
less, Delta Water Charges paid, and project water entitlements delivered, during the period 1981-1983	$ 76.94	6.87 AF	$ 31.95	6.87 AF	$ 108.89	6.87 AF
Cumulative Subtotal	$ 865.32	68.06 AF	$ 348.84	68.06 AF	$1,214.16	68.06 AF
Rate applicable 1984 through 1986	$12.71 per acre-foot		$ 5.13 per acre-foot		$17.84 per acre-foot	
Commencing in 1987						
Additional costs to be reimbursed during the project repayment period for Glenn Reservoir Complex	$ 809.29		$ 259.03		$1,068.32	
less, Delta Water Charges paid, and project water entitlements delivered, during the period 1984-1986	$ 93.93	7.39 AF	$ 37.91	7.39 AF	$ 131.84	7.39 AF
Cumulative Subtotal	$1,580.68	60.67 AF	$ 569.96	60.67 AF	$2,150.64	60.67 AF
Rate applicable 1987	$26.05 per acre-foot		$ 9.40 per acre-foot		$35.45 per acre-foot	
Commencing in 1988						
Additional costs to be reimbursed during the project repayment period for Cottonwood Creek Project	$ 395.35		$ 11.24		$ 406.59	
less, Delta Water Charges paid, and project water entitlements delivered, during 1987	$ 66.17	2.54 AF	$ 23.88	2.54 AF	$ 90.05	2.54 AF
Cumulative Subtotal	$1,909.86	58.13 AF	$ 557.32	58.13 AF	$2,467.18	58.13 AF
Rate applicable 1988 through 2035	$32.85 per acre-foot		$ 9.59 per acre-foot		$42.44 per acre-foot	
Calculation Under Original Provisions of Article 22(e) and 22(g)[d]						
Commencing in 1979						
Total costs of "initial" and "additional" project conservation facilities to be reimbursed and project water entitlements to be delivered during the project repayment period.	$2,799.47[e]	91.71 AF	$ 791.64[f]	91.71 AF	$3,591.11	91.71 AF
less, project power revenues to be realized during the project repayment period	$ 527.52		$ 103.84		$ 631.36	
less, Delta Water Charges paid, and project water entitlements delivered, prior to 1979[g]	$ 106.48	14.65 AF	$ 28.90	14.65 AF	$ 135.38	14.65 AF
TOTAL	$2,165.47	77.06 AF	$ 658.90	77.06 AF	$2,824.37	77.06 AF
Rate applicable 1979 through 2035	$28.10 per acre-foot		$ 8.55 per acre-foot		$36.65 per acre-foot	

a) Metric conversion is acre-feet times 1.2335 equals cubic dekametres.
b) Considering that all operating costs of project conservation facilities will not vary with annual amounts of project water delivered, and therefore are properly classified as "minimum" OMP&R costs.
c) Metric conversion is dollars per acre-foot times .8107 equals dollars per cubic dekametre.
d) Additional facilities shown in calculations of the Delta Water Rate are assumed needed to meet future water requirements and to develop full State Water Project yield.
e) Including net credits of $4,850,000 for settlements as to the magnitude of project capital costs incurred prior to December 31, 1960, and net credits of $6,331,926 for settlement as to the magnitude of project capital costs incurred during the 1961 through 1976 period.
f) Includes conservation power costs and credits at San Luis.
g) Applying all Delta Water Charges paid prior to 1970 to reimburse capital costs (the Charge is not divided into components until 1970).

TABLE B-21: TOTAL DELTA WATER

(in acre-feet)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC & WCD	Solano County FC & WCD	Total	Alameda County FC & WCD Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC & WCD	Santa Barbara County FC & WCD	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1967	0	0	0	14,000	50,050	177,100	241,150	0	0	0
1968	0	0	0	19,156	29,701	193,245	242,102	0	0	0
1969	0	0	0	30,324	44,096	215,483	289,903	0	0	0
1970	0	0	0	80,908	107,730	585,200	773,838	0	0	0
1971	0	0	0	57,320	123,080	637,120	817,520	0	0	0
1972	0	0	0	99,668	143,877	707,328	950,873	0	0	0
1973	0	0	0	120,880	167,099	782,167	1,070,146	0	0	0
1974	0	0	0	137,684	182,339	818,664	1,138,687	0	0	0
1975	0	0	0	146,204	187,324	804,123	1,137,651	0	0	0
1976	0	0	0	168,489	208,652	862,036	1,239,177	0	0	0
1977	0	0	0	172,931	208,645	827,062	1,208,638	0	0	0
1978	0	0	0	206,378	243,231	926,594	1,376,203	0	0	0
1979	0	0	0	237,771	273,209	1,005,955	1,516,935	0	0	0
1980	154,953	247,391	402,344	272,717	307,426	1,090,867	1,671,010	12,396	14,875	27,271
1981	217,897	293,205	511,102	364,482	412,023	1,394,539	2,171,044	15,847	36,448	52,295
1982	237,705	344,515	582,220	380,329	431,039	1,394,539	2,205,907	31,694	72,896	104,590
1983	257,514	395,826	653,340	396,176	450,056	1,394,539	2,240,771	47,541	109,345	156,886
1984	312,199	443,472	755,671	463,838	528,062	1,569,914	2,561,814	80,280	185,535	265,815
1985	334,499	513,108	847,607	481,678	549,470	1,569,914	2,601,062	133,800	308,631	442,431
1986	356,799	604,735	961,534	499,518	572,662	1,569,914	2,642,094	178,399	412,103	590,502
1987	753,307	733,012	1,486,319	1,028,043	1,180,477	3,119,578	5,328,098	443,122	1,020,953	1,464,075
1988	955,012	989,566	1,944,578	1,273,349	1,464,351	3,735,157	6,472,857	657,897	1,519,530	2,177,427
1989	1,008,068	1,264,445	2,272,513	1,315,794	1,515,285	3,820,046	6,651,125	848,899	1,956,713	2,805,612
1990	1,061,124	1,539,324	2,600,448	1,358,239	1,566,219	3,904,936	6,829,394	1,061,124	2,449,074	3,510,198
1991	1,061,124	1,539,324	2,600,448	1,443,129	1,629,886	3,989,826	7,062,841	1,061,124	2,449,074	3,510,198
1992	1,061,124	1,539,324	2,600,448	1,528,019	1,693,554	4,074,716	7,296,289	1,061,124	2,449,074	3,510,198
1993	1,061,124	1,539,324	2,600,448	1,612,908	1,757,221	4,159,606	7,529,735	1,061,124	2,449,074	3,510,198
1994	1,061,124	1,539,324	2,600,448	1,697,798	1,782,688	4,244,496	7,724,982	1,061,124	2,449,074	3,510,198
1995	1,061,124	1,539,324	2,600,448	1,782,688	1,782,688	4,244,496	7,809,872	1,061,124	2,449,074	3,510,198
1996	1,061,124	1,539,324	2,600,448	1,867,578	1,782,688	4,244,496	7,894,762	1,061,124	2,449,074	3,510,198
1997	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
1998	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
1999	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2000	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2001	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2002	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2003	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2004	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2005	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2006	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2007	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2008	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2009	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2010	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2011	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2012	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2013	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2014	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2015	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2016	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2017	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2018	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2019	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2020	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2021	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2022	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2023	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2024	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2025	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2026	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2027	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2028	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2029	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2030	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2031	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2032	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2033	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2034	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
2035	1,061,124	1,539,324	2,600,448	1,952,468	1,782,688	4,244,496	7,979,652	1,061,124	2,449,074	3,510,198
TOTAL	53,399,657	76,638,179	130,037,836	95,404,248	90,899,660	223,599,000	409,902,908	51,261,579	118,294,433	169,556,012

CHARGE FOR EACH CONTRACTOR

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA									
	Devil's Den Water District	Dudley Ridge Water District	Empire West Side Irrigation District	Hacienda Water District	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
					Municipal and Industrial	Agricultural				
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1967	0	0	0	0	0	0	0	0	0	0
1968	13,060	40,695	10,469	4,511	0	165,522	3,177	8,073	94,097	339,604
1969	17,804	61,267	3,281	3,744	0	337,686	4,200	8,805	98,734	535,521
1970	37,905	104,405	19,950	16,625	0	964,915	8,645	17,290	211,470	1,381,205
1971	48,508	129,596	21,720	16,652	0	1,377,772	9,412	20,272	247,608	1,871,540
1972	61,891	160,756	24,113	20,898	0	2,175,835	11,253	43,131	884,159	3,382,036
1973	77,328	195,541	26,664	25,776	386,638	2,373,167	13,333	27,553	347,531	3,473,531
1974	90,239	224,202	27,909	30,700	446,545	2,781,595	13,954	29,770	414,438	4,059,352
1975	97,774	329,688	27,413	32,896	481,560	3,041,048	14,620	33,702	794,695	4,853,396
1976	114,612	414,245	29,388	39,712	549,549	3,931,785	15,673	35,966	837,439	5,968,369
1977	119,360	312,532	28,195	39,473	569,545	4,071,218	15,977	40,289	586,737	5,783,326
1978	133,724	342,208	31,588	48,436	674,939	4,950,959	20,006	41,065	618,080	6,861,005
1979	145,178	395,524	34,294	56,013	772,756	5,901,986	22,863	45,725	715,600	8,089,939
1980	157,432	454,941	37,189	64,460	881,371	6,984,026	27,272	52,064	824,348	9,483,103
1981	201,257	614,865	47,541	88,743	1,185,358	9,771,280	36,448	68,142	1,115,631	13,129,265
1982	201,257	649,728	47,541	93,497	1,261,424	10,549,369	39,618	71,312	1,177,434	14,091,180
1983	201,257	679,838	47,541	98,252	1,323,227	11,435,218	44,372	72,896	1,239,238	15,141,839
1984	226,567	804,581	53,520	115,960	1,580,618	13,772,431	55,304	85,632	1,464,659	18,159,272
1985	226,567	842,045	53,520	123,096	1,675,170	14,648,372	60,656	87,416	1,534,235	19,251,077
1986	226,567	879,509	53,520	128,448	1,755,450	15,517,177	66,008	90,984	1,605,594	20,323,257
1987	450,212	1,822,117	106,349	265,873	3,690,319	32,592,497	141,799	184,339	3,328,731	42,582,236
1988	539,051	2,270,805	127,335	331,071	4,622,256	40,989,098	169,780	229,203	4,151,117	53,429,716
1989	539,051	2,359,940	127,335	348,049	4,804,769	42,406,760	169,780	237,692	4,316,652	55,310,028
1990	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
1991	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
1992	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
1993	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
1994	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
1995	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
1996	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
1997	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
1998	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
1999	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2000	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2001	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2002	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2003	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2004	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2005	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2006	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2007	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2008	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2009	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2010	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2011	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2012	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2013	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2014	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2015	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2016	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2017	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2018	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2019	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2020	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2021	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2022	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2023	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2024	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2025	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2026	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2027	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2028	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2029	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2030	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2031	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2032	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2033	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2034	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
2035	539,051	2,449,074	127,335	360,782	5,076,417	43,879,600	169,780	241,936	4,668,946	57,512,921
TOTAL	28,722,947	126,746,432	6,843,785	18,588,857	260,176,676	2,249,201,316	8,774,030	12,660,377	241,379,743	2,953,094,163

TABLE B-21: TOTAL DELTA WATER

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley County Water District	Crestline Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
1967	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0
1972	160,756	12,860	41,797	4,662	64,303	1,367	67,518	13,021	369,739	85,202
1973	222,207	29,835	51,552	7,279	79,994	2,577	95,104	26,131	54,908	14,338
1974	279,090	53,027	59,539	10,791	93,030	3,721	121,869	39,631	465,150	114,427
1975	319,822	68,533	63,964	13,250	100,515	4,752	140,722	50,989	479,733	119,705
1976	431,018	93,061	74,449	17,045	117,550	6,269	174,366	67,591	538,772	137,142
1977	469,922	107,142	79,144	19,079	122,180	6,861	189,848	77,255	540,410	139,097
1978	600,180	141,095	97,313	24,428	147,413	9,687	236,913	98,345	631,768	165,313
1979	720,173	174,899	115,033	29,836	171,470	11,888	284,639	117,285	714,457	189,760
1980	857,818	219,413	134,920	35,949	210,736	14,256	337,177	138,590	811,952	215,694
1981	1,188,527	318,525	191,828	50,552	301,094	20,126	469,072	185,410	1,085,522	290,001
1982	1,288,364	350,219	211,178	55,148	332,788	21,869	505,520	195,235	1,133,063	302,678
1983	1,389,785	389,837	230,527	59,743	364,482	23,771	543,553	205,061	1,180,604	315,356
1984	1,676,954	479,894	281,300	72,430	445,998	28,722	654,726	241,910	1,391,515	369,287
1985	1,791,130	519,142	303,083	77,604	481,678	30,863	695,758	252,970	1,453,955	388,911
1986	1,903,521	551,254	324,865	82,777	517,358	32,825	738,573	264,031	1,516,395	413,887
1987	4,005,821	1,166,297	688,824	174,767	1,116,667	69,482	1,549,154	546,635	3,155,027	872,064
1988	5,067,928	1,498,307	876,573	221,563	1,443,129	87,861	1,952,468	680,817	3,947,381	1,103,569
1989	5,335,332	1,587,442	928,399	233,872	1,549,241	92,954	2,058,581	707,133	4,117,161	1,162,992
1990	5,606,979	1,668,087	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,308,163	1,222,415
1991	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
1992	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
1993	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
1994	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
1995	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
1996	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
1997	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
1998	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
1999	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2000	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2001	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2002	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2003	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2004	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2005	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2006	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2007	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2008	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2009	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2010	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2011	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2012	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2013	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2014	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2015	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2016	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2017	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2018	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2019	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2020	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2021	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2022	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2023	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2024	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2025	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2026	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2027	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2028	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2029	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2030	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2031	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2032	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2033	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2034	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
2035	5,874,382	1,761,466	980,479	246,181	1,617,153	97,623	2,156,204	734,298	4,354,853	1,222,415
TOTAL	297,662,517	88,694,839	49,856,322	12,515,101	82,048,664	4,960,509	110,000,945	37,685,748	223,864,060	62,630,513

CHARGE FOR EACH CONTRACTOR

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				FUTURE CONTRACTOR	GRAND TOTAL
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC & WCD	Total	South Bay	
	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)
1967	0	0	0	0	0	0	0	0	0	241,150
1968	0	0	0	0	0	1,050	875	1,925	0	583,631
1969	0	0	0	0	0	1,225	929	2,154	0	827,578
1970	0	0	0	0	0	3,848	1,995	5,843	0	2,160,886
1971	0	0	0	0	0	4,546	3,186	7,732	0	2,696,792
1972	0	2,043,211	0	2,864,436	0	4,929	3,778	8,707	0	7,206,052
1973	0	2,317,893	0	2,901,818	0	7,059	4,444	11,503	0	7,456,998
1974	0	4,231,933	0	5,472,208	0	8,336	4,931	13,267	0	10,683,514
1975	0	5,073,286	0	6,435,271	0	9,416	5,117	14,533	0	12,440,851
1976	0	6,422,167	0	8,079,430	0	7,004	5,780	12,784	0	15,299,760
1977	0	7,104,278	0	8,855,216	0	16,917	5,827	22,744	0	15,869,924
1978	0	9,016,389	0	11,168,844	0	12,635	6,844	19,479	0	19,425,531
1979	0	10,935,192	0	13,464,632	0	16,575	7,773	24,348	0	23,095,854
1980	84,294	13,102,796	12,396	16,175,991	0	19,834	8,801	28,635	0	27,788,354
1981	123,607	18,339,770	31,694	22,595,728	151,772	30,109	11,727	193,608	0	38,653,042
1982	139,454	19,929,227	47,541	24,512,284	166,226	33,279	12,202	211,707	0	41,707,888
1983	155,301	21,520,269	63,388	26,441,677	182,488	36,448	12,678	231,614	0	44,866,127
1984	192,671	26,015,979	89,200	31,940,586	198,749	44,600	14,807	258,156	0	53,941,314
1985	210,511	27,807,109	107,040	34,119,754	215,010	48,168	15,342	278,520	0	57,540,451
1986	230,135	29,601,807	142,719	36,320,147	238,499	51,736	15,878	306,113	0	61,143,647
1987	496,296	62,384,465	354,497	76,579,996	263,794	109,894	32,614	406,302	0	127,847,026
1988	640,919	78,964,604	551,784	97,036,903	289,089	140,068	40,747	469,904	0	161,531,385
1989	687,608	83,234,567	679,119	102,374,401	317,998	148,557	42,445	509,000	0	169,922,679
1990	734,298	85,378,038	848,899	105,598,817	346,907	157,046	44,143	548,096	0	176,599,874
1991	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	45,841	1,559,984	0	178,252,681
1992	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	47,538	1,561,681	0	178,487,826
1993	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	49,236	1,563,379	0	178,722,970
1994	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	50,934	1,565,077	0	178,919,915
1995	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	53,056	1,567,199	0	179,006,927
1996	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	55,178	1,569,321	0	179,093,939
1997	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	57,301	1,571,444	0	179,180,952
1998	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	59,423	1,573,566	0	179,183,074
1999	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	61,545	1,575,688	0	179,185,196
2000	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	64,092	1,578,235	0	179,187,743
2001	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	66,639	1,580,782	0	179,190,290
2002	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	69,185	1,583,328	0	179,192,836
2003	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	71,732	1,585,875	0	179,195,383
2004	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	74,279	1,588,422	0	179,197,930
2005	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	76,825	1,590,968	0	179,200,476
2006	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	79,797	1,593,940	0	179,203,448
2007	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	82,768	1,596,911	0	179,206,419
2008	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	85,739	1,599,882	0	179,209,390
2009	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	88,710	1,602,853	0	179,212,361
2010	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	91,681	1,605,824	0	179,215,332
2011	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	95,077	1,609,220	0	179,218,728
2012	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	98,472	1,612,615	0	179,222,123
2013	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	102,292	1,616,435	0	179,225,943
2014	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	106,112	1,620,255	0	179,229,763
2015	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	110,357	1,624,500	0	179,234,008
2016	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2017	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2018	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2019	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2020	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2021	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2022	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2023	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2024	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2025	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2026	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2027	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2028	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2029	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2030	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2031	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2032	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2033	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2034	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
2035	734,298	85,378,038	848,899	106,006,289	346,907	1,167,236	114,601	1,628,744	0	179,238,252
TOTAL	36,738,504	4,355,434,690	41,128,732	5,403,221,144	17,981,347	53,438,899	4,438,692	75,858,938	0	9,141,671,001

TABLE B-22: TOTAL TRANSPORTATION[a] AND

(in dollars)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC & WCD	Solano County FC & WCD	Total	Alameda County FC & WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC & WCD	Santa Barbara County FC & WCD	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1962	0	0	0	11,750	43,787	0	55,537	0	0	0
1963	0	0	0	148,327	184,567	439,266	772,160	0	0	0
1964	0	0	0	166,418	260,113	609,051	1,035,582	8,164	20,282	28,446
1965	0	0	0	240,246	359,857	1,136,938	1,737,041	13,769	33,538	47,307
1966	18,560	0	18,560	265,814	369,686	1,387,768	2,023,268	22,819	54,876	77,695
1967	41,831	0	41,831	354,200	497,418	1,832,773	2,684,391	40,834	97,106	137,940
1968	127,265	0	127,265	402,779	575,856	2,146,374	3,125,009	66,150	156,398	222,548
1969	252,699	0	252,699	467,789	524,802	2,264,364	3,256,955	120,799	284,108	404,907
1970	275,781	0	275,781	531,675	579,569	2,752,705	3,863,949	133,700	314,323	448,023
1971	225,983	0	225,983	468,910	614,110	2,771,725	3,854,745	134,800	316,970	451,770
1972	223,578	0	223,578	600,750	761,029	2,992,393	4,354,172	140,961	331,463	472,424
1973	219,749	26,950	246,699	586,456	655,101	3,085,248	4,326,805	137,944	324,473	462,417
1974	239,194	28,373	267,567	626,532	685,403	3,289,360	4,601,295	139,202	327,466	466,668
1975	236,339	31,246	267,585	683,341	731,126	3,178,314	4,592,781	155,528	365,612	521,140
1976	270,695	35,147	305,842	796,058	881,702	3,327,852	5,005,612	260,623	611,115	871,738
1977	294,717	38,915	333,632	763,865	860,267	3,267,670	4,891,802	277,440	650,782	928,222
1978	279,912	42,280	322,192	843,550	868,797	3,614,174	5,326,521	288,830	677,487	966,317
1979	294,331	45,525	339,856	948,382	1,034,266	3,656,666	5,639,314	295,696	693,583	989,279
1980	490,586	311,730	802,316	1,029,867	1,098,118	3,818,499	5,946,484	334,340	773,861	1,108,201
1981	582,285	377,648	959,933	1,151,328	1,235,926	4,213,259	6,600,513	366,741	876,830	1,243,571
1982	629,543	451,151	1,080,694	1,161,828	1,249,265	4,168,298	6,579,391	414,841	1,010,882	1,425,723
1983	899,109	647,652	1,546,761	1,624,101	1,776,706	5,723,773	9,124,580	554,464	1,368,498	1,922,962
1984	1,473,840	1,304,708	2,778,548	1,828,615	2,009,955	6,270,768	10,109,338	1,051,855	2,724,767	3,776,622
1985	1,669,114	1,511,660	3,180,774	1,881,806	2,072,672	6,291,966	10,246,444	1,670,744	4,444,114	6,114,858
1986	1,717,796	1,640,155	3,357,951	1,956,308	2,164,573	6,379,808	10,500,689	2,469,923	6,686,856	9,156,779
1987	2,126,665	1,796,619	3,923,284	2,510,494	2,803,290	7,918,990	13,232,774	2,813,456	7,457,901	10,271,357
1988	2,352,029	2,119,947	4,471,976	2,824,720	3,167,806	8,651,936	14,644,462	3,105,247	8,114,045	11,219,292
1989	2,420,016	2,453,449	4,873,465	2,893,569	3,250,731	8,786,420	14,930,720	3,337,259	8,607,405	11,944,664
1990	2,480,508	2,787,160	5,267,668	2,967,877	3,340,233	8,937,165	15,245,275	3,589,557	9,156,927	12,746,484
1991	2,502,835	2,789,979	5,292,814	3,121,334	3,458,428	9,105,089	15,684,851	3,660,760	9,259,078	12,919,838
1992	2,519,322	2,785,874	5,305,196	3,249,561	3,550,186	9,204,549	16,004,296	3,721,339	9,328,635	13,049,974
1993	2,531,138	2,779,538	5,310,676	3,374,981	3,637,697	9,298,223	16,310,901	3,786,250	9,413,516	13,199,766
1994	2,567,277	2,795,243	5,362,520	3,572,431	3,736,467	9,575,168	16,884,066	3,884,148	9,566,986	13,451,134
1995	2,585,158	2,793,064	5,378,222	3,715,268	3,732,203	9,564,915	17,012,386	3,948,481	9,648,216	13,596,697
1996	2,606,118	2,791,998	5,398,116	3,850,403	3,720,978	9,538,903	17,110,284	4,024,130	9,730,239	13,754,369
1997	2,635,766	2,797,071	5,432,837	4,017,438	3,739,959	9,584,290	17,341,687	4,122,794	9,849,010	13,971,804
1998	2,655,926	2,795,893	5,451,819	4,010,977	3,734,060	9,570,244	17,315,281	4,132,836	9,927,458	14,060,294
1999	2,684,471	2,798,881	5,483,352	4,025,447	3,747,267	9,601,661	17,374,375	4,225,198	10,038,735	14,263,933
2000	2,700,900	2,795,695	5,496,595	4,011,463	3,734,500	9,571,264	17,317,227	4,292,259	10,103,290	14,395,549
2001	2,713,108	2,798,560	5,511,668	4,021,926	3,744,053	9,594,021	17,360,000	4,388,870	10,144,221	14,533,091
2002	2,723,259	2,801,373	5,524,632	4,033,737	3,754,839	9,619,709	17,408,285	4,457,719	10,137,660	14,595,379
2003	2,731,869	2,802,827	5,534,696	4,038,675	3,759,348	9,630,443	17,428,466	4,574,083	10,207,112	14,781,195
2004	2,741,436	2,804,234	5,545,670	4,046,063	3,766,093	9,646,508	17,458,664	4,674,943	10,249,010	14,923,953
2005	2,744,144	2,801,572	5,545,716	4,034,892	3,755,893	9,622,217	17,413,002	4,735,545	10,232,305	14,967,850
2006	2,751,355	2,799,368	5,550,723	4,026,933	3,748,625	9,604,912	17,380,470	4,724,346	10,236,087	14,960,433
2007	2,769,472	2,803,249	5,572,721	4,043,920	3,764,136	9,641,848	17,449,904	4,748,236	10,289,937	15,038,173
2008	2,780,191	2,802,589	5,582,780	4,040,732	3,761,229	9,634,935	17,436,896	4,744,976	10,308,179	15,053,155
2009	2,795,812	2,803,840	5,599,652	4,050,974	3,770,587	9,657,256	17,478,817	4,768,112	10,372,578	15,140,690
2010	2,802,564	2,801,931	5,604,495	4,040,003	3,760,564	9,633,369	17,433,936	4,744,639	10,351,923	15,096,562
2011	2,814,505	2,801,221	5,615,726	4,040,880	3,761,368	9,635,289	17,437,537	4,748,030	10,360,323	15,108,353
2012	2,834,034	2,805,471	5,639,505	4,057,915	3,776,922	9,672,325	17,507,162	4,777,164	10,402,459	15,179,623
2013	2,847,538	2,806,898	5,654,436	3,950,997	3,678,332	9,319,230	16,948,559	4,772,560	10,399,407	15,171,967
2014	2,850,869	2,802,789	5,653,658	3,898,106	3,607,951	9,117,927	16,623,984	4,755,806	10,358,860	15,114,666
2015	2,860,835	2,801,876	5,662,711	3,856,434	3,541,926	8,747,591	16,145,951	4,725,696	10,309,557	15,035,253
2016	2,864,689	2,806,437	5,671,126	3,857,084	3,536,270	8,619,738	16,013,092	4,748,821	10,335,574	15,084,395
2017	2,845,782	2,802,066	5,647,848	3,808,175	3,491,425	8,467,864	15,767,464	4,705,891	10,256,666	14,962,557
2018	2,779,994	2,801,534	5,581,528	3,767,295	3,452,792	8,347,851	15,567,938	4,685,271	10,214,046	14,899,317
2019	2,759,006	2,805,411	5,564,417	3,745,963	3,433,478	8,283,181	15,462,622	4,709,658	10,246,695	14,956,353
2020	2,768,185	2,805,868	5,574,053	3,751,998	3,438,539	8,287,769	15,478,306	4,719,363	10,259,305	14,978,668
2021	2,765,700	2,805,868	5,571,568	3,749,058	3,435,707	8,281,016	15,465,781	4,718,122	10,256,324	14,974,446
2022	2,764,242	2,805,868	5,570,110	3,748,457	3,434,991	8,276,832	15,460,280	4,717,198	10,254,051	14,971,249
2023	2,763,178	2,778,919	5,542,097	3,747,845	3,434,408	8,273,668	15,455,921	4,716,740	10,252,930	14,969,670
2024	2,760,252	2,777,496	5,537,748	3,747,322	3,433,883	8,271,705	15,452,910	4,716,397	10,252,077	14,968,474
2025	2,751,631	2,774,622	5,526,253	3,746,526	3,432,983	8,267,999	15,447,508	4,716,001	10,251,120	14,967,121
2026	2,746,580	2,770,721	5,517,301	3,745,687	3,432,201	8,265,908	15,443,796	4,613,055	10,010,634	14,623,689
2027	2,743,387	2,766,953	5,510,340	3,743,633	3,430,226	8,259,566	15,433,425	4,610,428	10,004,094	14,614,522
2028	2,739,730	2,763,588	5,503,318	3,741,674	3,428,383	8,253,636	15,423,693	4,604,521	9,990,191	14,594,712
2029	2,736,330	2,760,343	5,496,673	3,738,778	3,425,709	8,246,336	15,410,823	4,603,128	9,986,872	14,590,000
2030	2,711,800	2,741,529	5,453,329	3,737,807	3,424,819	8,244,098	15,406,724	4,597,198	9,968,898	14,566,096
2031	2,684,427	2,721,426	5,405,853	3,736,446	3,423,574	8,240,955	15,400,975	4,576,043	9,905,699	14,481,742
2032	2,657,065	2,699,232	5,356,297	3,734,753	3,422,023	8,237,155	15,393,931	4,543,434	9,807,265	14,350,699
2033	2,521,297	2,554,042	5,075,339	3,734,066	3,421,395	8,235,659	15,391,120	4,420,412	9,487,861	13,908,273
2034	2,202,557	2,211,167	4,413,724	3,732,661	3,420,110	8,232,598	15,385,369	3,958,850	8,214,996	12,173,846
2035	2,114,269	2,119,491	4,233,760	3,729,609	3,417,320	8,225,948	15,372,877	3,393,258	6,618,225	10,011,483
TOTAL	141,272,128	139,683,930	280,956,058	202,913,682	196,170,578	516,124,891	915,209,151	223,158,395	504,279,972	727,438,367

a) Unadjusted for prior overpayments or underpayments of charges. See Table B-19 for total Transportation Charge for each contractor.

b) See Table B-21 for total Delta Water Charge for each contractor.

DELTA WATER[b] CHARGE FOR EACH CONTRACTOR

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA									
	Devil's Den Water District	Dudley Ridge Water District	Empire West Side Irrigation District	Hacienda Water District	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
					Municipal and Industrial	Agricultural				
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	63,717	0	0	0	0	63,717
1966	0	0	0	0	119,265	0	0	0	0	119,265
1967	0	0	0	0	231,663	0	0	0	0	231,663
1968	84,160	215,105	20,519	9,864	391,953	1,642,008	15,853	18,809	284,824	2,683,095
1969	136,297	230,719	14,570	27,553	466,790	2,610,593	15,477	18,478	393,716	3,914,193
1970	179,134	295,050	37,951	52,486	513,531	3,737,601	20,045	29,450	440,369	5,305,617
1971	194,007	315,452	40,687	43,780	544,425	5,016,976	25,731	33,678	637,752	6,852,488
1972	229,673	367,506	43,901	49,780	569,285	6,887,301	25,014	62,011	1,843,556	10,078,027
1973	235,182	384,213	42,592	52,138	963,277	7,010,093	27,359	38,184	694,170	9,447,208
1974	257,455	486,032	43,800	59,900	1,081,334	7,690,233	28,059	41,359	924,854	10,613,026
1975	284,715	653,926	44,225	67,438	1,132,455	9,008,982	29,703	46,918	1,418,972	12,687,334
1976	322,414	699,337	46,778	75,761	1,258,984	10,236,702	31,131	50,759	1,315,782	14,037,648
1977	327,545	559,306	42,645	75,661	1,301,723	10,480,724	32,856	52,910	1,013,151	13,886,521
1978	369,577	674,179	45,240	87,870	1,507,924	12,815,531	37,305	57,094	1,045,371	16,640,091
1979	406,102	741,398	59,620	117,912	1,604,696	15,040,253	42,033	66,244	1,408,771	19,487,029
1980	433,998	819,274	58,118	118,027	1,752,874	16,679,851	47,066	69,993	1,471,616	21,450,817
1981	481,421	1,009,710	69,802	147,489	2,090,410	20,432,021	57,485	88,331	1,816,849	26,193,518
1982	469,468	1,036,363	68,102	150,993	2,143,970	21,375,366	59,890	89,586	1,861,410	27,255,148
1983	609,146	1,378,539	88,986	201,105	2,761,679	29,773,070	84,966	113,582	2,493,757	37,504,830
1984	673,023	1,632,447	101,396	237,282	3,247,748	35,565,665	105,635	135,168	2,952,177	44,650,541
1985	674,141	1,707,568	101,620	251,538	3,467,993	37,705,458	115,213	138,167	3,090,530	47,252,228
1986	688,910	1,797,802	102,744	264,566	3,701,179	40,140,534	125,932	144,953	3,259,865	50,226,485
1987	911,701	2,773,298	155,450	406,761	5,744,756	58,391,181	205,461	239,130	5,043,082	73,870,820
1988	1,011,175	3,284,899	178,006	481,108	6,847,153	68,616,560	235,766	287,892	5,980,415	86,922,974
1989	1,009,371	3,401,693	177,558	503,818	7,126,986	70,736,278	235,232	297,509	6,196,487	89,684,932
1990	1,009,485	3,528,362	177,655	522,000	7,502,184	73,157,201	235,375	302,868	6,691,165	93,126,295
1991	1,011,720	3,534,810	177,990	522,950	7,516,453	73,313,525	235,819	303,327	6,703,451	93,320,045
1992	1,003,196	3,501,897	176,286	518,101	7,456,356	72,588,628	233,585	302,206	6,640,875	92,421,130
1993	998,702	3,490,494	175,697	516,421	7,429,703	72,299,753	232,809	301,447	6,619,184	92,064,210
1994	1,009,697	3,520,762	177,266	520,880	7,499,891	73,055,114	234,893	303,499	6,676,835	92,998,837
1995	1,008,833	3,519,182	177,184	520,647	7,494,626	73,005,127	234,783	303,445	6,673,830	92,937,657
1996	1,007,207	3,512,332	176,828	519,640	7,480,626	72,851,535	234,296	302,910	6,660,740	92,746,114
1997	1,010,997	3,522,036	177,331	521,067	7,503,594	73,098,093	234,960	303,540	6,679,223	93,050,841
1998	1,009,848	3,519,239	177,186	520,656	7,496,439	73,023,779	234,768	303,367	6,673,896	92,959,178
1999	1,012,365	3,526,540	177,566	521,730	7,512,943	73,203,067	235,281	303,880	6,687,811	93,181,183
2000	1,009,778	3,519,544	177,201	520,701	7,496,810	73,028,183	234,792	303,395	6,674,474	92,964,878
2001	1,011,893	3,525,121	177,492	521,523	7,509,962	73,169,253	235,178	303,773	6,685,104	93,139,299
2002	1,013,792	3,530,546	177,773	522,321	7,522,582	73,304,197	235,551	304,139	6,695,442	93,306,343
2003	1,014,687	3,532,930	177,897	522,674	7,528,179	73,364,224	235,715	304,297	6,699,986	93,380,589
2004	1,015,907	3,536,617	178,089	523,215	7,536,646	73,454,805	235,969	304,555	6,707,009	93,492,812
2005	1,014,046	3,531,190	177,806	522,416	7,523,974	73,319,866	235,594	304,183	6,696,669	93,325,744
2006	1,012,621	3,527,448	177,613	521,866	7,514,943	73,224,080	235,337	303,937	6,689,539	93,207,384
2007	1,015,574	3,535,660	178,039	523,075	7,534,269	73,430,121	235,903	304,489	6,705,189	93,462,319
2008	1,015,255	3,534,560	177,981	522,913	7,531,892	73,403,373	235,806	304,412	6,703,090	93,429,282
2009	1,017,762	3,540,912	178,311	523,847	7,547,963	73,566,596	236,166	304,804	6,715,193	93,631,554
2010	1,015,515	3,534,890	177,998	522,962	7,533,013	73,412,926	235,794	304,422	6,703,713	93,441,233
2011	1,015,861	3,535,734	178,043	523,086	7,535,280	73,434,762	235,827	304,471	6,705,327	93,468,391
2012	1,018,789	3,544,087	178,477	524,316	7,554,708	73,642,824	236,411	305,038	6,721,241	93,725,891
2013	1,018,923	3,544,612	178,504	524,392	7,555,446	73,654,012	236,468	305,087	6,722,246	93,739,690
2014	1,015,091	3,534,409	177,974	522,890	7,530,975	73,396,656	235,817	304,413	6,702,805	93,421,030
2015	1,014,343	3,532,234	177,860	522,571	7,462,135	73,342,468	235,666	304,269	6,698,661	93,290,207
2016	1,017,706	3,541,692	178,353	523,963	7,428,859	73,579,635	236,322	304,904	6,716,683	93,528,117
2017	1,014,421	3,532,582	177,878	522,623	7,295,112	73,351,212	235,691	304,286	6,699,325	93,133,130
2018	1,014,458	3,532,757	177,888	522,649	7,193,141	73,353,284	227,302	304,315	6,699,658	93,025,452
2019	1,017,194	3,540,299	178,281	523,757	7,155,526	73,544,927	227,324	304,807	6,714,028	93,206,143
2020	1,022,874	3,566,014	179,616	527,547	7,166,265	74,064,908	228,857	307,172	6,763,040	93,826,293
2021	1,022,874	3,566,014	179,616	527,547	7,144,959	74,064,908	228,718	307,172	6,763,040	93,804,848
2022	1,022,874	3,566,014	179,616	527,547	7,135,091	74,064,908	228,651	307,172	6,763,040	93,794,913
2023	1,022,874	3,566,014	179,616	527,547	7,130,833	74,064,908	228,621	307,172	6,763,040	93,790,625
2024	1,022,874	3,566,014	179,616	527,547	7,128,906	74,064,908	228,608	307,172	6,763,040	93,788,685
2025	1,022,874	3,566,014	179,616	527,547	7,126,707	74,064,908	228,588	307,172	6,763,040	93,786,466
2026	1,022,874	3,566,014	179,616	527,547	7,124,905	74,064,908	228,555	307,172	6,763,040	93,784,631
2027	1,022,874	3,566,014	179,616	527,547	7,121,208	74,064,908	228,480	307,172	6,763,040	93,780,859
2028	1,022,874	3,566,014	179,616	527,547	7,120,351	74,064,908	228,491	307,172	6,763,040	93,780,013
2029	1,022,874	3,566,014	179,616	527,547	7,119,285	74,064,908	228,470	307,172	6,763,040	93,778,926
2030	1,022,874	3,566,014	179,616	527,547	7,117,512	74,064,908	228,426	307,172	6,763,040	93,777,109
2031	1,022,874	3,566,014	179,616	527,547	7,114,452	74,064,908	228,345	307,172	6,763,040	93,773,968
2032	1,022,874	3,566,014	179,616	527,547	7,108,130	74,064,908	228,187	307,172	6,763,040	93,767,488
2033	1,022,874	3,566,014	179,616	527,547	7,102,122	74,064,908	228,051	307,172	6,763,040	93,761,344
2034	1,022,874	3,566,014	179,616	527,547	7,092,136	74,064,908	227,750	307,172	6,763,040	93,751,057
2035	1,022,874	3,566,014	179,616	527,547	7,074,913	74,064,908	227,188	307,172	6,763,040	93,733,272
TOTAL	56,740,265	187,383,518	9,788,613	27,585,434	388,947,775	3,874,204,735	12,302,400	16,153,442	354,558,508	4,927,664,690

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley County Water District	Crestline Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
1962	0	0	0	0	0	0	0	0	0	0
1963	33,256	0	0	0	0	0	0	0	51,586	0
1964	62,381	19,863	14,151	4,278	36,661	1,129	27,914	8,116	81,215	34,530
1965	118,006	37,905	24,803	7,098	40,310	2,067	49,758	15,120	133,413	34,929
1966	214,766	71,834	44,372	12,367	72,584	3,732	89,698	27,527	230,589	60,976
1967	415,956	148,060	85,693	23,346	140,731	7,255	174,330	53,814	431,200	115,015
1968	729,742	310,249	151,326	41,139	248,974	12,760	307,920	94,654	776,012	207,283
1969	1,048,141	467,123	223,187	60,669	367,484	18,510	453,757	136,694	1,192,005	318,022
1970	1,364,660	595,608	312,921	89,103	515,479	25,025	627,166	183,298	1,760,367	462,736
1971	1,692,220	749,580	429,958	127,688	708,501	31,630	850,520	229,721	2,515,245	653,216
1972	2,164,404	942,539	597,816	183,760	980,704	43,384	1,165,946	285,249	3,716,393	939,376
1973	2,314,592	998,428	739,498	188,841	1,204,034	45,659	1,253,303	310,774	3,966,076	946,515
1974	2,433,479	1,074,263	761,689	201,414	1,241,727	48,512	1,308,923	328,871	4,394,789	1,087,363
1975	2,647,513	1,147,170	805,331	216,063	1,314,207	52,755	1,390,567	352,026	4,558,041	1,189,433
1976	3,108,192	1,168,138	861,717	228,800	1,405,847	57,185	1,464,871	377,501	4,751,749	1,259,103
1977	3,087,587	1,376,299	762,891	241,892	1,249,237	53,665	1,552,057	402,928	5,005,680	1,323,595
1978	3,660,191	1,368,076	971,787	256,697	1,567,246	58,000	1,637,162	428,071	5,129,306	1,380,951
1979	4,712,561	1,429,572	1,030,173	269,827	1,651,126	77,857	1,816,223	465,705	5,465,747	1,481,704
1980	4,659,237	1,596,833	1,108,306	294,462	1,796,537	85,037	1,925,077	498,085	6,292,825	1,603,229
1981	5,291,652	1,812,282	1,228,390	323,502	1,987,336	95,783	2,322,621	540,075	6,907,143	1,783,907
1982	5,490,007	1,840,618	1,268,984	340,223	2,055,629	96,995	2,506,774	563,359	6,928,250	1,819,245
1983	10,920,771	2,198,883	2,339,643	603,790	3,752,571	190,162	5,214,904	604,080	10,818,477	2,797,944
1984	13,445,902	2,456,049	2,836,587	758,940	4,549,029	232,694	6,324,168	691,626	12,421,171	3,269,915
1985	14,627,274	2,589,174	3,013,311	805,274	4,837,996	247,439	6,655,159	790,096	12,979,826	3,428,568
1986	16,176,223	2,712,411	3,239,927	863,417	5,206,396	265,312	7,114,099	875,025	13,710,384	3,665,474
1987	18,942,038	3,382,425	3,738,394	984,204	6,083,245	313,457	8,182,788	1,226,801	15,644,752	4,235,196
1988	21,119,162	3,801,699	4,171,008	1,092,723	6,868,677	351,078	9,078,800	1,444,433	17,279,210	4,721,639
1989	22,035,997	4,091,622	4,376,470	1,145,881	7,286,083	368,536	9,491,253	1,541,715	17,923,836	4,930,546
1990	23,029,606	4,277,317	4,579,192	1,182,436	7,551,979	385,743	9,898,735	1,642,052	18,434,428	5,114,181
1991	24,000,083	4,438,469	4,600,571	1,194,700	7,587,245	386,809	9,930,093	1,746,169	18,776,426	5,156,182
1992	23,783,783	4,423,805	4,559,560	1,185,238	7,519,606	383,278	9,838,613	1,835,900	18,522,657	5,083,558
1993	23,559,930	4,479,585	4,516,787	1,175,423	7,449,058	379,648	9,742,652	1,923,207	18,574,069	5,096,276
1994	24,150,237	4,484,745	4,624,409	1,193,443	7,626,569	389,402	9,999,455	2,060,570	18,689,538	5,145,857
1995	24,099,000	4,541,537	4,627,195	1,206,887	7,631,168	388,571	9,976,689	2,159,938	18,948,196	5,194,054
1996	24,011,347	4,529,307	4,603,053	1,195,655	7,591,345	387,001	9,935,171	2,234,856	18,861,485	5,179,567
1997	24,162,865	4,692,103	4,632,965	1,201,842	7,640,677	389,490	10,003,865	2,328,992	18,950,261	5,207,000
1998	24,115,019	4,611,185	4,625,187	1,202,150	7,627,850	388,696	9,981,645	2,407,051	18,979,800	5,210,958
1999	24,282,991	4,780,514	4,649,802	1,200,681	7,668,450	391,500	10,053,278	2,505,005	18,913,500	5,207,055
2000	24,118,426	4,759,305	4,628,810	1,205,947	7,633,827	388,755	9,983,151	2,571,496	18,968,113	5,202,170
2001	24,198,265	4,722,172	4,632,848	1,194,517	7,640,480	390,082	10,020,169	2,641,531	18,873,490	5,199,429
2002	24,319,659	4,877,579	4,668,987	1,215,574	7,700,095	392,104	10,072,462	2,716,819	19,113,959	5,243,977
2003	24,402,143	4,844,758	4,682,704	1,217,411	7,722,719	393,482	10,106,219	2,799,195	19,197,258	5,270,419
2004	24,491,963	5,095,597	4,689,935	1,209,486	7,734,634	394,975	10,144,156	2,883,257	19,032,281	5,242,758
2005	24,334,926	4,985,898	4,674,372	1,219,344	7,708,979	392,359	10,078,792	2,937,294	19,254,714	5,278,845
2006	24,298,836	5,063,409	4,658,930	1,208,737	7,683,502	391,762	10,060,093	2,932,809	19,072,369	5,240,548
2007	24,459,171	5,084,793	4,686,103	1,210,799	7,728,320	394,431	10,130,585	2,952,865	19,083,209	5,252,699
2008	24,431,570	5,148,458	4,684,792	1,214,300	7,726,162	393,971	10,118,471	2,949,416	19,257,092	5,293,993
2009	24,473,199	5,208,416	4,705,099	1,228,103	7,759,655	394,663	10,141,404	2,954,592	19,383,922	5,312,298
2010	24,424,685	5,258,987	4,681,932	1,211,616	7,721,440	393,860	10,115,774	2,948,555	19,174,241	5,274,231
2011	24,382,534	5,306,932	4,679,917	1,215,496	7,718,118	393,153	10,100,782	2,943,251	19,040,851	5,228,195
2012	24,559,213	5,323,088	4,709,852	1,218,279	7,767,483	396,095	10,177,388	2,965,363	19,255,068	5,297,408
2013	24,568,865	5,444,476	4,721,610	1,225,479	7,773,563	396,811	10,194,173	2,970,749	19,098,363	5,246,877
2014	24,328,289	5,377,742	4,669,032	1,215,045	7,700,760	392,158	10,075,289	2,936,155	19,055,161	5,229,012
2015	24,265,476	5,484,447	4,645,239	1,198,647	7,661,517	391,105	10,047,853	2,928,276	18,648,005	5,135,016
2016	24,360,394	5,489,135	4,675,942	1,217,769	7,712,167	392,631	10,091,737	2,939,847	19,073,812	5,233,225
2017	23,962,190	5,329,665	4,587,304	1,186,620	7,565,974	385,826	9,921,897	2,888,905	18,419,905	5,067,829
2018	23,721,845	5,400,102	4,536,303	1,174,134	7,481,862	381,550	9,815,532	2,857,292	18,205,438	5,008,787
2019	23,581,890	5,250,935	4,496,919	1,160,161	7,416,913	378,772	9,746,547	2,837,584	17,930,744	4,942,601
2020	23,491,795	5,207,893	4,448,351	1,145,595	7,336,825	376,023	9,655,189	2,819,318	17,603,323	4,858,667
2021	23,232,374	5,074,574	4,343,632	1,110,128	7,164,118	370,561	9,457,369	2,781,455	16,903,533	4,683,319
2022	23,098,506	4,984,738	4,288,447	1,092,714	7,073,106	368,055	9,349,832	2,763,447	16,487,054	4,581,718
2023	23,047,931	4,968,571	4,271,332	1,087,967	7,044,880	367,063	9,315,336	2,756,475	16,346,889	4,545,343
2024	23,029,824	4,928,299	4,263,236	1,083,766	7,031,527	366,741	9,303,188	2,754,121	16,256,916	4,524,720
2025	23,006,707	4,916,445	4,249,990	1,079,977	7,009,681	366,324	9,276,693	2,751,091	16,174,218	4,502,940
2026	22,993,809	4,906,648	4,240,106	1,077,281	6,993,380	366,071	9,256,677	2,749,357	16,095,867	4,482,097
2027	22,980,469	4,896,648	4,232,904	1,075,322	6,981,502	365,834	9,242,040	2,747,622	16,045,627	4,468,722
2028	22,971,623	4,884,906	4,228,486	1,074,065	6,974,216	365,663	9,233,182	2,746,411	16,016,527	4,461,078
2029	22,964,315	4,868,744	4,226,274	1,073,429	6,970,569	365,533	9,228,756	2,745,456	16,003,474	4,457,719
2030	22,942,674	4,823,367	4,221,696	1,072,034	6,963,018	365,223	9,219,775	2,743,218	15,969,257	4,448,914
2031	22,910,337	4,771,469	4,215,689	1,070,320	6,953,111	364,767	9,207,758	2,739,854	15,935,122	4,439,993
2032	22,812,790	4,731,751	4,199,332	1,066,122	6,926,136	363,285	9,174,073	2,728,748	15,859,834	4,419,517
2033	22,664,807	4,704,125	4,175,573	1,060,090	6,886,953	361,108	9,125,008	2,712,426	15,752,557	4,390,172
2034	22,550,895	4,684,246	4,164,478	1,057,279	6,868,655	360,091	9,102,059	2,704,796	15,702,782	4,376,518
2035	22,141,671	4,676,594	4,160,339	1,056,227	6,861,829	359,717	9,093,460	2,701,999	15,684,066	4,371,383
TOTAL	1,254,234,837	265,130,182	242,203,549	62,733,633	398,659,974	20,336,360	521,728,823	134,820,149	990,690,688	271,558,235

DELTA WATER[b] CHARGE FOR EACH CONTRACTOR

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				FUTURE CONTRACTOR	GRAND TOTAL
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC & WCD	Total	South Bay	
	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)
1962	0	0	0	0	0	0	0	0	0	55,537
1963	0	691,858	0	776,700	0	0	0	0	57,712	1,606,572
1964	21,451	1,263,535	9,291	1,584,515	0	0	0	0	95,429	2,743,972
1965	21,608	2,183,149	17,673	2,685,839	0	0	395	395	164,836	4,699,135
1966	37,661	3,899,227	33,294	4,798,627	0	0	551	551	190,631	7,228,597
1967	70,937	7,692,026	68,010	9,426,373	0	0	549	549	247,530	12,770,277
1968	127,903	15,282,786	142,346	18,433,094	0	1,050	1,426	2,476	321,800	24,915,287
1969	196,451	23,058,703	214,459	27,755,205	0	1,225	4,045	5,270	390,949	35,980,178
1970	286,631	30,506,538	272,784	37,002,316	0	3,848	16,762	20,610	429,281	47,345,577
1971	405,471	39,887,406	341,836	48,622,992	0	4,546	18,815	23,361	418,951	60,450,290
1972	530,390	54,772,182	421,031	66,743,174	0	4,929	20,747	25,676	444,627	82,341,678
1973	578,937	59,479,009	434,594	72,460,260	0	7,059	21,373	28,432	419,133	87,390,954
1974	600,455	65,854,369	454,868	79,790,722	0	8,336	22,003	30,339	442,161	96,211,778
1975	631,531	71,598,277	478,537	86,381,451	0	9,416	23,117	32,533	451,681	104,934,505
1976	654,149	74,623,881	480,839	90,441,972	0	7,004	22,853	29,857	474,340	111,167,009
1977	683,035	72,507,097	550,314	88,796,277	0	16,917	23,655	40,572	467,352	109,344,378
1978	715,833	84,026,649	539,951	101,739,920	0	12,635	23,844	36,479	472,971	125,504,491
1979	727,633	91,151,248	562,379	110,841,755	0	16,575	24,911	41,486	511,581	137,850,300
1980	844,157	99,648,923	614,339	120,967,047	0	19,834	25,939	45,773	525,969	150,846,607
1981	880,133	111,476,029	665,989	135,314,842	151,772	30,109	28,865	210,746	531,458	171,054,581
1982	911,063	113,652,933	697,776	138,171,856	166,226	33,279	29,340	228,845	532,689	175,274,346
1983	933,421	156,437,391	807,010	197,619,047	182,488	36,448	29,816	248,752	535,068	248,502,000
1984	1,000,343	174,888,212	909,141	223,783,777	198,749	44,600	31,945	275,294	539,316	285,913,436
1985	1,961,395	172,515,205	1,042,303	225,493,020	215,010	48,168	32,480	295,658	540,253	293,123,235
1986	2,125,709	180,251,971	1,206,313	237,412,661	238,499	51,736	33,016	323,251	541,384	311,519,200
1987	2,479,376	215,297,656	1,536,140	282,046,472	263,794	109,894	49,752	423,440	541,295	384,309,442
1988	2,796,476	238,130,742	1,943,325	312,798,972	289,089	140,068	57,885	487,042	541,610	431,086,328
1989	2,956,545	263,744,810	2,402,434	342,295,728	317,998	148,557	59,583	526,138	541,251	464,796,898
1990	3,097,839	277,522,012	2,894,129	359,609,649	346,907	157,046	61,281	565,234	540,076	487,100,681
1991	3,124,721	281,801,426	2,951,531	365,694,425	346,907	1,167,236	62,979	1,577,122	540,023	495,029,118
1992	3,081,187	280,575,465	2,885,966	363,678,616	346,907	1,167,236	64,676	1,578,819	534,207	492,572,238
1993	3,089,009	283,383,493	2,902,348	366,271,485	346,907	1,167,236	66,374	1,580,517	533,008	495,270,563
1994	3,116,698	284,993,171	2,854,001	369,328,095	346,907	1,167,236	68,072	1,582,215	534,128	500,140,995
1995	3,148,687	290,846,256	2,885,475	375,653,653	346,907	1,167,236	70,194	1,584,337	533,997	506,696,949
1996	3,138,780	289,572,539	2,845,211	374,085,317	346,907	1,167,236	72,316	1,586,459	535,039	505,215,698
1997	3,154,957	296,246,032	2,921,165	381,532,214	346,907	1,167,236	74,439	1,588,582	535,395	513,453,360
1998	3,157,879	294,949,104	2,896,656	380,153,180	346,907	1,167,236	76,561	1,590,704	535,370	512,065,826
1999	3,153,671	302,804,658	2,962,127	388,573,232	346,907	1,167,236	78,683	1,592,826	535,166	521,004,067
2000	3,153,268	301,082,426	2,941,209	386,636,903	346,907	1,167,236	81,230	1,595,373	535,255	518,941,780
2001	3,148,666	299,955,783	2,892,090	385,509,522	346,907	1,167,236	83,777	1,597,920	535,446	518,186,946
2002	3,178,284	307,616,999	2,962,031	394,078,529	346,907	1,167,236	86,323	1,600,466	535,587	527,049,221
2003	3,193,798	306,388,735	2,945,339	393,164,180	346,907	1,167,236	88,870	1,603,013	535,649	526,427,788
2004	3,174,859	316,166,416	3,043,942	403,304,259	346,907	1,167,236	91,417	1,605,560	535,693	536,866,611
2005	3,199,812	312,730,851	2,982,571	399,778,757	346,907	1,167,236	93,963	1,608,106	535,629	533,174,804
2006	3,175,198	314,954,690	2,985,785	401,726,668	346,907	1,167,236	96,935	1,611,078	535,573	534,972,329
2007	3,181,377	316,895,503	2,981,647	404,041,502	346,907	1,167,236	99,906	1,614,049	535,762	537,714,430
2008	3,207,205	321,655,987	3,021,885	409,103,302	346,907	1,167,236	102,877	1,617,020	536,483	542,758,918
2009	3,220,680	324,606,124	3,034,833	412,422,988	346,907	1,167,236	105,848	1,619,991	539,193	546,432,885
2010	3,195,041	326,690,442	3,047,479	414,138,283	346,907	1,167,236	108,819	1,622,962	537,636	547,875,107
2011	3,168,561	329,396,533	3,039,903	416,614,226	346,907	1,167,236	112,215	1,626,358	538,397	550,408,988
2012	3,208,991	332,123,624	3,043,066	420,044,918	346,907	1,167,236	115,610	1,629,753	538,338	554,265,190
2013	3,179,259	335,525,209	3,078,397	423,423,831	346,907	1,167,236	119,430	1,633,573	492,534	557,064,590
2014	3,168,933	331,728,993	3,038,773	418,915,342	346,907	1,167,236	123,250	1,637,393	454,153	551,820,226
2015	3,109,811	331,607,840	3,043,684	418,166,916	346,907	1,167,236	127,100	1,641,243	399,720	550,342,001
2016	3,171,207	332,073,986	3,031,724	419,463,576	346,907	1,167,236	131,188	1,645,331	376,473	551,782,110
2017	3,069,060	321,539,684	2,952,820	406,877,679	346,907	1,167,236	131,191	1,645,334	335,866	538,369,878
2018	3,032,601	321,486,722	2,946,699	406,048,867	346,907	1,167,236	131,188	1,645,331	260,686	537,029,119
2019	2,990,254	313,170,609	2,859,716	396,763,645	346,907	1,167,236	128,623	1,642,766	197,657	527,793,603
2020	2,937,482	308,730,307	2,831,425	391,442,193	346,907	1,167,236	116,972	1,631,115	176,212	523,106,840
2021	2,827,930	300,397,270	2,772,324	381,118,587	346,907	1,167,236	116,165	1,630,308	172,312	512,737,850
2022	2,764,661	293,515,525	2,734,109	373,101,912	346,907	1,167,236	114,812	1,628,955	171,501	504,698,920
2023	2,742,013	291,226,239	2,730,657	370,450,696	346,907	1,167,236	114,811	1,628,954	170,794	502,008,757
2024	2,728,895	289,195,032	2,715,801	368,182,066	346,907	1,167,236	114,810	1,628,953	170,310	499,729,146
2025	2,715,377	288,233,540	2,711,421	366,994,404	346,907	1,167,236	114,807	1,628,950	168,535	498,519,237
2026	2,702,406	287,385,254	2,707,162	365,956,115	346,907	1,167,236	114,806	1,628,949	168,103	497,122,584
2027	2,694,106	286,680,243	2,702,698	365,113,737	346,907	1,167,236	114,803	1,628,946	167,022	496,248,851
2028	2,689,360	286,093,687	2,697,149	364,436,353	346,907	1,167,236	114,802	1,628,945	165,981	495,533,015
2029	2,687,278	285,425,864	2,689,450	363,706,861	346,907	1,167,236	114,801	1,628,944	164,769	494,776,996
2030	2,681,790	283,611,178	2,667,983	361,730,127	346,907	1,167,236	114,801	1,628,944	163,953	492,726,282
2031	2,676,262	281,577,127	2,643,305	359,505,114	346,907	1,167,236	114,801	1,628,944	162,877	490,359,473
2032	2,663,669	279,774,026	2,624,240	357,343,523	346,907	1,167,236	114,801	1,628,944	161,961	488,002,843
2033	2,645,634	278,222,624	2,611,312	355,312,389	346,907	1,167,236	114,801	1,628,944	161,715	485,239,124
2034	2,637,247	277,252,259	2,602,389	354,063,694	346,907	1,167,236	114,801	1,628,944	161,211	481,577,845
2035	2,634,099	276,881,945	2,598,822	353,222,151	346,907	1,167,236	114,801	1,628,944	160,116	478,362,603
TOTAL	160,997,196	148,759,425		17,981,347		5,299,397			28,886,769	
	16,298,815,244		20,770,668,295		53,438,899		76,719,643			27,727,542,973

TABLE B-23: EQUIVALENT UNIT CHARGE FOR WATER SUPPLY FOR EACH CONTRACTOR[a]

(in dollars per acre-foot)[b]

Project Service Area and Water Supply Contractor	Transportation Charge				Delta Water Charge	Total Equivalent Unit Charge
	Capital Cost Component	Minimum OMP&R Component	Variable OMP&R Component	Total		
	(1)	(2)	(3)	(4)	(5)	(6)
FEATHER RIVER AREA						
City of Yuba City	0	0	0	0	36.14	36.14
County of Butte	0	0	0	0	41.15	41.15
Plumas County Flood Control and Water Conservation District	15.35	0.21	0	15.56	34.54	50.10
Feather River Area	0.95	0.01	0	0.96	39.26	40.22
NORTH BAY AREA						
Napa County Flood Control and Water Conservation District	50.44	16.14	24.93	91.51	48.63	140.14
Solano County Flood Control and Water Conservation District	22.21	5.92	9.39	37.52	42.61	80.13
North Bay Area	33.00	9.82	15.33	58.15	44.91	103.06
SOUTH BAY AREA						
Alameda County Flood Control and Water Conservation District, Zone 7	13.22	9.95	24.50	47.67	32.50	80.17
Alameda County Water District	12.78	8.04	21.23	42.05	27.74	69.79
Santa Clara Valley Water District	16.27	6.95	18.02	41.24	23.25	64.49
South Bay Area	15.05	7.68	19.77	42.50	25.72	68.22
SAN JOAQUIN VALLEY AREA						
County of Kings	3.66	1.46	9.07	14.19	29.99	44.18
Devil's Den Water District	8.07	7.16	11.77	27.00	23.60	50.60
Dudley Ridge Water District	4.39	1.74	8.02	14.15	26.19	40.34
Empire Westside Irrigation District	2.93	1.28	6.85	11.06	22.99	34.05
Hacienda Water District	4.63	1.83	8.35	14.81	27.25	42.06
Kern County Water Agency	7.80	3.71	12.69	24.20	30.69	54.89
Oak Flat Water District	1.59	0.74	5.06	7.39	24.48	31.87
Tulare Lake Basin Water Storage District	4.33	1.72	8.03	14.08	26.76	40.84
San Joaquin Valley Area	7.23	3.43	11.90	22.56	29.92	52.48
CENTRAL COASTAL AREA						
San Luis Obispo County Flood Control and Water Conservation District	120.57	20.24	64.84	205.65	57.53	263.18
Santa Barbara County Flood Control and Water Conservation District	190.95	27.95	64.23	283.13	77.45	360.58
Central Coastal Area	165.01	25.11	64.46	254.58	70.11	324.69
SOUTHERN CALIFORNIA AREA						
Antelope Valley-East Kern Water Agency	29.66	8.61	88.71	126.98	35.49	162.47
Castaic Lake Water Agency	82.50	26.80	65.71	175.01	72.49	247.50
Coachella Valley County Water District	36.80	13.81	101.47	152.08	34.14	186.22
Crestline-Lake Arrowhead Water Agency	46.81	17.10	107.52	171.43	36.44	207.87
Desert Water Agency	37.36	14.02	102.36	153.74	34.44	188.18
Littlerock Creek Irrigation District	25.70	8.70	86.73	121.13	34.36	155.49
Mojave Water Agency	38.26	14.50	115.36	168.12	39.84	207.96
Palmdale Water District	47.54	16.17	103.91	167.62	67.76	235.38
San Bernardino Valley Municipal Water District	52.34	19.40	77.82	149.56	36.23	185.79
San Gabriel Valley Municipal Water District	48.80	18.41	78.35	145.56	36.40	181.96
San Gorgonio Pass Water Agency	63.97	24.09	90.78	178.84	42.73	221.57
The Metropolitan Water District of Southern California	52.52	18.20	63.81	134.53	41.59	176.12
Ventura County Flood Control District	47.95	15.65	69.17	132.77	40.74	173.51
Southern California Area	50.52	17.53	68.97	137.02	41.01	178.03
ALL AREAS	31.64	11.20	42.24	85.08	35.93	121.01

a) Hypothetical charges which, if assessed on all entitlement water delivered to date, all surplus water delivered prior to May 1, 1973 and all entitlement water now estimated to be delivered during the remainder of the project repayment period (Table B5-B), would provide a sum at the end of the period financially equivalent to all Transportation Charge and Delta Water Charge payments required under a water supply contract, considering interest at the project interest rate; 4.462 percent per annum.

b) Metric conversion is dollars per acre-foot times .8107 giving dollars per cubic dekametres.

TABLE B-24: EQUIVALENT UNIT COSTS OF WATER DELIVERED FROM OR THRU EACH AQUEDUCT REACH[a]

(in dollars per acre-foot)[b]

Aqueduct Reach	Unit Costs of Reach[c]				Cumulative Unit Costs from the Delta			
	Capital Costs	Minimum OMP&R	Variable OMP&R	Total	Capital Costs	Minimum OMP&R	Variable OMP&R	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NORTH BAY AQUEDUCT								
1	16.27	4.93	8.41	29.61	16.27	4.93	8.41	29.61
2	6.78	1.13	.00	7.91	23.05	6.06	8.41	37.52
3	26.96	9.81	18.08	54.85	50.01	15.87	26.49	92.37
SOUTH BAY AQUEDUCT								
1	5.19	4.99	14.59	24.77	6.40	5.77	21.24	33.41
2	.48	.62	.00	1.10	6.88	6.39	21.24	34.51
4	1.68	1.05	.00	2.73	8.56	7.44	21.24	37.24
5	3.72	.85	.00	4.57	12.28	8.29	21.24	41.81
6	.21	.06	.00	.27	12.49	8.35	21.24	42.08
7	1.69	.11	.00	1.80	14.18	8.46	21.24	43.88
8	2.53	.13	.00	2.66	16.71	8.59	21.24	46.54
9	4.93	.74	.00	5.67	21.64	9.33	21.24	52.21
CALIFORNIA AQUEDUCT								
1	1.21	.78	6.65	8.64	1.21	.78	6.65	8.64
2A	.91	.18	.00	1.09	2.12	.96	6.65	9.73
2B	.45	.10	.00	.55	2.57	1.06	6.65	10.28
3	.36	.09	.00	.45	2.93	1.15	6.65	10.73
4	.70	.52	3.11	4.33	3.63	1.67	9.76	15.06
5	.64	.11	.00	.75	4.27	1.78	9.76	15.81
6	.18	.04	.00	.22	4.45	1.82	9.76	16.03
7	.49	.08	.00	.57	4.94	1.90	9.76	16.60
8C	.01	.02	.00	.03	4.95	1.92	9.76	16.63
8D	.30	.10	.00	.40	5.25	2.02	9.76	17.03
9	.22	.10	.00	.32	5.47	2.12	9.76	17.35
10A	.25	.11	.00	.36	5.72	2.23	9.76	17.71
11B	.37	.08	.00	.45	6.09	2.31	9.76	18.16
12D	.35	.07	.00	.42	6.44	2.38	9.76	18.58
12E	.23	.11	.00	.34	6.67	2.49	9.76	18.92
13B	.51	.14	.00	.65	7.18	2.63	9.76	19.57
14A	1.87	.92	5.80	8.59	9.05	3.55	15.56	28.16
14B	.29	.12	.00	.41	9.34	3.67	15.56	28.57
14C	.25	.09	.00	.34	9.59	3.76	15.56	28.91
15A	1.34	.88	6.07	8.29	10.93	4.64	21.63	37.20
16A	2.20	1.37	14.31	17.88	13.13	6.01	35.94	55.08
17E	8.00	2.44	52.26	62.70	21.13	8.45	88.20	117.78
17F	2.13	.04	.00	2.17	23.26	8.49	88.20	119.95
18A	1.62	.18	-1.80	.00	24.88	8.67	86.40	119.95
19	1.34	.51	.00	1.85	26.22	9.18	86.40	121.80
19C	18.74	.99	.00	19.73	44.96	10.17	86.40	141.53
20A	1.19	.43	.00	1.62	27.41	9.61	86.40	123.42
20B	1.66	.34	.00	2.00	29.07	9.95	86.40	125.42
21	.82	.23	.00	1.05	29.89	10.18	86.40	126.47
22A	.54	.19	.00	.73	30.43	10.37	86.40	127.20
22B	6.53	3.45	15.33	25.31	36.96	13.82	101.73	152.51
23	.36	.14	.00	.50	37.32	13.96	101.73	153.01
24	4.35	1.30	.00	5.65	41.67	15.26	101.73	158.66
25	2.22	.06	.00	2.28	43.89	15.32	101.73	160.94
26A	3.19	2.25	-25.02	-19.58	47.08	17.57	76.71	141.36
28G	5.28	.44	.00	5.72	52.36	18.01	76.71	147.08
28H	5.22	.37	.00	5.59	57.58	18.38	76.71	152.67
28J	13.15	6.39	.00	19.54	70.73	24.77	76.71	172.21
WEST BRANCH								
29A	2.35	2.14	6.71	11.20	25.61	10.63	94.91	131.15
29F	1.69	.44	.00	2.13	27.30	11.07	94.91	133.28
29G	4.96	1.01	-14.62	-8.65	32.26	12.08	80.29	124.63
29H	3.34	1.40	.00	4.74	35.60	13.48	80.29	129.37
29J	6.18	.34	-23.35	-16.83	41.78	13.82	56.94	112.54
30	9.82	2.60	.00	12.42	51.60	16.42	56.94	124.96
COASTAL BRANCH								
31A	5.63	7.50	5.30	18.43	10.88	9.52	15.06	35.46
33A	106.26	3.97	44.67	154.90	117.14	13.49	59.73	190.36
34	10.73	.20	.00	10.93	127.87	13.69	59.73	201.29
35	35.83	.45	.00	36.28	163.70	14.14	59.73	237.57

a) Representative of transportation unit costs only; does not include a unit cost for conservation. The Delta Water Rate should be added to these values in order to approximate total unit costs at canalside. Includes surplus water prior to May 1, 1973.

b) Metric conversion is dollars per acre-foot times .8107 equals dollars per cubic dekametre.

c) Hypothetical charges which, if assessed on all entitlement water delivered to date, all surplus water delivered prior to May 1, 1973, and all entitlement water now estimated to be delivered during the remainder of the project repayment period (Table B-5B), would provide a sum at the end of the period financially equivalent to all Transportation Charges required under the water supply contract, considering interest at the project interest rate; 4.462 percent per annum.

TABLE B-25: ANNUAL SURPLUS WATER DELIVERIES

(in acre-feet)[a]

Area/Agency	Calendar Year					
	1973[b]	1974	1975	1976	1977	1978
SOUTH BAY AREA						
Alameda County Flood Control and Water Conservation District, Zone 7	0	0	0	3,636	0	0
Alameda County Water District	0	0	0	4,147	0	0
Santa Clara Valley Water District	2,499	2,934	18,470	24,705	0	0
Total	2,499	2,934	18,470	32,488	0	0
SAN JOAQUIN VALLEY AREA						
Devil's Den Water District	4,104	4,128	7,495	5,727	0	0
Dudley Ridge Water District	13,192	33,391	40,555	30,922	0	7,586
Empire West Side Irrigation District	2,814	1,539	3,448	3,457	0	0
Hacienda Water District	5,600	1,972	3,759	3,720	0	0
Kern County Water Agency	163,774	299,433	410,820	442,150	0	8,623[c]
Oak Flat Water District	1,013	3,471	3,576	3,840	0	6[c]
Tulare Lake Basin Water Storage District	63,988	68,989	132,206	57,806	0	0
Total	254,485	412,923	601,859	547,622	0	16,215
SOUTHERN CALIFORNIA AREA						
Littlerock Creek Irrigation District	80	67	356	0	0	0
Total	80	67	356	0	0	0
GRAND TOTAL	257,064	415,924	620,685	580,110	0	16,215

a) Metric conversion is acre-feet times 1.2335 equals cubic dekametres.
b) May through December only.
c) Delivered from Delta during periods when deliveries did not adversely affect project operational efficiency or the quality of Delta outflows.

TABLE B-26: POWER COSTS FOR PUMPING SURPLUS WATER

(in dollars)

Area/Pumping Plant	Calendar Year											
	1973[a]		1974		1975		1976		1977		1978	
	Capacity	Energy	Capacity	Energy	Capacity	Energy	Capacity	Energy	Capacity	Energy	Capacity	Energy
SOUTH BAY AQUEDUCT												
Reach 1												
South Bay and Del Valle Pumping Plants	5,290	6,302	21,773	7,561	32,288	47,597	41,897	83,722	0	0	0	0
CALIFORNIA AQUEDUCT												
Reach 1												
Delta Pumping Plant	0	231,691	0	374,506	298,709	617,396	60,502	597,636	0	0	9,595	15,039
Reach 4												
Dos Amigos Pumping Plant	37,033	102,725	81,328	181,827	126,806	264,000	63,788	225,126	0	0	4,210	6,592
Reach 14A												
Buena Vista Pumping Plant	25,622	53,375	69,381	95,596	99,676	99,745	85,415	103,213	0	0	0	0
Reach 15A												
Wheeler Ridge Pumping Plant	29,816	12,819	62,301	22,550	30,049	313	8,579	4,885	0	0	0	0
Reach 16A												
Wind Gap Pumping Plant	0	1,697	0	5,599	0	661	0	5,385	0	0	0	0
Reach 17E												
A. D. Edmonston (Tehachapi Pumping Plant)	0	526	0	450	0	2,391	0	0	0	0	0	0
Reach 31A												
Las Perillas & Badger Hill Pumping Plants	15,588	24,245	31,511	33,406	32,231	49,501	30,449	45,101	0	0	0	0
TOTAL	113,349	433,380	266,294	721,495	619,759	1,081,604	290,630	1,065,068	0	0	13,805	21,631
COMBINED TOTAL	546,729		987,789		1,701,363		1,355,698		0		35,436	

a) May through December only.

TABLE B-27: POWER, REPLACEMENT, AND ADMINISTRATIVE CHARGE FOR SURPLUS WATER DELIVERIES

(in dollars)

Area/Agency	Calendar Year					
	1973	1974	1975	1976	1977	1978
SOUTH BAY AREA						
Alameda County FC&WCD, Zone 7						
Capacity	0	0	0	5,873	0	0
Energy	0	0	0	13,116	0	0
Replacement	0	0	0	252	0	0
Administrative	0	0	0	1,640	0	0
Total	0	0	0	20,881	0	0
Alameda County Water District						
Capacity	0	0	0	6,126	0	0
Energy	0	0	0	14,959	0	0
Replacement	0	0	0	286	0	0
Administrative	0	0	0	1,758	0	0
Total	0	0	0	23,129	0	0
Santa Clara Valley Water District						
Capacity	5,290	21,773	42,153	32,954	0	0
Energy	8,554	10,203	65,969	89,116	0	0
Replacement	-	-	1,216	1,703	0	0
Administrative	1,916	3,451	5,023	7,675	0	0
Total	15,760	35,427	114,361	131,448	0	0
SAN JOAQUIN VALLEY AREA						
Devil's Den Water District						
Capacity	2,722	3,308	7,972	4,473	0	0
Energy	8,712	9,105	17,011	13,047	0	0
Replacement	-	0	259	288	0	0
Administrative	1,573	1,187	2,038	1,779	0	0
Total	13,007	13,600	27,280	19,587	0	0
Dudley Ridge Water District						
Capacity	2,603	6,394	23,216	6,629	0	6,458
Energy	17,235	44,892	58,225	44,658	0	10,121
Replacement	-	-	1,052	1,273	0	189
Administrative	5,056	10,006	11,029	10,804	0	3,793
Total	24,894	61,292	93,522	63,364	0	20,561
Empire West Side Irrigation District						
Capacity	342	324	2,333	685	0	0
Energy	3,676	2,069	4,950	4,993	0	0
Replacement	-	-	89	143	0	0
Administrative	1,078	460	938	1,074	0	0
Total	5,096	2,853	8,310	6,895	0	0
Hacienda Water District						
Capacity	244	654	2,665	1,588	0	0
Energy	7,316	2,652	5,397	5,373	0	0
Replacement	-	-	97	153	0	0
Administrative	2,146	953	1,022	2,197	0	0
Total	9,706	4,259	9,181	9,311	0	0
Kern County Water Agency						
Capacity	90,152	216,862	441,640	220,439	0	7,341
Energy	302,474	555,925	732,538	792,366	0	11,504
Replacement	-	-	15,889	24,127	0	215
Administrative	62,767	95,360	111,724	162,001	0	4,311
Total	455,393	868,147	1,301,791	1,198,933	0	23,371
Oak Flat Water District						
Capacity	0	0	1,644	424	0	5
Energy	913	3,125	3,557	3,956	0	8
Replacement	-	-	58	119	0	0
Administrative	728	998	972	1,216	0	3
Total	1,641	4,123	6,231	5,715	0	16
Tulare Lake Basin Water Storage District						
Capacity	11,808	16,713	97,316	11,425	0	0
Energy	83,596	92,750	189,808	83,484	0	0
Replacement	-	-	3,428	2,378	0	0
Administrative	24,523	40,687	35,954	19,750	0	0
Total	119,927	150,150	326,506	117,037	0	0
SOUTHERN CALIFORNIA AREA						
Littlerock Creek Irrigation District						
Capacity	188	266	820	14	0	0
Energy	904	774	4,149	0	0	0
Replacement	-	-	138	0	0	0
Administrative	63	47	97	6	0	0
Total	1,155	1,087	5,204	20	0	0
TOTAL, ALL CONTRACTORS						
Capacity	113,349	266,294	619,759	290,630	0	13,804
Energy	433,380	721,495	1,081,604	1,065,068	0	21,633
Replacement	-	-	22,226	30,722	0	404
Administrative	99,850	153,149	168,797	209,900	0	8,107
Total	646,579	1,140,938	1,892,386	1,596,320	0	43,948

TABLE B-28: PROJECTED ANNUAL SURPLUS WATER DELIVERIES[a]

(in acre-feet)[b]

Area/Agency	Calendar Year					
	1979	1980	1981	1982	1983	1984
SOUTH BAY AREA						
Alameda County WD	11,557	16,901	16,000	14,747	13,600	12,400
Santa Clara Valley WD	8,700	12,000	12,000	12,000	12,000	12,000
Total	20,257	28,901	28,000	26,747	25,600	24,400
SAN JOAQUIN VALLEY AREA						
Devil's Den WD	0	0	265	3,300	3,300	3,300
Dudley Ridge WD	40,101	44,130	42,030	25,840	19,453	13,695
Empire West Side ID	1,200	1,200	3,000	1,891	1,360	911
Hacienda WD	1,000	0	0	0	0	0
Kern County WA	467,960	550,242	499,655	434,913	339,062	243,200
Oak Flat WD	2,620	4,000	3,900	3,700	3,600	3,400
Tulare Lake Basin WSD	168,520	162,600	158,700	46,828	35,460	24,929
Total	681,401	762,172	707,550	516,472	402,235	289,435
SOUTHERN CALIFORNIA AREA						
Antelope Valley-East Kern WA	34,083	72,356	68,303	62,616	0	0
Littlerock Creek ID	0	0	57	165	165	165
Total	34,083	72,356	68,360	62,781	165	165
GRAND TOTAL	735,741	863,429	803,910	606,000	428,000	314,000

a) Based on contractor's estimates of September 1978. Contractor estimates for years 1982 through 1984 reduced as required to meet total projected supply.
b) Metric conversion is acre-feet times 1.2335 equals cubic dekametres.

TABLE B-29: PROJECTED POWER COSTS FOR PUMPING SURPLUS WATER[a]

(in dollars)

Area/Pumping Plant	Calendar Year [b]					
	1979	1980	1981	1982	1983[b]	1984[b]
SOUTH BAY AQUEDUCT						
Reach 1						
South Bay & Del Valle Pumping Plants	105,458	180,198	188,888	168,567	-	-
CALIFORNIA AQUEDUCT						
Reach 1						
Delta Pumping Plant	1,027,154	1,588,709	1,490,229	1,525,331	-	-
Reach 4						
Dos Amigos Pumping Plant	1,457,897	2,114,524	1,993,871	1,998,714	-	-
Reach 14A						
Buena Vista Pumping Plant	519,005	904,426	804,626	743,309	-	-
Reach 15A						
Wheeler Ridge Pumping Plant	249,688	567,683	526,736	488,998	-	-
Reach 16A						
Wind Gap Pumping Plant	381,335	937,859	757,650	644,612	-	-
Reach 17E						
A. D. Edmonston (Tehachapi) Pumping Plant	757,324	1,510,866	1,560,012	1,050,075	-	-
Reach 31A						
Las Perillas & Badger Hill Pumping Plants	117,500	147,176	126,686	117,591	-	-
TOTAL	4,615,361	7,951,441	7,448,698	6,737,197	-	-

a) *Estimated costs for capacity and energy which would be incurred in delivering the annual amounts of surplus water shown in Table B-28.*

b) *Values for the years 1983 and 1984 are not available, as the source and cost of power which will be used during those years are not known.*

TABLE B-30: PROJECTED UNIT POWER RATES FOR PUMPING SURPLUS WATER[a]

(in dollars per acre-foot)[b]

Area/Pumping Plant	Calendar Year					
	1979	1980	1981	1982	1983[c]	1984[c]
SOUTH BAY AQUEDUCT						
Reach 1						
South Bay & Del Valle Pumping Plants						
Unit Rate	3.808	4.395	4.890	3.881		
Cumulative Rate	5.206	6.235	6.746	5.896	-	-
CALIFORNIA AQUEDUCT						
Reach 1						
Delta Pumping Plant						
Unit Rate	1.398	1.840	1.856	2.015		
Cumulative Rate	1.398	1.840	1.856	2.015	-	-
Reach 4						
Dos Amigos Pumping Plant						
Unit Rate	0.650	0.706	0.730	0.736		
Cumulative Rate	2.048	2.546	2.586	2.751	-	-
Reach 14A						
Buena Vista Pumping Plant						
Unit Rate	1.417	1.707	1.632	1.309		
Cumulative Rate	3.465	4.253	4.218	4.060	-	-
Reach 15A						
Wheeler Ridge Pumping Plant						
Unit Rate	1.558	1.507	1.784	1.498		
Cumulative Rate	5.023	5.760	6.002	5.558	-	-
Reach 16A						
Wind Gap Pumping Plant						
Unit Rate	4.360	3.756	4.411	3.039		
Cumulative Rate	9.383	9.516	10.413	8.597	-	-
Reach 17E						
A. D. Edmonston Tehachapi Pumping Plant						
Unit Rate	12.837	11.365	13.455	8.129		
Cumulative Rate	22.220	20.881	23.868	16.726	-	-
Reach 31A						
Las Perillas & Badger Hill Pumping Plants						
Unit Rate	1.330	1.324	1.368	1.362		
Cumulative Rate	3.378	3.870	3.954	4.113	-	-

a) *Rates are based on estimated costs of capacity and energy required to make the deliveries shown in Table B-28. Actual rates for a specific contractor may vary considerably from these mean rates due to the effect of surplus water power commitments and variations in delivery patterns. Does not include the effect of the costs of any of the firm capacity ordered for pumping surplus, shown in Table B-31 herein, which might not be used during the year.*

b) *Metric conversion is dollars per acre-foot times 0.8107 equals dollars per cubic dekametre.*

c) *Values for years 1983 and 1984 are not available, as the source and cost of much of the power which will be used during those years are not known yet.*

TABLE B-31: COMMITMENT FOR THE COST OF POWER FOR PUMPING SURPLUS WATER[a]

(in dollars)

Contractor	Year of Obligation					
	1978	1979	1980	1981	1982	1983[c]
Antelope Valley-East Kern Water Agency						
Surplus Water Requested (acre-feet)	0	0	0	0	43,216	0
Obligation Incurred (dollars)	0	0	0	0	668,300	0
Devil's Den Water District						
Surplus Water Requested (acre-feet)	0	0	0	0	4,000	1,825
Obligation Incurred (dollars)	0	0	0	0	18,100	5,900
Dudley Ridge Water District						
Surplus Water Requested (acre-feet)	43,300	23,100	39,100	37,000	42,805	10,380
Obligation Incurred (dollars)	15,800	27,257	27,100	48,000	126,400	27,800
Empire Westside Irrigation District						
Surplus Water Requested (acre-feet)	0	0	0	0	3,000	700
Obligation Incurred (dollars)	0	0	0	0	8,900	1,900
Hacienda Water District						
Surplus Water Requested (acre-feet)	4,600	4,900[b]	5,200	5,600	5,900	1,500
Obligation Incurred (dollars)	2,000	0	3,600	6,700	17,800	4,100
Kern County Water Agency						
Surplus Water Requested (acre-feet)	584,790	462,100	554,900	509,617	777,073	58,797
Obligation Incurred (dollars)	278,200	820,274	655,500	802,500	2,863,200	238,300
Santa Clara Valley Water District						
Surplus Water Requested (acre-feet)	12,000	12,000	12,000	12,000	12,000	10,000
Obligation Incurred (dollars)	13,300	10,151	22,800	65,000	95,700	53,500
Tulare Lake Basin Water Storage District						
Surplus Water Requested (acre-feet)	170,400	140,000	203,500	158,700	154,800	34,900
Obligation Incurred (dollars)	30,800	162,558	141,200	98,000	452,600	93,600
Totals						
Surplus Water Requested (acre-feet)	815,090	642,100	814,700	722,917	1,042,794	118,102
Obligation Incurred (dollars)	340,100	1,020,240	850,200	1,020,200	4,251,000	425,100

a) Metric conversion is acre-feet times 1.2335 equals cubic dekametres.
b) Power not ordered to pump this amount as the request was not made in time to allow the State to place an order resulting in a rate advantage.
c) Commitments made for deliveries during first three months of year only as existing power contracts not applicable beyond that time.

INDEX TO TABULAR MATERIAL IN BULLETIN

SUBJECT MATTER	BULLETIN 132-79 TABLE NO.	TABLE TITLE	CORRESPONDING TABLE NOS. IN PREVIOUS BULLETINS 132 1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963
		MAIN TEXT (with allowance for future capital price escalation, for financial planning purposes)																
PROJECTED ANNUAL OPERATIONS	1	Annual Water Requirements	1	1	1	1	1	1	1	1	1	1	3	4	5	7	8	6,9
	4	Annual Project Energy Requirements for Pumping	4	4	4	4	3	3	3	3	3	3	4,5	6,7	6,7	8,9	9,10	10,11
ACTUAL OPERATIONS FOR PRIOR YEAR	2	Summary of 1978 Entitlement and Surplus Water Service to Long-term Contractors	2	2	2	2	none	none	none	none	none	none	none	none	none	none	none	none
	3	Water Deliveries in 1978	3	3	3	3	2	2	2	2	2	none	none	none	none	none	none	none
	5	Water Quality Measurements at Selected Stations in 1978	5	5	5	5	4	4	none	none	none	none	none	none	none	none	none	none
	6	Monthly Power Operations in 1978	6	6	6	6	5	5	7	7	7	7	none	none	none	none	none	none
PROJECTED ANNUAL FINANCING OF CAPITAL AND OPERATING EXPENDITURES	7	Project Financial Analysis, December 31, 1978	7	*	7	7	6	6	8	14-16	13-15	14-16	21-24	23-26	23,24 26	24-27	24,25 27-31	40,42
	8	Project Capital Expenditures	8	7	8	8	7	7	9	9,11	8,10	8,11	10,13	19,15	19,15	20,16	22,17	12
	9	Actual Bond Sales and Project Interest Rates	9	*	9	9	8	8	10	8	none	none	none	none	none	none	none	none
	9A	Projected Bond Sales and Interest Rates	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none
	10	Project Operating Costs	10	8	10	10	9	9	11	12,13	11,12	12,13	18,19	14,16	14,16	15,17	15,20 21	15
	11	Annual Service on Bonds Sold as of December 31, 1978	11	*	11	11	10	10	12,13	none	none	none	none	none	none	none	none	none
	12	Annual Service on Assumed Future Bond Sales	12	*	12	12	11	11	12,13	18	17	18	26	28	28	29	34	43
		APPENDIX B (No allowance for future price escalation, for billing purposes)																
AQUEDUCT REACHES	B-1	Factors for Distributing Reach Capital Costs Among Contractors	B-1	B-1	B-1	B-1	B-1	B-1	B-1	B-1	B-2	B-2	B-2	B-3	B-3	B-3	C-3	26-29
	B-2	Factors for Distributing Reach Minimum OMP&R Costs Among Contractors	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-3	B-3	B-3	C-3	26-29
VARIABLE COSTS	B-3	Power Costs and Credits and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant	B-3	B-3	B-3	B-3	B-3	B-3	B-3	B-3	B-3	B-3	B-4	B-8	B-8	B-9	C-7	none
ANNUAL WATER DELIVERY QUANTITIES	B-4	Annual Entitlements to Project Water	B-4	B-4	B-4	B-4	B-4	B-4	B-4	B-4	B-4	B-4	B-6	5	4	6	7	6
	B-5A	Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor	B-5A	B-5A	B-5A	B-5	B-5	B-5	B-5	B-5	B-5	B-5	B-7	B-4	B-4	B-5	C-4	5
	B-5B	Annual Water Quantities Delivered to Each Contractor	B-5B	B-5B	B-5B	B-5	none	none	none	none	none	none	none	none	none	none	none	none
	B-6	Annual Water Quantities conveyed thru Each Pumping and Power Recovery Plant of Project Transportation Facilities	B-6	B-6	B-6	B-6	B-6	B-6	B-6	B-6	B-6	B-6	B-3	B-5	B-5	B-6	C-5	8
RECONCILIATION OF CAPITAL EXPENDITURES	B-7	Reconciliation of Capital Costs Allocated to Water Supply and Power Generation for the Period 1952-2035	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-8	none	none	none	none	none
	B-8	Capital Costs of Requested Delivery Structures	B-8	B-8	B-8	B-8	B-8	B-8	B-8	B-8	B-8	B-8	B-9	none	none	none	none	none
	B-9	Capital Costs of Requested Excess Peaking Capacity	B-9	B-9	B-9	B-9	B-9	B-9	B-9	B-9	B-9	B-9	B-10	B-6	B-6	B-7	none	none
COSTS PAID THRU: TRANSPORTATION CHARGE	B-10	Capital Costs of Each Aqueduct Reach to be Reimbursed thru Capital Cost Component of Transportation Charge	B-10	B-10	B-10	B-10	B-10	B-10	B-10	B-10	B-10	B-10	B-11	B-7	B-7	B-8	C-6	17-19
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FUTURE DELTA WATER RATES	B-20	Calculation of Delta Water Rates	B-20	B-20	B-20	B-20	B-20	B-20	B-20	B-20	B-20	B-20	none	none	none	none	none	30
TOTAL CHARGES	B-21	Total Delta Water Charge for Each Contractor	B-21	B-21*	B-21	none	none	none	none	none	none	none	none	none	none	none	none	none
	B-22	Total Transportation and Delta Water Charge for Each Contractor	B-22	B-22*	B-22	none	none	none	none	none	none	none	none	none	none	none	none	none
EQUIVALENT COSTS OF WATER	B-23	Equivalent Unit Charge for Water Supply for Each Contractor	B-23	B-23	B-23	B-21	B-21	B-21	B-21	B-21	B-21	B-23	B-23	none	none	none	none	39
	B-24	Equivalent Unit Costs of Water Delivered From or Thru Each Aqueduct Reach	B-24	B-24	B-24	B-22	B-21	B-22	B-22	B-22	none	none	none	none	none	none	none	none
SURPLUS WATER SERVICE AND CHARGES	B-25	Annual Surplus Water Deliveries	B-25	B-25	B-25	none	none	none	none	none	none	none	none	none	none	none	none	none
	B-26	Power Costs for Pumping Surplus Water	B-26	B-26	B-26	none	none	none	none	none	none	none	none	none	none	none	none	none
	B-27	Power, Replacement and Administrative Charge for Surplus Water Deliveries	B-27	B-27	B-27	none	none	none	none	none	none	none	none	none	none	none	none	none
	B-28	Projected Annual Surplus Water Deliveries	B-28	B-28*	B-28	none	none	none	none	none	none	none	none	none	none	none	none	none
	B-29	Projected Power costs for Pumping Surplus Water	B-29	B-29*	B-29	none	none	none	none	none	none	none	none	none	none	none	none	none
	B-30	Projected Unit Power Rates for Pumping Surplus Water	B-30	B-30*	B-30	none	none	none	none	none	none	none	none	none	none	none	none	none
	B-31	Commitment for the Cost of Power for Pumping Surplus Water	B-31	B-31	B-31	none	none	none	none	none	none	none	none	none	none	none	none	none

* This table not included in Bulletin.

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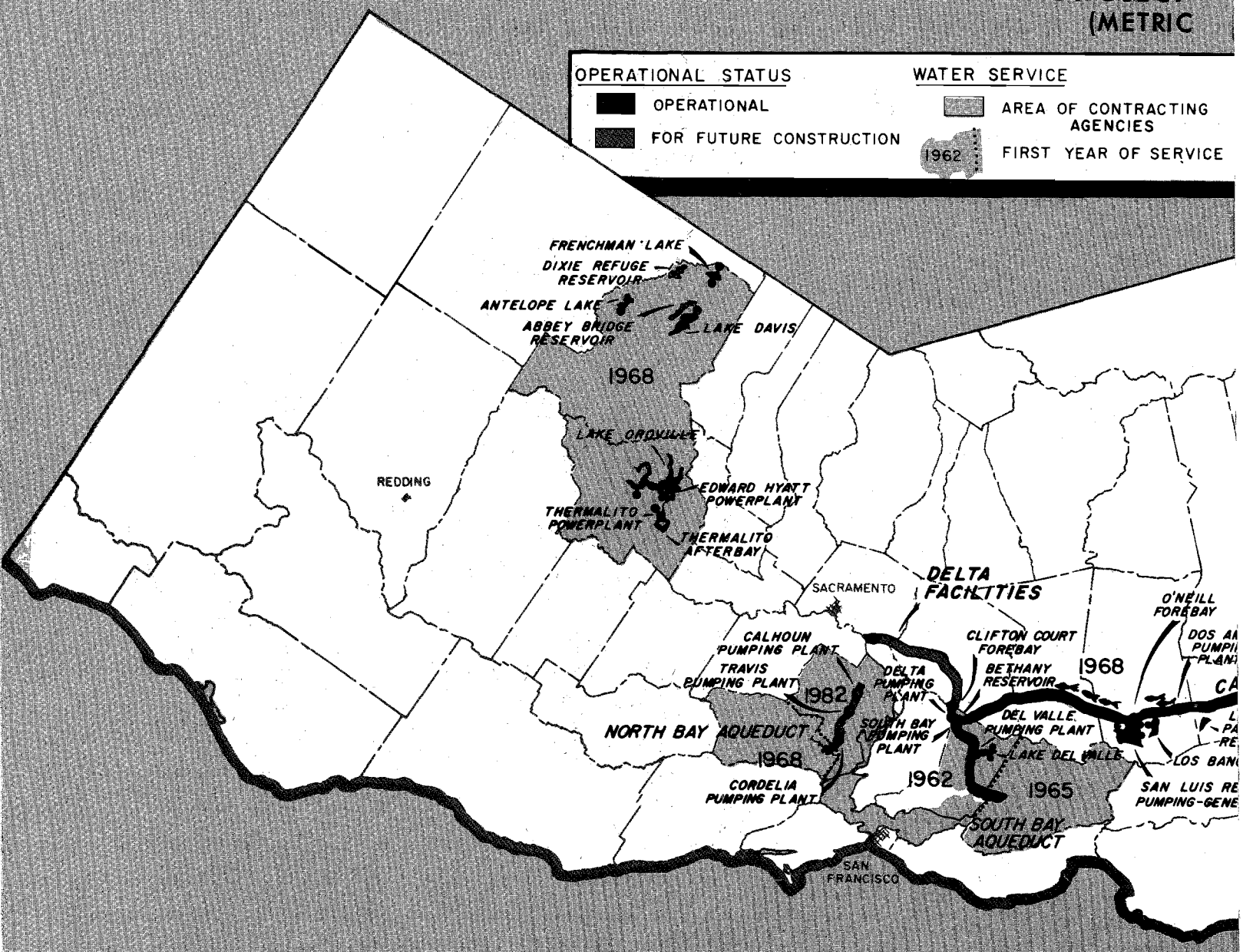


25 DAMS AND RESERVORS

	Reservoirs			Dams			
	Capacity millions) of cubic metres)	Surface Area (hectares)	Shore-line (kilo-metres)	Crest Eleva-tion(1 (metres)	Struc-tural Height (metres)	Crest Length (metres)	Volume (cubic (metres)
Frenchman Lake	68.43	639	33.8	1 709	42	219	410 600
Antelope Lake	27.84	377	24.1	1 532	37	402	290 500
Lake Davis	104.07	1 629	51.5	1 763	40	244	193 400
Lake Oroville	4 363.60	6 396	268.8	281	235	2 109	61 164 000
Thermalito Diversion Pool	16.44	131	16.1	71	44	396	117 700
Fish Barrier Pool	0.72	21	1.6	55	28	183	8 000
Thermalito Forebay	14.52	255	16.1	70	28	4 846	1 406 800
Thermalito Afterbay	70.36	1 741	41.8	43	12	12 802	3 838 000
Clifton Court Forebay	35.34	853	12.9	4	9	11 125	1 865 500
Bethany	5.93	65	9.7	76	37	1 201	1 070 400
Lake Del Valle	95.11	429	25.7	236	72	268	3 172 900
San Luis	2 514.82	5 140	104.6	169	117	5 669	59 363 500
O'Neill Forebay	69.60	1 093	19.3	71	27	4 374	2 293 700
Los Banos	42.63	252	19.3	117	51	418	1 605 600
Little Panoche	16.33	143	16.1	206	46	439	925 100
Buttes	26.89	235	9.7	850	58	680	2 393 000
Silverwood Lake	92.48	395	20.9	1 030	76	680	5 810 600
Lake Perris	162.15	938	16.1	488	39	3 536	15 291 000
Quail Lake	6.19	90	4.8	NA	12	–	–
Pyramid Lake	211.17	525	33.8	794	122	332	5 244 800
Elderberry Forebay	34.82	186	11.3	472	61	607	4 587 300
Castaic Lake	399.29	904	46.7	468	130	1 494	35 169 300
Castaic Lagoon	6.98	79	4.8	NA	8	–	–
Totals	**8 385.71**	**22 516**	**809.5**			**52 024**	**206 221 700**

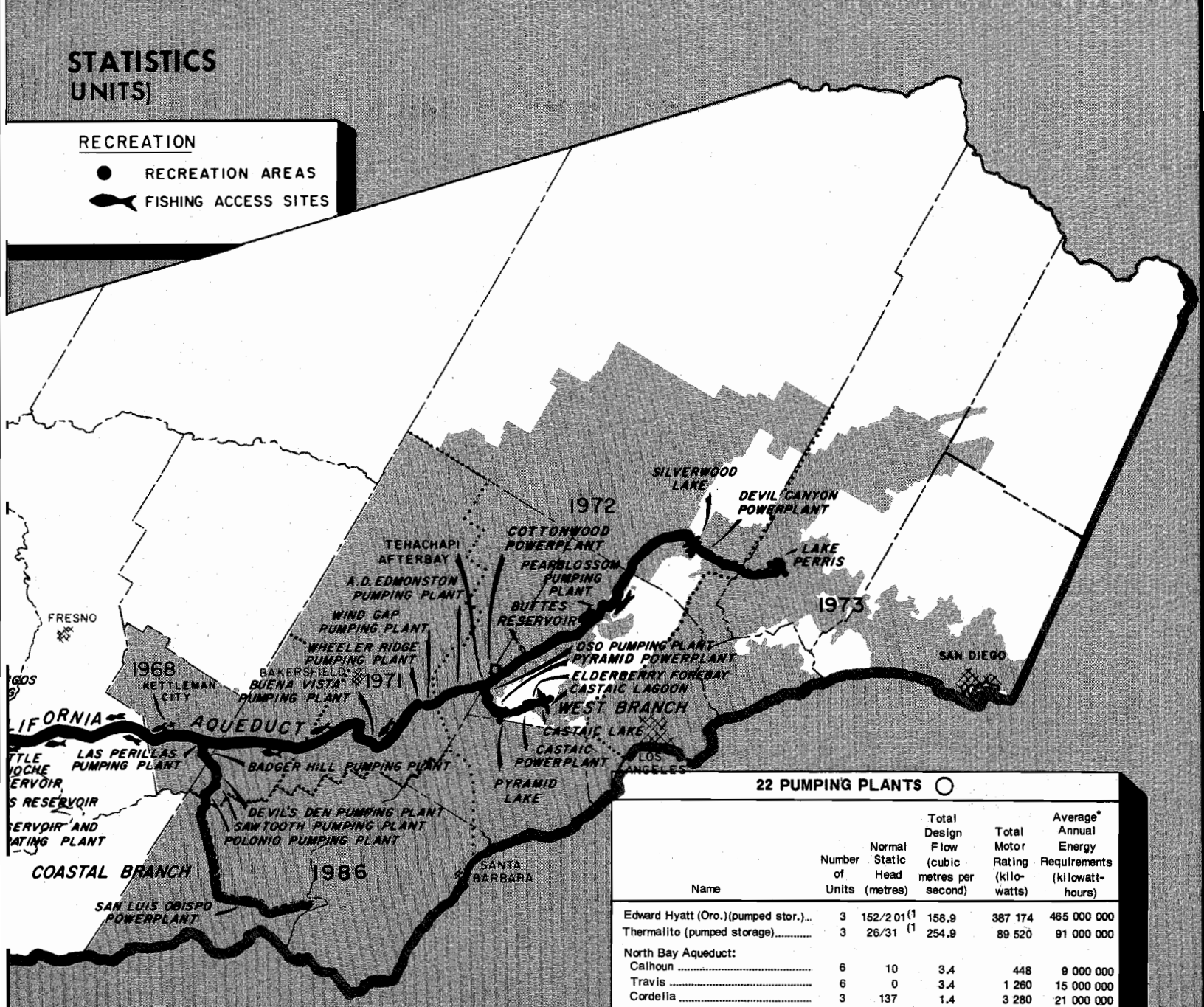
1) Above sea level.

AQUEDUCTS

Name	Length (kilometres)				
	Total	Canal	Pipeline	Tunnel	Channel and Reservoir
North Bay Aqueduct	42.6	23.0	19.6	0	0
South Bay Aqueduct	69.1	13.5	53.0	2.6	0
Subtotal	111.7	36.5	72.6	2.6	0
California Aqueduct (main line):					
Delta to O'Neill Forebay	110.1	107.8	0	0	2.3
O'Neill Forebay to Kettleman City	170.1	166.6	0	0	3.5
Kettleman City to A.D. Edmonston Pumping Plant	194.6	194.6	0	0	0
A. D. Edmonston Pumping Plant thru Tehachapi Afterbay	17.0	0.3	4.0	12.7	0
Tehachapi Afterbay thru Lake Perris	222.7	150.3	61.6	6.1	4.7
Subtotal, main line	714.5	619.6	65.6	18.8	10.5
California Aqueduct (branches)					
West Branch	51.3	14.6	10.3	11.6	14.8
Coastal Branch	154.8	23.8	131.0	0	0
Subtotal, branches	206.1	38.4	141.3	11.6	14.8
Totals(1	1 032.3	694.5	279.5	33.0	25.3

1) Does not include Delta Facilities

STATISTICS
UNITS)



8 POWERPLANTS □

Name	Number of Units	Normal Static Head (metres)	Total Design Flow (cubic metres per second)	Power Generator Output (kilowatts)	Average* Annual Energy Output (kilowatt-hours)
Edward Hyatt (Oro.)	6	125/206 (1	412.0	678 750	2 475 000 000
Thermalito	4	26/30 (1	478.6	119 600	383 000 000
San Luis					
Total	8	30/100 (1	371.6	424 000	
State Share			194.6	222 100	165 000 000
Cottonwood	1	43	46.4	15 000	113 000 000
Devil Canyon	2	432	34.0	119 700	877 000 000
Pyramid	2	226	87.8	157 000	854 000 000
Castaic					
Total	7	324	521.0	1 250 000	
State Share (2			87.6	214 000	1 396 000 000
San Luis Obispo	1	223	3.1	5 900	24 000 000
Total, State Share					6 287 000 000

1) Minimum and maximum static heads.
2) The City of Los Angeles Department of Water and Power constructed and operates a 1 250 000-kilowatt Castaic Powerplant and will supply the Project with electrical power and energy equivalent to the generation from a 213 984-kilowatt powerplant the State originally planned to construct.

* Under full development

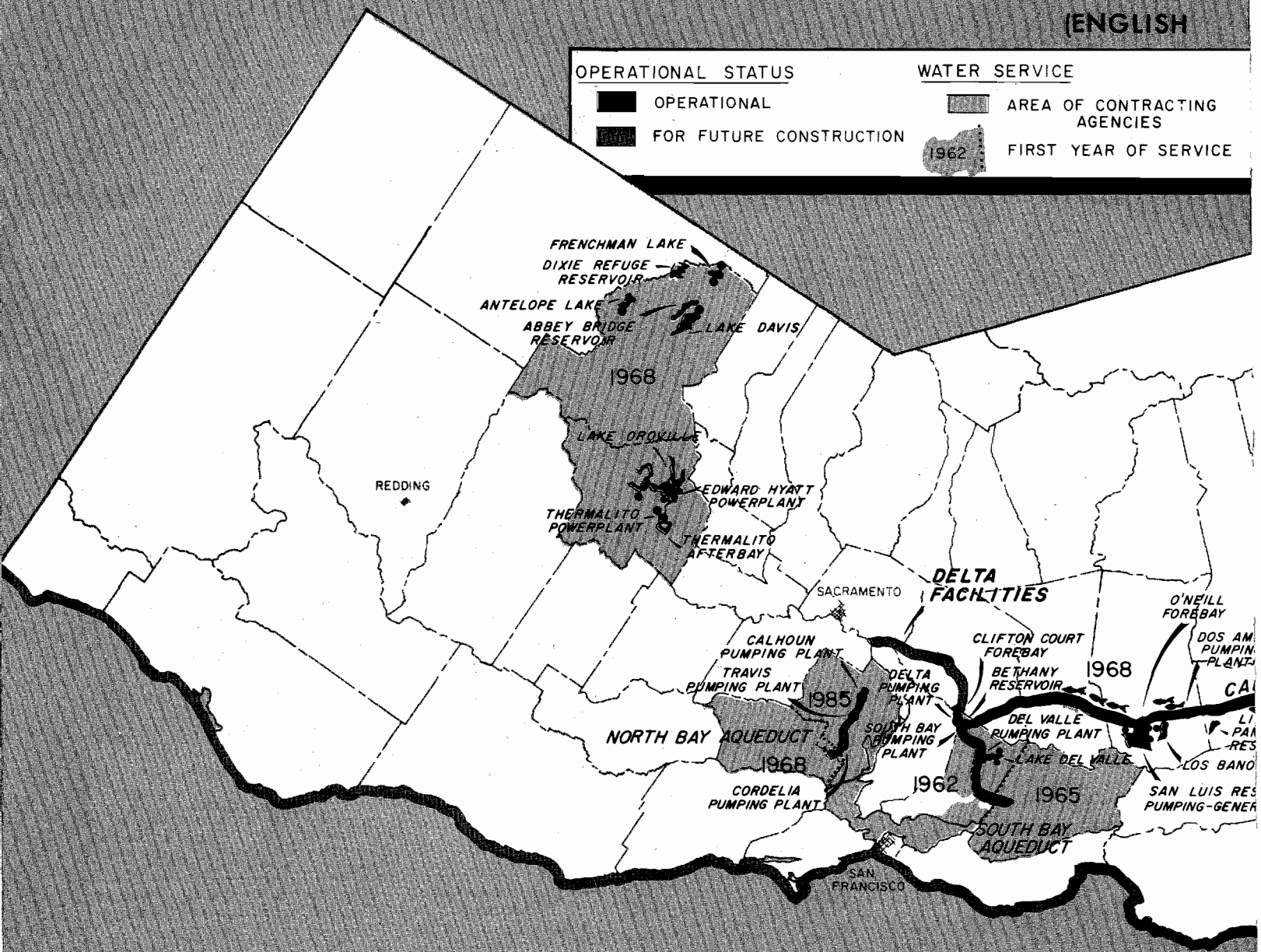
22 PUMPING PLANTS ○

Name	Number of Units	Normal Static Head (metres)	Total Design Flow (cubic metres per second)	Total Motor Rating (kilowatts)	Average* Annual Energy Requirements (kilowatt-hours)
Edward Hyatt (Oro.) (pumped stor.)	3	152/2 01 (1	158.9	387 174	465 000 000
Thermalito (pumped storage)	3	26/31 (1	254.9	89 520	91 000 000
North Bay Aqueduct:					
Calhoun	6	10	3.4	448	9 000 000
Travis	6	0	3.4	1 260	15 000 000
Cordelia	3	137	1.4	3 280	21 000 000
South Bay Aqueduct:					
South Bay	9	166	9.3	20 702	160 000 000
Del Valle	4	0/12 (2	3.4	746	2 000 000
California Aqueduct (main line):					
Delta	11	74	291.8	248 418	1 374 000 000
San Luis					
Total	8	30/100 (2	311.5	375 984	
State Share			163.2	196 944	304 000 000
Dos Amigos					
Total	6	34	373.8	179 040	
State Share			201.1	96 980	585 000 000
Buena Vista	10 (3	62	143.0	101 456	748 000 000
Wheeler Ridge	9 (3	71	130.2	104 440	726 000 000
Wind Gap	9 (3	158	124.9	229 268	1 683 000 000
A. D. Edmonston (Tehachapi)	14 (3	587	116.0	775 840	6 061 000 000
Pearblossom	6	165	39.1	84 447	633 000 000
California Aqueduct (branches):					
Oso	8	70	88.6	69 975	435 000 000
Las Perillas	6	17	12.7	3 021	18 000 000
Badger Hill	6	46	12.7	7 833	38 000 000
Devil's Den	4	125	3.6	5 968	36 000 000
Sawtooth	4	101	3.6	4 849	28 000 000
Polonio	4	247	3.6	11 936	76 000 000
Peripheral Canal					
Total	9 (3	3	617.3	26 483	
State Share			308.7	13 242	53 000 000
Total State Share					13 561 000 000

1) Minimum and maximum total pumping heads.
2) Minimum and maximum static heads.
3) Includes one spare unit.

* Under full development.

PROJECT (ENGLISH



25 DAMS AND RESERVOIRS

Name of Reservoir	Reservoirs: Capacity (Acre-feet)	Surface Area (acres)	Shore-line (miles)	Dams: Crest Elevation (1 (feet)	Structural Height (feet)	Crest Length (feet)	Volume (cubic yards)
Frenchman Lake	55,477	1,580	21	5,607	139	720	537,000
Antelope Lake	22,566	931	15	5,025	120	1,320	380,000
Lake Davis	84,371	4,026	32	5,785	132	800	253,000
Lake Oroville	3,537,577	15,805	167	922	770	6,920	80,000,000
Thermalito Diversion Pool	13,328	323	10	233	143	1,300	154,000
Fish Barrier Pool	580	52	1	181	91	600	10,500
Thermalito Forebay	11,768	630	10	231	91	15,900	1,840,000
Thermalito Afterbay	57,041	4,302	26	142	39	42,000	5,020,000
Clifton Court Forebay	28,653	2,109	8	14	30	36,500	2,440,000
Bethany	4,804	161	6	250	121	3,940	1,400,000
Lake Del Valle	77,106	1,060	16	773	235	880	4,150,000
San Luis	2,038,771	12,700	65	554	385	18,600	77,645,000
O'Neill Forebay	56,426	2,700	12	233	88	14,350	3,000,000
Los Banos	34,562	623	12	384	167	1,370	2,100,000
Little Panoche	13,236	354	10	676	152	1,440	1,210,000
Buttes	21,800	580	6	2,790	190	2,230	3,130,000
Silverwood Lake	74,970	976	13	3,378	249	2,230	7,600,000
Lake Perris	131,452	2,318	10	1,600	128	11,600	20,000,000
Quail Lake	5,020	223	3	NA	40	–	–
Pyramid Lake	171,196	1,297	21	2,606	400	1,090	6,860,000
Elderberry Forebay	28,231	460	7	1,550	200	1,990	6,000,000
Castaic Lake	323,702	2,235	29	1,535	425	4,900	46,000,000
Castaic Lagoon	5,662	196	3	NA	25	–	–
Totals	6,798,299	55,641	503			170,680	269,729,500

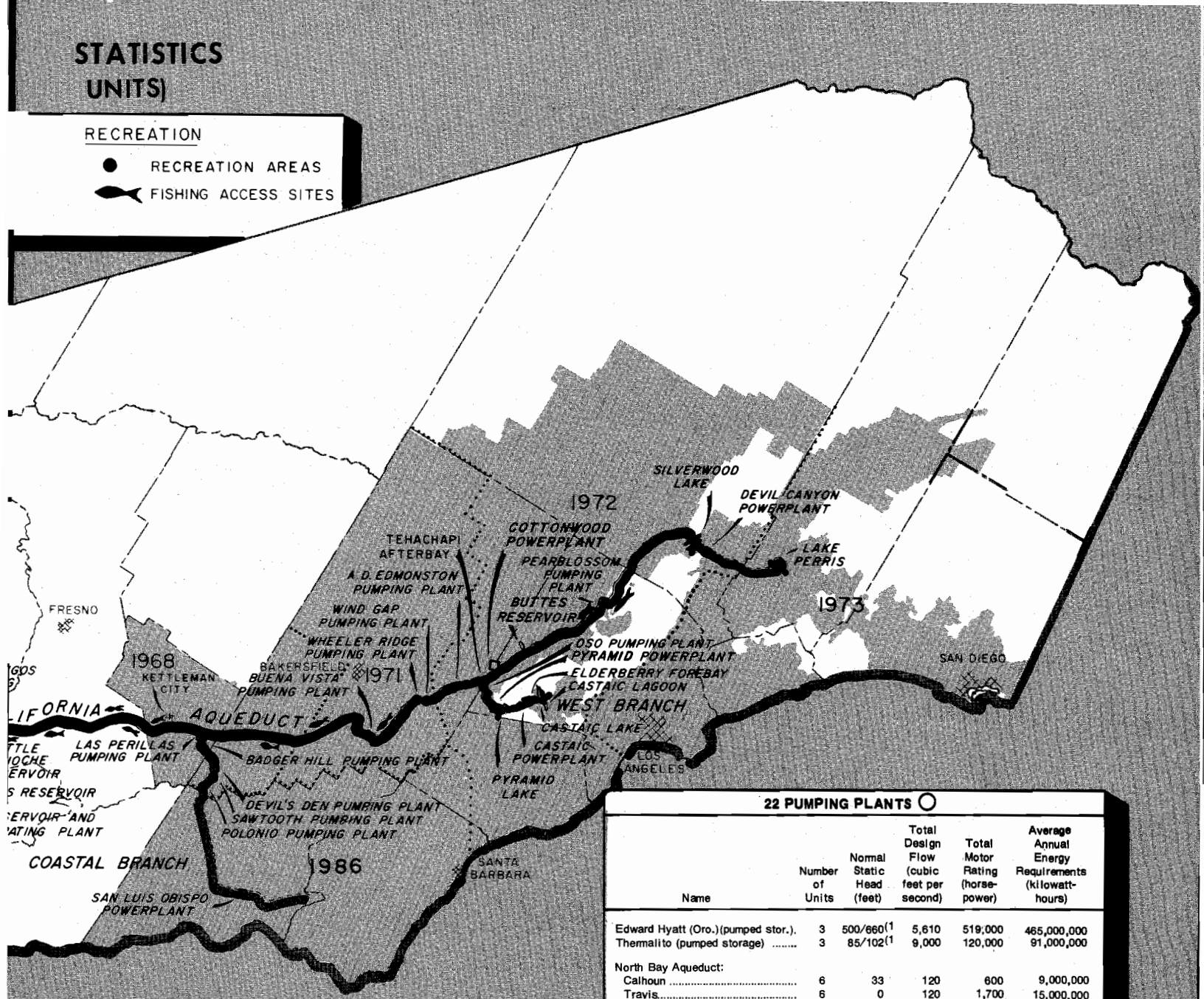
1) Above sea level.

AQUEDUCTS

Name	Length (miles): Total	Canal	Pipeline	Tunnel	Channel and Reservoir
North Bay Aqueduct	26.5	14.3	12.2	0	0
South Bay Aqueduct	42.9	8.4	32.9	1.6	0
Subtotal	69.4	22.7	45.1	1.6	0
California Aqueduct (main line):					
Delta to O'Neill Forebay	68.4	67.0	0	0	1.4
O'Neill Forebay to Kettleman City	105.7	103.5	0	0	2.2
Kettleman City to A. D. Edmonston Pumping Plant	120.9	120.9	0	0	0
A. D. Edmonston Pumping Plant thru Tehachapi Afterbay	10.6	0.2	2.5	7.9	0
Tehachapi Afterbay thru Lake Perris	138.4	93.4	38.3	3.8	2.9
Subtotal, main line	444.0	385.0	40.8	11.7	6.5
California Aqueduct (branches):					
West Branch	31.9	9.1	6.4	7.2	9.2
Coastal Branch	96.2	14.8	81.4	0	0
Subtotal, branches	128.1	23.9	87.8	7.2	9.2
Totals(1	641.5	431.6	173.7	20.5	15.7

1) Does not include Delta Facilities

STATISTICS
UNITS)



8 POWERPLANTS □

Name	Number of Units	Normal Static Head (feet)	Total Design Flow (cubic feet per second)	Power Generator Output (kilowatts)	Average Annual Energy Output (kilowatt-hours)
Edward Hyatt (Oroville).	6	410/676(1	14,550	678,750	2,475,000,000
Thermalito	4	85/100(1	16,900	119,600	383,000,000
San Luis					
Total	8	99/327(1	13,120	424,000	
State Share			6,872	222,100	165,000,000
Cottonwood	1	140	1,637	15,000	113,000,000
Devil Canyon	2	1,418	1,200	119,700	877,000,000
Pyramid	2	740	3,100	157,000	854,000,000
Castaic					
Total	7	1,063	18,400	1,250,000	
State Share(2			3,092	214,000	1,396,000,000
San Luis Obispo	1	730	111	5,900	24,000,000
Total, State Share					6,287,000,000

1) Minimum and maximum static heads.
2) The City of Los Angeles Department of Water and Power constructed and operates a 1,250,000-kilowatt Castaic Powerplant and will supply the Project with electrical power and energy equivalent to the generation from a 213,984-kilowatt powerplant the State originally planned to construct.
* Under full development

22 PUMPING PLANTS ○

Name	Number of Units	Normal Static Head (feet)	Total Design Flow (cubic feet per second)	Total Motor Rating (horse-power)	Average Annual Energy Requirements (kilowatt-hours)
Edward Hyatt (Oro.)(pumped stor.).	3	500/660(1	5,610	519,000	465,000,000
Thermalito (pumped storage)	3	85/102(1	9,000	120,000	91,000,000
North Bay Aqueduct:					
Calhoun	6	33	120	600	9,000,000
Travis	6	0	120	1,700	15,000,000
Cordelia	3	448	48	4,400	21,000,000
South Bay Aqueduct:					
South Bay	9	545	330	27,750	160,000,000
Del Valle	4	0/38(2	120	1,000	2,000,000
California Aqueduct (main line):					
Delta	11	244	10,303	333,000	1,374,000,000
San Luis					
Total	8	99/327(2	11,000	504,000	
State Share			5,762	264,000	304,000,000
Dos Amigos					
Total	6	113	13,200	240,000	
State Share			7,100	130,000	585,000,000
Buena Vista	10(3	205	5,049	136,000	748,000,000
Wheeler Ridge	9(3	233	4,598	140,000	726,000,000
Wind Gap	9(3	518	4,410	308,000	1,683,000,000
A. D. Edmonston (Tehachapi)	14(3	1,926	4,095	1,040,000	6,061,000,000
Pearblossom	6	540	1,380	113,200	633,000,000
California Aqueduct (branches):					
Oso	8	231	3,128	93,800	435,000,000
Las Perillas	6	55	450	4,050	18,000,000
Badger Hill	6	151	450	10,500	38,000,000
Devil's Den	4	409	126	8,000	36,000,000
Sawtooth	4	331	126	6,500	28,000,000
Polonio	4	810	126	16,000	76,000,000
Peripheral Canal					
Total	9(3	10	21,800	35,500	
State Share			10,900	17,750	53,000,000
Total, State Share					13,561,000,000

1) Minimum and maximum total pumping heads.
2) Minimum and maximum static heads.
3) Includes one spare unit.

78948-950 3-79 2,500

CONVERSION FACTORS

English to Metric System of Measurement

Quantity	English Unit	Multiply by*	To get metric equivalent
Length	Inches (in)	25.4	millimetres (mm)
		.0254	metres (m)
	feet (ft)	.3048	metres (m)
	miles (mi)	1.6093	kilometres (km)
Area	square inches (in^2)	6.4516×10^4	square metres (m^2)
	square feet (ft^2)	.092903	square metres (m^2)
	acres	4046.9	square metres (m^2)
		.40469	hectares (ha)
		.40469	square hectometres (hm^2)
		.0040469	square kilometres (km^2)
	square miles (mi^2)	2.590	square kilometres (km^2)
Volume	gallons (gal)	3.7854	litres (l)
		.0037854	cubic metres (m^3)
	million gallons (10^6 gal)	3785.4	cubic metres (m^3)
	cubic feet (ft^3)	.028317	cubic metres (m^3)
	cubic yards (yd^3)	.76455	cubic metres (m^3)
	acre-feet (ac-ft)	1233.5	cubic metres (m^3)
		1.2335	cubic dekametres (dm^3)
		.0012335	cubic hectometres (hm^3)
		1.233×10^{-6}	cubic kilometres (km^3)
Volume Time (Flow)	cubic feet per sec (ft^3/s)	28.317	litres per second (l/s)
		.028317	cubic metres per sec (m^3/s)
	gallons per minute (gal/min)	.06309	litres per second (l/s)
		6.309×10^{-5}	cubic metres per sec (m^3/s)
	million gallons per day (mgd)	.043813	cubic metres per sec (m^3/s)
Water Usage	acre-feet per acre	.3048	cubic metres per square metre (m^3/m^2)
Mass	pounds (lb)	.45359	kilograms (kg)
	tons (short, 2,000 lb)	.90718	tonne (t)
		907.18	kilograms (kg)
Power	horsepower (hp)	0.7460	kilowatts (kW)
Pressure	pounds per square inch (psi)	6894.8	pascal (Pa)

* For greater accuracy, use conversion factors in "Metric Practice Guide" (American Society for Testing and Materials, E 380-72).

CALIFORNIA DEPARTMENT OF WATER RESOURCES

THE RESOURCES AGENCY