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Management of the California State Water Project



State of California
The Resources Agency
Department of Water Resources

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Foreword

California stands at the threshold of a new era in management of the state's water resources. Six years of drought together with rapid growth in population has resulted in an increasing need for more water to satisfy both urban and agricultural demands. In addition, increased environmental concerns have helped to make more Californians than ever aware of the limitations associated with the state's water resources.

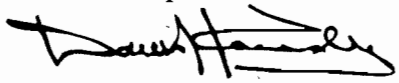
As a result, we are likely to see many changes in the way California's water supplies are managed. Those changes are likely to range from water conservation efforts shared by urban and agricultural users to water transfers between users. Other changes will undoubtedly require more water to be allocated for environmental purposes, including restoration of habitats for fish and wildlife.

Because those changes will affect the operation of the State Water Project, we have included in this bulletin a special section entitled "Changing Ways of Managing Water," in which we examine the effects of those changes on the operation of the State Water Project.

At this time, of course, we cannot predict how the changes will ultimately affect our day-to-day operations. We do know that some changes will affect the Department's ability to meet its obligations to long-term contractors. Some changes can only help to make more beneficial use of available supplies—water conservation and water transfers, for example. In fact, the Department has taken the initiative in sponsoring and administering an extensive drought-related conservation and transfer program in which we used State Water Project storage and water transfer facilities to move water from areas where water supplies were available to areas where a critical need for water existed.

Obviously, any decrease in available water supply to the State Water Project poses serious concerns for us as well as for contractors. A big step toward resolving many of our water supply problems would be to proceed with a program to construct much-needed water transfer facilities in the Sacramento-San Joaquin Delta. In addition to providing a means for capturing surplus water from the Delta during high-flow periods, those facilities would provide a means for protecting the Delta as a unique environmental resource.

Undoubtedly, any proposal involving the Delta will result in vigorous discussions among all interests. We believe that representatives of widely divergent interests can work together to develop an acceptable solution for this sensitive and unique area of the state.



DAVID N. KENNEDY
Director

Preface

Because of foreword-looking planning, California designed and built water delivery systems, including the State Water Project (SWP), to help mitigate the effects of droughts.

As a result, the effects of California's most recent 1987-1992 drought might not seem as severe as the effects of the drought Californians first experienced 64 years ago. Nevertheless, the effects of the current drought are significant. And because of the effects,ways of managing California's water delivery systems, including ways in which the Department of Water Resources manages SWP, are likely to change forever.

In addition to including information about the normal activities associated with operating the State Water Project,we have designed and written this issue of Bulletin 132 to provide information about ways in which the Department has changed its policies and operations as a result of the drought.

Information about those changes,which were based on the Department's commitment to make the most beneficial use of available water, is included throughout the bulletin. However, a summary of that information is included in an introduction entitled "Changing Ways of Managing Water."

In addition to the introduction, the bulletin contains 24 chapters, which have been organized into five sections, "Facilities and Deliveries," "Meeting Today's Water Needs," Protecting Environmental Resources," "Meeting Future Water Needs," and "Financing the State Water Project." The information included in the bulletin covers the period from January 1, 1991 to June 30, 1992.[1]

As usual, to facilitate understanding of the material, various tables and figures have been included. For ease of reading, they have been integrated into the text when possible; those that could not be integrated into the text have been grouped at the end of the appropriate chapters. The bulletin also contains one appendix, "Data and Computations Used in Determining 1993 Water Charges."

[1]Information concerning water deliveries and related power generation and recreational activities is based on the 1991 calendar year; information concerning precipitation is based on the 1990-91 water year. All other information, included financial information, is based on the 1991-92 fiscal year; that is the period from July 1, 1991, to June 30, 1992.

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Introduction
Changing Ways of Managing Water

During the last six years—1987 through late 1992—Californians have experienced one of the state's driest hydrologic periods, a period of drought that rivals the longest and driest ever recorded in California, the drought of 1928-1934.[1]

Thanks to water delivery systems now in place, the economic effects of the current six-year drought have been mitigated; nevertheless, the costs of the drought have been high. For example:

- Agricultural land has been fallowed; and yields from orchards have been reduced, resulting in an estimated one-half billion dollar loss to California's agricultural community. The Department of Water Resources estimates that about 455,000 acres have been idled because of the drought, about 5 percent of the 9.5 million acres harvested in 1988.
- Hydroelectric energy production has declined, resulting in higher energy costs to Californians. According to a study requested by the U.S. House Subcommittee on Health and the Environment, California's drought has cost California's ratepayers roughly $3 billion due to lost hydroelectric production.
- In the San Joaquin Valley, groundwater levels have been depleted by about 11 million acre-feet, resulting in levels as low or lower than those recorded during the 1977 drought. Throughout California the number of wells being drilled has more than doubled.
- The environment has been damaged. The population of the winter-run Chinook salmon and striped bass declined significantly; and state and federal wetlands, allocated only about 25 percent of their normal water supplies, have been affected. Emergency allocations by the U.S. Bureau of Reclamation and the Department of Fish and Game have increased the supply of water to wetlands to about 75 per-cent of normal.
- In agriculture-intensive communities, unemployment rates have risen considerably. As a result, some local businesses, including restaurants and food stores have closed or reduced their hours of operation; and other businesses primarily dependent on agriculture for sales—seed companies or businesses dealing in agri-

[1]Based on hydrologic records and water quality and operating criteria in place today, only the seven-year drought from 1928-1934 is considered to be more severe than the current six-year, 1987-1992 drought.

cultural equipment, for example—have suffered.

The effects of the drought have caused Californians to become acutely aware of and concerned about the disparity between the available supply of and the demand for water. And that disparity has become a primary concern for the Department of Water Resources as well.

For the Department, the difference been the available supply and the demand for water during this drought has helped bring into sharper focus the challenges it faces in managing its water delivery system, the State Water Project (SWP). In response, the Department has refined some methods of managing SWP's operations and water supplies; expanded others; and developed and implemented new methods.

This introduction includes information about the Department's activities resulting from changes in the Department's methods of managing SWP. The information is organized into two categories:

1. Managing the available supply, including protecting the environment and administering important aspects of Governor Pete Wilson's water plan, including transferring control of CVP to California.
2. Developing new water supplies

Managing Available Water Supplies

Managing available water supplies during a drought involves activities designed to make the most beneficial use of water available to SWP. Those activities involve:

1. Determining the amount of water available for delivery.
2. Transferring, exchanging, loaning, purchasing or carrying over water for delivery at a later date.
3. Protecting the environment.
4. As part of administering Governor Wilson's comprehensive policy for meeting California's water needs during the next 20 years, transferring control of CVP to the state. Governor Wilson's announced his plan in April 1992.[2]

Information about those activities follows.

Determining Delivery Amounts

Based on estimates of runoff made in the 1950s as well as the amount of water needed annually by each contractor, the Department initially structured its plans for water conservation, storage, and delivery capabilities according to the concept of a firm yield or the quantity of water that can be made available on a firm annual basis to municipal and industrial users and to agricultural users during a drought period. The Department planned that the firm yield would increase as needs increased and additional facilities were built.

Because of escalating costs of large-scale water projects, changed plans for developing water conservation storage, increasing emphasis on environmental regulations, and other factors, all facilities have not yet been built. In addition, the Department has changed its methods of determining delivery amounts. The concept of firm yield has been replaced by the concept of variable yield; and today, the Department determines the amount

[2] In addition to transferring CVP to state control, Governor Wilson's long-term water policy, which he announced in April 1992, includes provisions for (1) restoring and protecting the Sacramento-San Joaquin Delta; (2) protecting fish and wildlife, including developing water quality standards; (3) constructing needed Delta facilities; (4) supporting construction of three new off-stream reservoirs, including Los Banos Grandes, a SWP facility, Los Vaqueros, proposed by the Contra Costa Water District, and Domenigoni, proposed by the Metropolitan Water District of Southern California, a SWP long-term contractor; (5) encouraging a voluntary, state-wide water transfer program; (6) conserving existing water supplies through developing efficient water management programs, particularly for agricultural use and through water reclamation and recycling programs; and (7) more effectively managing groundwater.

of water available for delivery each year according to:

1. The water supply projected to be available in that year; that is, by the amount of water from storage and the amount of water the Department expects to obtain through rainfall and snowmelt
2. Acceptable amounts of water retained in storage and carried over for use in following years
3. Operating capability of SWP's facilities

Today, SWP's sources of water supplies have changed. Rivers in the north cannot be counted on as a source of supply because of their designation as Wild and Scenic rivers. Water available to SWP would likely come from the Sacramento River Basin and the San Joaquin River. The average annual runoff for the Sacramento River Basin is 15.5 million acre-feet; for the San Joaquin River, 3 million acre feet.

Operating on the basis of a variable yield is designed to make most efficient use of available water supplies, especially during a drought. By using this method, the Department frequently reevaluates and modifies its delivery capabilities as the water supply develops, according to hydrological conditions, reservoir storage levels, and the amount of water needed for environmental protections.

During a drought the demand for stored water increases, including the amount needed for environmental protections. As a result, at the end of the 1991 water year, to maintain water quality in the Delta and to protect fish and wildlife, the Department determined a need to maintain an amount of storage in Lake Oroville to ensure that:

- Cool water would be available for spawning salmon
- Enough water would be available for the Delta in case the drought were to continue

In addition, during the 1991 water year, the Department determined a need for SWP water to satisfy requirements in the Delta for:

1. Salinity control
2. Water quality standards
3. Fish, wildlife, and environmental protections

In changing the basis of operations from a firm yield to a variable yield, the Department also changed its activities for water management and developed programs to compensate for the lack of storage facilities. Information about those programs, which include transferring, exchanging, loaning, storing, purchasing, and carrying over water for delivery at a later date, follow.

Transferring and Exchanging Water

For more than 30 years, the Department has used SWP facilities to transfer water from sources of supply to areas of need, first as a wholesaler of water to long-term contractors and then as a conveyer of water for other agencies according to specific agreements and contracts.

In response to the 1976-1977 drought, the Department pioneered the development of water exchanges and purchases. In 1976, to alleviate a critical water shortage in the San Joaquin Valley, the Department developed a water exchange with two long-term water contractors, the Metropolitan Water District of Southern California (MWDSC) and Dudley Ridge Water District (DRWD), an agricultural contractor in the San Joaquin Valley.[3]

In mid-1976, MWDSC increased its water supply from the Colorado River by 10,500 acre-feet and released a like amount to be delivered to DRWD.

In late 1976-early 1977, in response to the continuing drought, the Department negotiated another exchange with MWDSC. On March 15, 1977, the Department signed an exchange agreement with MWDSC for 320,000 acre-feet with a provision that an additional 80,000 acre-feet be

retained in SWP reservoirs for an exchange later in the year if necessary.

The water, allocated for urban use in the Bay Area and agricultural use by SWP contractors and nonproject contractors, was purchased by and delivered to Alameda County Water District; Marin Municipal Water District; San Francisco Water Department; Skylonda Municipal Water District; U.S. Bureau of Reclamation; and ten SWP agricultural contractors.

As another precaution against the drought, the Department negotiated to continue exchanges with MWDSC in 1978 and arranged an exchange with three other contractors to lend more than 41,000 acre-feet of entitlement water to agricultural contractors. Because water supplies increased dramatically in early 1978, the water exchanges were not necessary.

In 1982, because of increasing environmental concerns and costs of developing large-scale water projects, California adopted a statewide policy of encouraging voluntary transfers between agencies throughout the state (*Water Code* Section 109).

Since then, many laws designed to facilitate water transfers within the state have been passed and incorporated into California's *Water Code*, including those ranging from authorizing agencies to sell, lease, exchange, or transfer water to ensuring water conveyance facilities are available for use in transferring water.

Legislation included provisions for ensuring the short-term and long-term effects of transfers. For example, the transfer must not have an unreasonable, adverse effect on the environment, local economy, groundwater supplies, or other authorized users of the source of supply from which the water is being transferred.

In addition, some transfers are subject to approval by the State Water Resources Control Board (SWRCB). In those cases the Board must determine the impact of the transfer on:

- Vested water rights
- Fish and wildlife
- Public interest

Based on various requirements, SWRCB may approve short-term and long-term (longer than one year) transfers as well as those based on urgent need. Long-term transfers are subject to provisions of the California Environmental Quality Act (CEQA); however, short-term transfers, the most common type of transfer approved by the Board, are exempt from CEQA (*Water Code* Section 1729).

Water transfers and exchanges have become more frequent in California among the project's long-term contractors and other specific agencies. In 1991 the Department negotiated the transfer of 490,462 acre-feet of water, including three transfers of SWP entitlement water; a first delivery of entitlement water to a SWP long-term contractor; 13 transfers involving nonproject contractors; and 14 transfers of water purchased from the 1991 Drought Water Bank.

This section includes information about those transfers. See Chapter 6, "Delivering Water," and Chapter 17, "Augmenting the Water Supply," for additional information about transfers.

Entitlement Water Transfers

During 1991 a total of 4,097 acre-feet of SWP entitlement water was transferred between six SWP long-term contractors, including Castaic Lake Water Agency to Devil's Den Water Agency; Antelope Valley-East Kern Water Agency to Kern County Water Agency; and Mojave Water Agency to Antelope Valley-East Kern Water Agency.

First Delivery of Entitlement Water

In response to a drought emergency declared in Santa Barbara County, the Department

[3]The Department negotiated its first water exchange in 1969 with Alameda County Water District. The Department delivered 6,005 acre-feet in exchange for an equal amount of the agency's local runoff into Lake Del Valle.

negotiated the first delivery of 1,240 acre-feet entitlement water to Santa Barbara Flood Control and Water Conservation District. Because conveyance facilities to Santa Barbara were not available, the water was delivered from February 1991 through August 1991 through a series of transfers.

Water was delivered to Santa Barbara from Lake Casitas, which is located in Ventura County, in exchange for delivery of the same amount of water from Castaic Lake to Ventura County through the facilities of MWDSC, Calleguas Municipal Water District, and the city of Oxnard.

The agreement signed by the Department with Santa Barbara provided for delivery of up to 7,200 acre-feet of water by December 31, 1992.

City and Agency Transfers

In 1991, SWP facilities were used to transfer a total of 73,654 acre-feet of nonproject water between nine water districts or agencies, including Modesto Irrigation District; city of Napa; Oroville-Wyandotte Irrigation District; Placer County Water Agency; city of San Francisco; Santa Clara Valley Water District; Solano County Water Agency; city of Vallejo (water right permit water); Westlands Water District; and Yuba County Water Agency.

Department of Fish and Game Transfers

The Department of Fish and Game purchased 41,375 acre-feet of water from the 1991 Drought Water Bank. The Department conveyed 31,500 acre-feet of the water through SWP facilities from Harvey O. Banks Delta Pumping Plant to O'Neill Forebay.

The Central Valley Project conveyed the water from O'Neill Forebay along the Delta-Mendota Canal to wildlife habitats within Los Banos, Volta, and Mendota State Wildlife Management areas and Grassland Water District.

Central Valley Project Transfers

In 1991 the Department conveyed 38,500 acre-feet of CVP water according to agreements negotiated with the U.S. Bureau of Reclamation.

The water was delivered to contractors as well as to the U.S. Fish and Wildlife Service, U.S. Department of Veterans' Affairs, and to seven water or irrigation districts and two counties who use the Cross Valley Canal in Kern County to obtain water through SWP facilities.

Transfers Through Drought Water Banks

In 1991 California began its first statewide water transfer program, the Drought Water Bank. Established through Executive Order by Governor Wilson in February 1991, the bank was administered by the Department.

Of the 862,040 acre-feet of water transferred to the 1991 water bank, 167,012 acre-feet was used for environmental protection of the Delta and other activities.

Water available for sale from the 1991 bank totaled about 695,000 acre-feet, including about 265,000 acre-feet allocated to the State Water Project for carry-over storage to meet SWP's water requirements in early 1992. See Table 17-2, "1991 Drought Water Bank Balances, June 30, 1992," in Chapter 17, "Augmenting the Water Supply.

A 1992 bank, established by Governor Wilson in March 1992, is also being administered by the Department. As of June 30, 1992, a total of 135,550 acre feet had been requested; and of that amount, 107,780 acre-feet had been allocated to SWP long-term contractors, the Department of Fish and Game (DFG), and others.

Amounts allocated to SWP long-term contractors and DFG as of June 30, 1992, follows.

Kern County Water Agency, 6,570 acre-feet

Metropolitan Water District of Southern California, 7,575 acre-feet

Tulare Lake Basin Water Storage District, 22,200 acre-feet

Department of Fish and Game, 16,225 acre-feet

For a listing of amounts requested by and allocated to all agencies from the 1992 bank, see Table 17-3, "Agencies Requesting Water from 1992 Drought Water Bank, Amounts Requested, and Amounts Allocated, June 30, 1992," in Chapter 17, "Augmenting the Water Supply.

Loaning, Storing, Purchasing, and Carrying Over Water

Because of continuing shortages, particularly among agricultural contractors, the Department developed programs to loan, store, and purchase water and modified another to help agencies, including SWP contractors and Central Valley Project contractors, alleviate critical water shortages in both service areas.

The programs are designed to mitigate shortages within service areas by providing:

1. Short-term loans of water
2. Temporary storage of local water captured as runoff and delivered into SWP's facilities, pumped from groundwater basins, or purchased by SWP from the 1991 Drought Water Bank
3. Storage of entitlement water directly in contractors' groundwater basins

In addition, the Department modified its carry-over program to ensure that long-term contractors could make the most efficient and beneficial use of their entitlement water supply and the limited supply that will be available should the drought continue for another year.

The two programs that provide for loaning water to contractors and storing water captured, as runoff or purchased from groundwater basins are significant in that they allow contractors to pump water directly into the California Aqueduct, either to repay loans or to store water for use later.

To preserve water quality, the Department normally does not allow water to be pumped directly into the aqueduct. But because of the severity of the drought, the Department approved the pump-ins after putting into place a comprehensive program to check and monitor the quality of water introduced into the aqueduct. Information about those programs follows.

Loans

In 1991, SWP agricultural contractors only received 35 percent of requested entitlement, which was not enough to meet all need. To supplement water received from SWP, agricultural contractors pump water from groundwater supplies. However, in some agricultural areas, that groundwater could not be pumped fast enough from wells to meet peak demands.

Consequently, in 1991, SWP loaned about 124,000 acre-feet of water to Kern County Water Agency; Oak Flat Water District; and Dudley Ridge Water District, for use in their service areas with a requirement that the water be repaid.

By June 30, 1992, the contractors had repaid the loans through a program to return pumped groundwater into the California Aqueduct.

Storage

To conserve and use available water supplies, the Department developed two water storage programs. One program, implemented in spring 1991, involved long-term contractors storing water in SWP facilities; the other, implemented in fall 1991, involved SWP storing entitlement water in facilities belonging to long-term contractors.

Spring 1991 Storage Program

In spring 1991 contractors were allowed to store in SWP facilities water captured as runoff,

pumped from groundwater supplies, or purchased from suppliers in contractors' local areas.

Agencies participating in the program included two SWP contractors, Antelope Valley-East Kern Water District and San Bernardino Valley Municipal Water District, and one CVP contractor, Westlands Water District.

For Antelope Valley-East Kern Water Agency (AVEK), the Department accepted into the California Aqueduct approximately 11,000 acre-feet of water purchased from Tejon Ranchcorp. The water was accepted at Reach 18A and Reach 19 of the aqueduct; stored; and conveyed to other reaches in the California Aqueduct for use by the agency.

The water was accepted into the aqueduct from May 1991 through December 1991.

For San Bernardino Valley Municipal Water District, the Department provided storage for water diverted by the district from the Santa Ana River and Mill Creek. The agency was required to test the water before introducing it into the aqueduct to ensure it met Department of Health Services's water quality standards. Approximately 3,600 acre-feet of water was stored for the district from April 1991 through September 1991.

For Westlands Water District, a CVP agricultural contractor allocated only 25 percent of its normal entitlement for irrigation, the Department allowed the district to pump approximately 30,000 acre-feet of local groundwater into the California Aqueduct from September 1991 through February 1992. The water, stored in San Luis Reservoir, was later conveyed to reaches within the district's service area for use within those areas.

Because of high storage levels in SWP's portion of San Luis Reservoir in April 1992, approximately 12,000 acre-feet was transferred to the U.S. Bureau of Reclamation for delivery to Westlands Water District.

Districts and agencies were required to meet specific water quality standards before the water could be accepted for storage.

Fall 1991 Storage Program

Because of high storage in SWP facilities in fall 1991, the Department transferred 200,000 acre-feet of entitlement water from San Luis Reservoir to urban contractors for storage in local reservoirs or groundwater basins. The water was made available from October through December 1991.

Available water in SWP facilities resulted from a combination of factors, including:

- Heavy rains in March 1991
- A cool summer
- Purchase of water through the Drought Water Bank
- Public support of drought conservation measures

Purchases

As a means of conserving and making the most beneficial use of available supplies, the Department has arranged for purchases of water for SWP operations and deliveries to SWP contractors since 1977.

In 1991 the Department purchased about 265,000 acre-feet of water from the 1991 Drought Water Bank for delivery to water contractors in 1992. The water was purchased as a hedge against the drought continuing into 1992.

Carry-Over Water

The Department first implemented a program to allow carrying over entitlement water in SWP storage—delaying delivery of entitlement water from fall of one year to the beginning of the following year—in 1977, the second year of a critical water shortage.

The carrying over of entitlement water was approved as a means of achieving a more efficient use of remaining 1977 entitlement water and the limited 1978 supply that would have been available if the drought had continued. Four contrac-

tors, including three agricultural contractors, carried over a total of 5,865 acre-feet of 1977 entitlement water into 1978.

Since the Department approved the first carry-over, it has modified the conditions acceptable for carrying over water and has formalized the program by amending long-term water supply contracts.

However, the program's intent has remained the same—a means of achieving a more efficient use of the supply. Today, requests for delaying the use of, or carrying over, entitlement water from October, November, and December of one calendar year into the first three months of the next year are approved according to the following conditions:

- Requests must not adversely affect SWP's current or future operations as determined by the Department; that is, operational constraints on SWP facilities must take priority.
- Contractors must pay all significant identifiable costs associated with carrying over the water.

Carrying over of entitlement water is limited to entitlement water that was included in the contractor's approved delivery schedule for October, November, and December, but was not delivered due to:

1. Scheduled or unscheduled outages of facilities within the agency's service area
2. Delay in the planned application of a contractor's annual entitlement water for preirrigation purposes
3. Delay in the planned spreading of the agency's annual entitlement water for groundwater storage

In 1990, eight long-term contractors carried over about 27,000 acre-feet of water, which the Department delivered in 1991. In 1991 seven contractors requested and the Department approved 92,000 acre-feet of 1991 entitlement water to be delivered in 1992.

Protecting the Environment

California has a large and diverse natural environment, which supports many rare and endangeed species. In fact, some species living in California are found nowhere else in the world. Because of the state's unique resources, Californians have been leaders in calling for laws to protect those resources. For example, California was the first state to pass a state environmental quality act (CEQA); and California is one of the few states to have a public trust doctrine clarified and codified by its supreme court.

However, while Californians were calling for policies and laws to protect the environment, they were also calling for policies and laws to encourage growth. And it is Californians' contradictory desire for environmental protection on one hand and growth on the other that has often resulted in debates between and among water contractors, environmentalists, and others.

In an attempt to protect the environment as well as meet its contractual responsibilities to its long-term contractors, the Department has made changes in the way it operates the project. For example, releases from Lake Oroville have been adjusted, Delta pumping schedules have been altered, and facilities have been constructed to provide an optimum habitat for fish.

The Department constructed its first fish protection facility at Oroville in 1966. In 1968 the Department began operating the John E. Skinner Delta Fish Protective Facility, which is located near the Harvey O. Banks Delta Pumping Plant in Tracy; and in 1978 began operating salinity control facilities in Suisun Marsh.

As part of its operation of the Skinner Fish Protective Facility, the Department has contracted with growers to raise or produce fish for planting in the Delta, including striped bass, Chinook salmon, and steelhead rainbow trout. As of June 1992, the Department estimates that more than

4.6 million fish have been planted in the Delta and San Francisco Bay.

In connection with the striped bass, the Department is participating in studies designed to investigate the use of real-time monitoring to help protect the fish. In the studies, which are conducted as part of the Interagency Ecological Studies Program, striped bass eggs and larvae are collected by an automated sampler in the river near Sacramento.

As part of these studies, when large numbers of eggs and larvae are counted, which may happen a few times during late April through May, project operators have closed the Delta cross-channel gates to allow the eggs and larvae to pass downstream into Suisun Bay.

As another example of actions taken to protect the environment, the Department is acquiring Twitchell Island, which is located in the Delta, with plans to set aside these lands as wetlands.

Also, out of the 862,040 acre-feet of water purchased for the 1991 Drought Water Bank, approximately 149,954 acre-feet was used for environmental purposes—41,375 acre-feet purchased by the Department of Fish and Game through an agreement with the Drought Water Bank was used for wildlife enhancement at Los Banos State Wildlife Area, Volta State Wildlife Area, Mendota State Wildlife Area, and at wildlife areas in Grasslands Water District near Mendota and Gray Lodge near the north Feather River; and 108,589 acre-feet was used for environmental protection of the Delta.

Information about other environmental protection activities conducted in 1991-92 is included in this section. The information is arranged according to the following categories:

1. Sacramento-San Joaquin Delta
2. Endangered species

Additional information about those activities may be found in Chapters 10 through Chapter 14 in Part III, "Ensuring Environmental Quality."

Sacramento-San Joaquin Delta

The Sacramento-San Joaquin Delta, the crossroads of California's water system, is one of California's most intractable water problems. In fact, restoration of the Delta is a main objective of Governor Wilson's long-term water policy for California.

Governor Wilson, in announcing his policy on April 4, 1992, said about the Delta, "Nowhere is there a greater need for a comprehensive program than in the Delta. Solutions must address fish and wildlife needs, efficiency and reliability of water export systems, water quality for various water uses, and the physical integrity of delta channels and levees."

The Delta provides an estimated one-half of the state's water supply. In addition, the Delta is an estuary, a constantly changing area where tidal and river currents meet and where salinity is between the extremes of ocean and fresh waters. That estuary provides a habitat for fish and wildlife, including wildfowl on the Pacific Flyway.

As one of California's most valuable natural resources and a natural collection point for more than half of California's water, the preservation of the Delta is critically important to farmers, environmentalists, and urban dwellers alike.

However, many of the problems facing the Delta today have plagued the area for many years, including problems with salt intrusion and oxidation of peat soil. For example, originally a tidal marsh land covered with tules, the Delta, during dry summer months, has been subject to intrusions of salty ocean water from the San Francisco Bay.

Today, dams upstream of the Delta, including SWP's Oroville Dam and CVP's Shasta Dam, help control the intrusion of salt water by releasing water into the Delta during dry periods in summertime. However, problems with salinity in the Delta still exist and determining responsibility

for and correcting the problems has not proven to be easy.

Also, although the Delta's soil is fertile, it consists of peat. Peat soil naturally oxidizes, or breaks down, over time; and farming the soil helps to increase the oxidation process. In the past, as farmers worked the soil, they discovered that they had to build a network of higher and higher levees to keep out surrounding waters. The problems with soil erosion still plague the Delta today, and creating levees to keep out surrounding waters is of vital concern .

The Department has been actively involved in protecting Delta resources since the project began operating in 1967. In 1974 the Department designed three comprehensive programs, North Delta, South Delta, and West Delta Water Management programs, to take into account the interests of farmers, environmentalists, and urban dwellers.

Those programs include complicated objectives concerning water quality and flows, water levels and circulation, and conditions of fisheries and wildlife habitats, among others.

Currently, the Department is reviewing its Delta water management programs in light of Governor Wilson's new California water policy. Particular attention is being paid to developing both long-term and interim solutions to solving problems concerning:

- Water quality and flows
- Conditions for fisheries
- Wildlife management and wetland habitats
- Subsidence and soil erosion

See Chapter 11, "Preserving Delta Resources," and Chapter 12, "Managing Delta Resources," for additional information about the Department's Delta water management programs and the effects of the governor's new water policy on those programs.

Endangered Species

The Department's operating procedures for SWP includes provisions to protect threatened and endangered species, including winter-run salmon, which is listed as *threatened* on the Federal Endangered Species Act and *endangered* on the California Endangered Species Act, and the Delta smelt, which is proposed for listing as *endangered* according to state and federal endangered species acts, is of special concern to SWP.

Winter-Run Salmon

Salmon migrate between salt and fresh water and return to spawn and die in the same river in which they were born. In 1991 the National Marine Fisheries Service and DFG conducted population studies for the winter-run salmon, which was listed as *endangered* in 1989.

According to the studies, which were conducted to determine the effect of SWP and CVP operations in the Delta, the population of winter-run had declined. As a result, operational restrictions in the Delta were imposed on both projects in early 1992.

The Department cites biological data to explain the difficulties in determining the percentage of the decline due to water projects and the percentage due to other conditions—changes in oceanic conditions and water quality due to mining, logging, pollution, and urban development, for example.

To compensate for losses, SWP's operations have been modified operations to include:

1. Restoring gravel beds in the upper Sacramento River
2. Modifying releases from Lake Oroville to ensure optimal water temperature and minimum flows
3. Altering schedules for pumping to improve flows

4. Leaving in the down position the Montezuma Slough salinity control gates from March 1 though March 23, 1992
5. Reducing water export rates in April 1992 to ensure restrictions imposed by the National Marine Fisheries Service was not exceeded.

In addition, since the mid 1980s at least $10 million has been spent to improve the design and operation of the Skinner Fish Protection Facility, located between Clifton Court Forebay and Harvey O. Banks Delta Pumping Plant.

Delta Smelt

The Department has also been actively involved in developing methods to preserve the Delta smelt, which spends its one-year life cycle only in the Sacramento-San Joaquin estuary.

The Department is continuing to develop and analyze information about the Delta smelt and to modify operations to protect the Delta smelt as necessary. The National Marine Fisheries Services has proposed to the State Water Resources Control Board alternative levels of restrictions on pumping in the Delta to protect fish species.

See Chapter 14, "Protecting Fish, Plants, and Wildlife," for additional information about the Department's activities to protect the winter-run salmon and Delta smelt as well as plants and wildlife.

Transferring the Central Valley Project

The Central Valley Project was originally designed as an integral part of California's comprehensive water management plan. In 1933 California voters passed the Central Valley Project Act, which included provisions for building facilities necessary to convey water from the Sacramento River to the San Joaquin River near Mendota and to make deliveries from the San Joaquin River from Friant Dam to the vicinity of Bakersfield. The act also included provisions for financing the project through issuing of revenue bonds.

Because of the Great Depression, however, revenue bonds were unmarketable; and subsequently, arrangements were made for financing through the U.S. Bureau of Reclamation (USBR). The Bureau began construction of the Central Valley Project in 1935.

Today, CVP consists of 20 reservoirs with Shasta Dam as the largest; eight power plants, and two pumping-generating plants. The project also includes about 500 miles of canals and aqueducts. The project's 20 reservoirs have a combined storage capacity of 12 million acre-feet and its power and pumping-generating plants, a maximum capacity of 1.8 million kilowatts.

In an average year, CVP delivers between seven and eight million acre-feet of water, 95 percent of which is used to irrigate about 3.25 million acres of farmland in the Central Valley.

Even though California could not fund the Central Valley Project when it was first proposed, the reason for including it in California's water plan was sound— to make the best use of California's water resources. That reason remains sound today as indicated by Governor Wilson when in March 1992 he requested that the Department of Interior negotiate control of the project to California. David N. Kennedy, Director of the Department of Water Resources, and Secretary of Resources, Douglas Wheeler, were named as the governor's chief negotiators.

Governor Wilson's reasons for wanting California to control CVP are to:

- Ensure that California has the ability to carry out its responsibilities for the long-term planning and allocating of water resources.
- Maximize operational flexibility and efficiency through integrated management of CVP and SWP.

Although the Department believes state control of CVP is essential in the long-run if California is to effectively manage its water resources, the transfer presents both the state and the Department with short-term issues to resolve. For example, the project has contracts with approximately 225 contractors for about six million acre-feet of water. Key issues to resolve if California is to take control of CVP include:

- Value and financial status
- Environmental obligations and resulting legal liabilities
- Price of water
- Amount of water available for urban use

An advisory committee representing a broad spectrum of water interests—urban, agricultural, and environmental—has been formed by the governor to contribute to discussions underway between representatives of California and the federal government.

Developing New Supplies

Developing new supplies is necessary if SWP is to meet its contractual obligations to deliver 4.2 million acre-feet of water to long-term contractors. The Department has identified certain programs for meeting SWP's contractual obligations. Those programs involve increasing the water supply through improvements in the Sacramento-San Joaquin Delta to more efficiently transfer water to the pumps while protecting the the Delta environment; constructing off-stream storage facilities; developing SWP groundwater storage (subsurface) facilities; and developing conjunctive-use projects in cooperation with local agencies.

Some of those types of projects are not without specific environmental concerns. And as a result, those projects may take considerable time from initial planning to full operation.

Information about the Department's activities in developing new supplies through planned surface and subsurface reservoirs and conjunctive-use programs follows.

Construction of Surface and Subsurface Reservoirs

Currently, the Department is involved in planning one surface reservoir, Los Baos Grandes, and developing a significant groundwater storage program, Kern Water Bank. In announcing his water policy, Governor Wilson reaffirmed the state's commitment to constructing those facilities. Information about them follows.

Los Banos Grandes

A key component of the Department's efforts to meet California's growing water needs is water banking, moving water during periods of high winter flow into storage facilities located south of the Delta for release later during drier periods.

Los Banos Grandes, authorized by the California Legislature in 1984, is designed to be a primary south-of-the-Delta water storage facility for the Department. To be effective, Los Banos Grandes must be linked with an efficient Delta transfer facility.

The facilities, consisting of a dam, an off-stream storage reservoir, several saddle dams, and two pumping-generating plants, will be located in Merced County on Los Banos Creek. The project also will include a pumping-generating system for filling the reservoir from the California Aqueduct and for recovering energy when releases are made.

See Chapter 16, "Increasing Storage and Delivery Facilities," for additional information about Los Banos Grandes.

Kern Water Bank

The Kern Water Bank, a subsurface reservoir, is designed to store SWP water in the

ground during wet years. Later, during dry periods, water can be withdrawn by pumping to the California Aqueduct or substituted for entitlement water that ordinarily would be delivered to Kern County.

Kern Water Bank currently consists of eight separate projects or elements. The initial element, the Kern Fan Element, is proposed by the Department. To build the Kern Fan Element, the Department plans to construct some recharge basins and extraction wells and use similar facilities that have been constructed as part of the La Hacienda Groundwater Program. As part of the program, the Department signed a contract for purchasing recharged groundwater from La Hacienda, Inc., in 1990. To extract the water, the Department rehabilitated exisiting wells and constructed conveyance facilities.

As part of the process necessary to operate the Kern Fan Element, the Department has prepared two environmental documents, a supplemental environmental impact report, and habitat conservation plan.

The supplemental report was distributed for review in 1990, but the final draft has been delayed because of unresolved issues concerning threatened and endangered species in the Delta. For additional information about the Kern Water Bank, see Chapter 16, "Increasing Storage and Delivery Facilities."

Conjunctive-Use Programs

Conjunctive-use programs provide to SWP a relatively low-cost method for storing water in times of above-average supplies to use during dry periods. The Department has actively promoted conjunctive-use programs as a water management tool since 1978.

Currently, the Department is working with two agencies in San Joaquin County on a proposal for releasing as much as 145,000 acre-feet of water contracted from CVP in exchange for financing facilities in the Stanislaus and Calaveras river basins. The water would be released downstream in the Stanislaus River in years of critical shortages.

The facilities financies by the Department would be used to provide conjunctive use of water as well as benefits to fisheries, improved water quality, and increased yield to SWP's and CVP's contractors.

At this time the Department is preparing a draft environmental impart report and statement for the San Joaquin County program. Issues of concern to be identified in the report include fishery flows, water quality, and groundwater levels.

Also, in 1992 the Department expanded its investigation of the potential for conjunctive use of surface water and groundwater in the Sacramento Valley. The Department focused its investigation on the hydrological, environmental, and institutional factors necessary to develop conjunctive-use projects, including completing prefeasibility investigations; surveying water supplies; and working with local agencies to establish cooperative relations and help develop tools needed to resolve legal and institutional concerns.

For additional information about conjunctive-use programs, see Chapter 17, "Augmenting the Water Supply."

Part I.
Facilities and Deliveries

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1. Water Delivery Facilities

California is a land of contrast, with climate and geography ranging from desert to alpine to subtropical. In an average year some areas in California may receive two inches of rain while other areas receive 100 inches or more.

People have settled in all areas of the state, regardless of the amount of rainfall those areas receive. Consequently, California has long been faced with the problem of how best to conserve, control, and deliver water. For example, remains of aqueducts, canals, and dams still may be found near some of California's missions. And in the early twentieth century, several cities—Los Angeles and San Francisco, for example—built aqueducts to bring water from the Sierra Nevada Mountains and the Colorado River.

In 1951 the legislature authorized the construction of a water storage and supply system to capture and store rainfall in northern California and deliver it to areas in northern and southern California, the San Francisco Bay Area, and the San Joaquin Valley.

Eight years later the legislature passed the Burns-Porter Act, which provided the mechanism for obtaining funds necessary to construct the initial facilities. In 1960 California voters approved an issue of $1.75 billion general obligation bonds as authorized in the act, thereby obtaining funds to build the State Water Project (SWP).

Today, SWP, managed by the Department of Water Resources, is the largest state-built, multipurpose water project in the country. Approximately 20 million of California's 31 million residents receive at least part of their water from SWP; and SWP's water is used to irrigate thousands of acres of farmland. Also, SWP was designed and built to control floods, generate power, and provide recreational facilities as well as enhance habitats for fish and wildlife (see Chapter 2 for information about recreational facilities).

This chapter contains information about SWP's water delivery facilities as well as about methods of financing the construction of those facilities.

Project Design

The State Water Project begins with three small lakes on Feather River tributaries in Plumas County—Lake Davis, Frenchman Lake, and Antelope Lake, all of which are used for recreational purposes.

The branches and forks of the Feather River flow into Lake Oroville, SWP's principal reservoir with a capacity of about 3.5 million acre-feet. (An acre-foot consists of about 326,000 gallons.)

From Oroville, water flows through three hydroelectric powerplants, then down the Feather River and Sacramento River before reaching the Delta. From the northern Delta, water is supplied to Napa and Solano counties through the North Bay Aqueduct, which was completed in 1988. Water is supplied to Alameda and Santa Clara

counties through the South Bay Aqueduct, which is located near Byron in the southern Delta,

In the southern Delta, Harvey O. Banks Delta Pumping Plant lifts some water into Bethany Reservoir. From this small reservoir, the water is lifted by the South Bay Pumping Plant into the South Bay Aqueduct. Most of the water from the Bethany Reservoir, however, flows into the Governor Edmund G. Brown California Aqueduct, which wends along the west side of the San Joaquin Valley to O'Neill Forebay. From O'Neill Forebay part of the water is pumped through the William R. Gianelli Pumping-Generating Plant for storage in San Luis Reservoir until needed.

San Luis Reservoir, which has a storage capacity of more than two million acre-feet, and the B. F. Sisk San Luis Dam are jointly owned by the Department and the U.S. Bureau of Reclamation (USBR). The Department's share of storage in the reservoir is 1,062,000 acre-feet of water.

In the southern San Joaquin Valley, the short Coastal Branch Aqueduct serves agricultural areas west of the California Aqueduct. That branch will be extended to serve Santa Barbara and San Luis Obispo counties (see Chapter 16, "Increasing Storage and Delivery Facilities," for additional information about the Coastal Branch Aqueduct).

Water not stored in San Luis Reservoir continues its flow south down the valley and is raised 1,069 feet by four pumping plants—Dos Amigos, Buena Vista, Wheeler Ridge, and Ira J. Chrisman Wind Gap—before reaching the foot of the Tehachapi Mountains.

At the Tehachapi Mountains, the A. D. Edmonston Pumping Plant raises the water 1,926 feet—the highest single lift of any pumping plant in the world—to enter 8.5 miles of tunnels and siphons. Once the water has crossed the Tehachapi Mountains, it flows through the California Aqueduct into the Antelope Valley.

In the Antelope Valley, the California Aqueduct is divided into two branches, the East Branch and West Branch. The East Branch carries water through the Antelope Valley into Silverwood Lake in the San Bernardino Mountains. From Silverwood Lake, the water enters the San Bernardino Tunnel and drops 1,418 feet into Devil Canyon Powerplant, then flows to Lake Perris, SWP's southernmost reservoir.

Water in the West Branch flows through the William E. Warne Powerplant into Pyramid Lake in Los Angeles County. From Pyramid Lake it flows through the Angeles Tunnel and Castaic Powerplant into Castaic Lake, terminus of the West Branch. For the location of facilities cited in this section, see Figure 1-1, "Names and locations of primary water delivery facilities, current and projected," at the end of this chapter.

The energy needed to operate SWP comes from a variety of its own sources including hydroelectric, coal-fired, and wind-generated plants as well as energy purchased from other utilities.

The project's eight hydroelectric power plants, including two pumping-generating plants, produce enough electricity to reduce SWP's demand for energy by nearly half. The power produced—more than six billion kilowatt-hours in an average year—is enough to serve the entire needs of the city of San Francisco for one year.

Water Delivery Facilities

The State Water Project depends on a complex system of reservoirs, dams, power plants, pumping plants, canals, and aqueducts to deliver water. The project's initial facilities were completed in 1973; other facilities have been constructed since 1973; and still others are planned for construction in the future. Information about those facilities follows.

Initial Facilities

The State Water Project's initial facilities, completed in 1973, include 22 dams and reservoirs, 15 pumping plants, four hydroelectric power plants, two pumping-generating plants, and

550 miles of aqueducts and pipelines. Those facilities were designed and built to distribute 4.23 million acre-feet of water forecast to be needed 60 years after the project was authorized in 1960. The conservation and storage facilities were built to provide only 2.2 million acre-feet. To increase the project's yield, additional facilities were scheduled to be built in an orderly manner as more water was needed.

For the names and locations of SWP's facilities, see Figure 1-1. For information about the physical characteristics of reservoirs and dams; average amount of energy produced at power plants and required at pumping plants; and the total miles of aqueducts, see Table 1-1 through Table 1-5.[1]

Table 1-1, "Physical Characteristics of Primary Reservoirs and Storage Facilities," includes information about the capacity, surface area, and shoreline, if applicable, of SWP's primary reservoirs and storage facilities. Table 1-2, "Physical Characteristics of Primary Dams," includes information about the crest elevation and length and structural height and volume of SWP's primary dams.

Table 1-3, "Average Amount of Energy Required at Pumping Plants," includes information about SWP's pumping plants as well as about the amount of energy required to pump water at SWP's full development. Data for Edward Hyatt Pumping Plant, Thermalito Pumping-Generating Plant, and William R. Gianelli Pumping-Generating Plant apply to pumped storage capability.

At Edward Hyatt Pumping Plant and Thermalito Pumping-Generating Plant, pumped storage capability is used only under economically favorable conditions.

Also, the following pumping plants, Buena Vista, Wheeler Ridge, Ira J. Chrisman Wind Gap,

TABLE 1-1
Physical Characteristics of Primary Reservoirs and Storage Facilities

Facility	*Gross Capacity (Acre-feet)*	*Surface Area (Acres)*	*Shoreline (Miles)*
Antelope Lake	22,600	930	15
Frenchman Lake	55,500	1,580	21
Lake Davis	84,400	4,030	32
Lake Oroville	3,537,600	15,800	167
Thermalito Forebay	11,~~700~~ 800	630	10
Thermalito Afterbay	57,000	4,300	26
Clifton Court Forebay	28,700	2,110	8
Bethany Reservoir	4,800	180	6
Lake Del Valle	77,100	1,050	16
San Luis Reservoir	2,028,000	12,700	65
SWP storage, 1,062,000 AF			
O'Neill Forebay	56,400	2,700	12
SWP storage, 29,500 AF			
Los Banos Grandes (future facility)	1,728,000	12,870	
Los Banos Reservoir	34,600	620	12
Kern Water Bank			
Fan Element	1,000,000		
Other local elements	up to 2,000,000		
Pyramid Lake	171,000	1,300	21
Elderberry Forebay	28,200	460	7
Castaic Lake	324,000	2,240	29
Silverwood Lake	75,000	980	13
Lake Perris	131,000	2,320	10

A. D. Edmonston, Pearblossom, Devil's Den, Bluestone, and Polonio Pass, include a spare unit. Devil's Den, Bluestone, and Polonio Pass are future facilities; data are tentative.

The total design flow at pumping plants reflects the total rated capacity at the dynamic head used for the normal design criteria and operation and maximum efficiency. Motors at William R. Gianelli Pumping-Generating Plant are two-speed units; value indicated reflects operation at higher revolutions per minute (RPM).

Table 1-4, "Average Amount of Energy Produced at Power Plants, by Type of Facility," includes information about the amount of energy produced at each facility at SWP's full development. The total design flow at power plants reflects the total rated capacity at the dynamic head used for the normal design criteria and operation at maximum efficiency. Total generator rating of Edward Hyatt Powerplant reflects upgrading of the generator.

[1]Names of facilities included in this publication are presented as they were adopted by the California Water Commission as part of the State Water Resources Development System.

TABLE 1-2
Physical Characteristics of Primary Dams

Facility	Crest Elevation (Feet)	Structural Height (Feet)	Crest Length (Feet)	Structural Volume (in thousand cubic yards)
Antelope Lake	5,025	120	1,320	380
Frenchman Lake	5,607	139	720	537
Lake Davis	5,785	132	800	253
Lake Oroville	922	770	6,920	80,000
Thermalito Diversion Dam	233	143	1,300	154
Thermalito Forebay	231	91	15,900	1,840
Thermalito Afterbay	142	39	42,000	5,020
Clifton Court Forebay	14	30	36,500	2,440
Bethany Reservoir	250	121	3,940	1,400
Lake Del Valle	773	235	880	4,150
San Luis Reservoir	554	385	18,600	77,645
O'Neill Forebay	233	88	14,350	3,000
Los Banos Reservoir	384	167	1,370	2,100
Pyramid Lake	2,606	400	1,090	6,860
Cedar Springs Dam	3,378	249	2,230	7,600
Lake Perris	1,600	128	11,600	20,000

TABLE 1-3
Average Amount of Energy Required at Pumping Plants

Facility and Number of Units	Normal Static Head (ft)	Total Design Flow (cfs)	Total Design Motor Rating (hp)	Average Annual Energy Required (in thousand kWh)
Thermalito (p-g), 3	85-101	9,120	120,000	
E. Hyatt (p-g), 3	410-660	5,610	519,000	
Barker Slough, 9	95-120	228	4,800	15,000
Cordelia, 11	104-439	138	4,940	23,000
H. O. Banks Delta, 11	236-252	10,668	333,000	1,230,000
South Bay, 9	566	330	27,750	151,000
Del Valle, 4	0-38	120	1,000	1,600
W. R. Gianelli (p-g), 8	99-327	11,000	504,000	470,000
SWP share				255,000
Dos Amigos, 6	107-125	15,450	240,000	715,000
SWP share				545,000
Las Perillas, 6	55	828	4,050	15,000
Badger Hill, 6	151	801	11,750	38,000
Devil's Den (future facility), 4	378	80	4,760	52,000
Bluestone (future facility), 4	534	80	6,680	52,000
Polonio Pass (future facility), 4	543	80	6,680	52,000
Buena Vista, 10	205	5,405	144,500	653,000
Wheeler Ridge, 9	233	5,445	150,000	756,000
I. J. Chrisman Wind Gap, 9	518	4,095	330,000	1,609,000
A. D. Edmonston, 14	1,926	4,480	1,120,000	5,580,000
Oso, 8	231	2,607	93,800	315,000
Pearblossom, 9	540	2,575	203,200	800,000
Total				**13,327,600**

Table 1-5, "Total Miles of Aqueducts," includes information about SWP's three aqueducts and related branches as well as about the length in miles of each aqueduct. A small aqueduct, Grizzly Valley Pipeline, serves the city of Portola in the Upper Feather River area but is not included in the table.

The names of facilities included in Table 1-1 through Table 1-5 are listed according to geographical location; the facility at the northernmost point is listed first, and so forth. For locations of State Water Project facilities, see Figure 1-1 at the end of this chapter.

Recent and Proposed Facilities

When SWP was designed and built, conservation and storage facilities were built to provide only 2.2 million acre-feet of water. Additional facilities were tentatively planned and scheduled to be built as more water was needed. Because of increased costs, lack of suitable sites, and changes in water management practices resulting, in part, from environmental concerns, the construction schedule was not followed.

Instead, the Department reassessed its plans and developed conservation and storage facilities that incorporate environmental protections as well as contribute to SWP's storage capacity. Developing those projects involved the time-consuming process of finding technically suitable sites and satisfying the many complex environmental procedures, laws, and regulations.

Today, the Department is planning the offstream storage complex, Los Banos Grandes, and has investigated and developed alternative methods of storing water, including the conjunctive-use groundwater storage facility, Kern Water Bank. Also, in response to rising costs of energy, the Department has participated in the development of two geothermal power plants, Bottle Rock and South Geysers; one wind-generated power plant

in Alameda County, Bethany Wind Park; and one coal-fired plant, Reid Gardner, east of Las Vegas, Nevada.

Future facilities planned for SWP include dams and reservoirs, pumping plants, and power plants. Information about those facilities follows.

Dams and Reservoirs

Two dams and reservoirs are in the planning stages: either Dippingvat or Schoenfield (Red Bank Project) in Shasta and Tehema counties and Los Banos Grandes in Merced County. See Table 1-1. For additional information about the Red Bank Project and Los Banos Grandes, see Chapter 16, "Increasing Storage and Delivery Facilities."

Pumping Plants

Three pumping plants, Devil's Den, Bluestone, and Polonio Pass, have been designated as future facilities. See Table 1-3.

Power Plants

One power plant, Mojave Siphon is under construction; another, Devil Canyon, is being enlarged (units 3 and 4); and San Luis Obispo has been designated as a future facility. Construction has been deferred on South Geysers; and Bottle Rock is not operational.

Units 3 and 4 at Devil Canyon Powerplant should be operational in early fall 1992. See Table 1-4.

Methods of Financing

The project's facilities have been constructed with three general types of financing: general obligation bonds and oil revenues (Burns-Porter Act, approved by voters in 1960); revenue bonds; and capital resources.

Operations, maintenance, power, and replacement costs are repaid by the 29 water con-

TABLE 1-4
Average Amount of Energy Produced at Power Plants, by Type of Facility

Type and Facility and Number of Units	*Normal Static Head (ft)*	*Total Design Flow (cfs)*	*Total Design Generator Capability (kw)*	*Average Annual Energy Produced (in thousand kWh)*
Hydro				
Thermalito Diversion Dam, 1	63–77	615	3,000	26,400
Thermalito (p-g), 4	85–101	17,400	119,600	242,000
E. Hyatt, 6	410–675	16,950	813,000	1,906,200
W. R. Gianelli p-g, 8	99–327	16,960	424,000	320,000
SWP share			222,100	170,000
San Luis Obispo (future facility), 1	730	94	5,000	40,000
Alamo, 1	115-141	1,740	18,000	110,000
W. E. Warne, 2	719–739	1,564	78,200	720,000
Mojave Siphon (future facility), 3	81-136	2,880	34,500	100,000
Devil Canyon (units 3, 4 under construction), 4	1,406	3,020	291,000	1,200,000
Thermal				
Reid Gardner, Unit 4, 1			250,000	
SWP share			169,500	1,400,000
Total				**6,234,600**

TABLE 1-5
Total Miles of Aqueducts

Facility	*Channel and Reservoir*	*Canal*	*Pipeline*	*Tunnel*	*Total*
North Bay Aqueduct	0.0	0.0	27.4	0.0	27.4
South Bay Aqueduct	0.0	8.4	32.9	1.6	42.9
Subtotal	0.0	8.4	60.3	1.6	70.3
California Aqueduct, Main Line					
Delta to O'Neill Forebay	1.4	67.0	0.0	0.0	68.4
O'Neill Forebay to Kettleman City	2.2	103.5	0.0	0.0	105.7
Kettleman City to Edmonston Pumping Plant	0.0	120.9	0.0	0.0	120.9
A. D. Edmonston Pumping Plant to Tehachapi Afterbay	0.0	0.2	2.5	7.9	10.6
Tehachapi Afterbay to Lake Perris	2.9	93.4	38.3	3.8	138.4
Subtotal	6.5	385.0	40.8	11.7	444.0
California Aqueduct, Branches					
West Branch	9.2	9.1	6.4	7.2	31.9
Coastal Branch (planned)	0.0	14.8	87.0	0.0	101.8
Subtotal	9.2	23.9	93.4	7.2	133.7
Total	**15.7**	**417.3**	**194.5**	**20.5**	**648.0**

tractors as they are incurred. Those contractors signed long-term water contracts with the Department in the 1960s to repay the cost of building and operating SWP facilities and to ensure that water can be delivered when needed.

Designed to be in effect for 75 years or until all general obligation bonds were repaid, the contracts provided for a combined maximum annual entitlement of 4,230,000 acre-feet of water. However, as a result of amendments in the 1980s, the contracts now extend until 2035; and the combined maximum annual entitlement totals 4,217,786 acre-feet.

For additional information see Chapter 22, "Analyzing State Water Project Financing"; Chapter 23, "Analyzing Capital Requirements and Funding"; and Chapter 24, "Forecasting Revenues, Expenses, and Future Costs of Water Service."

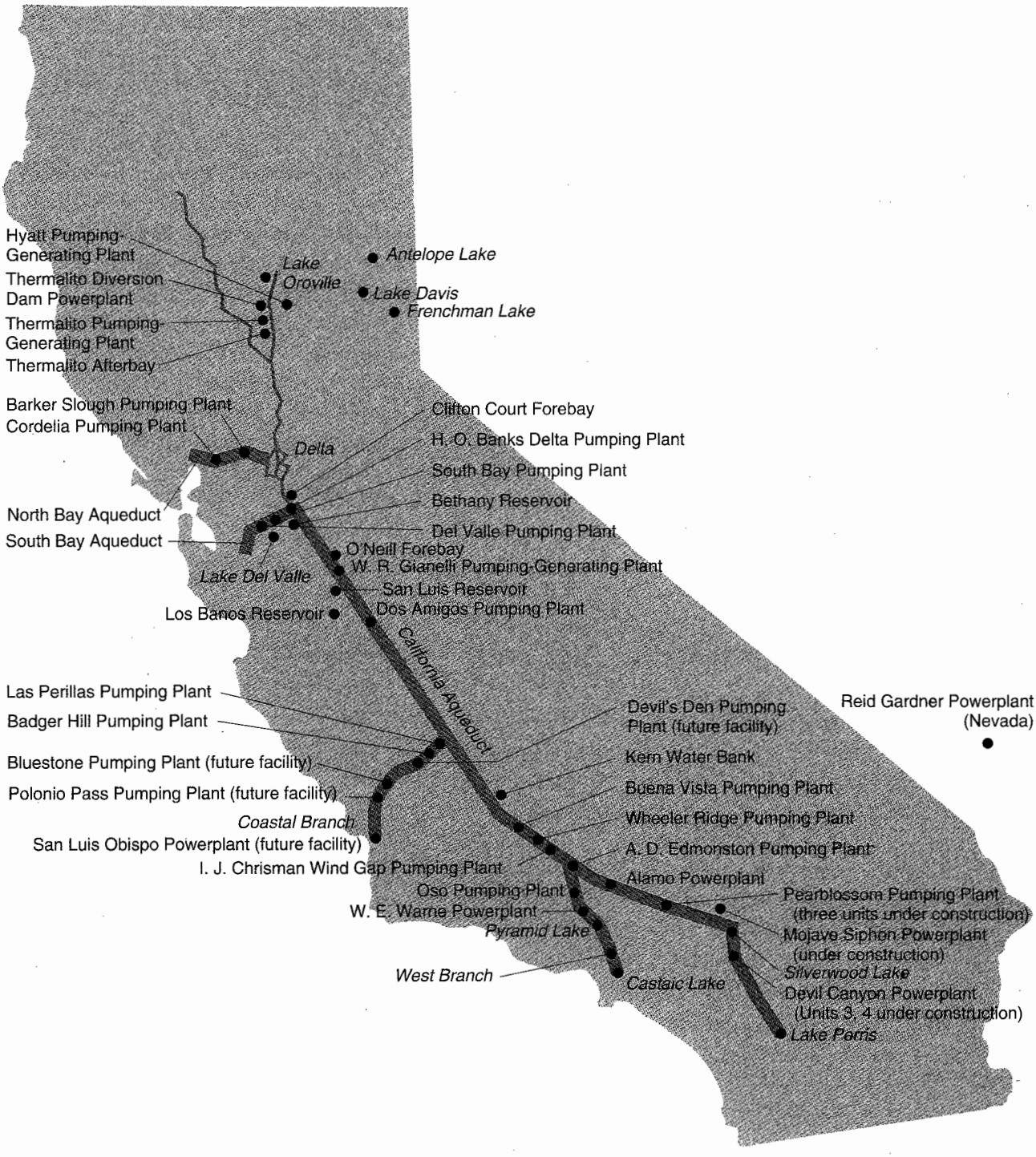


Fig. 1-1. Names and locations of primary water delivery facilities, current and projected

2. Water Deliveries

The water delivered by the Department of Water Resources through State Water Project (SWP) facilities originates in northern California and is delivered to contractors and other agencies throughout the state through a system of reservoirs, dams, power and pumping plants, canals and aqueducts.

The Department began delivering water through SWP facilities in 1962. Since that time, 62,518,182 acre-feet of water has been conveyed. See Table 2-1, "Total Amounts of Water Delivered, by Category, 1962 Through 1991," at the end of this chapter.

Information about the long-term contractors and other agencies to whom water is delivered as well as about the amounts and routes of deliveries follows.

Contracting Agencies

Originally, 32 agencies or districts signed long-term water delivery contracts with the Department. However, in 1965 the city of West Covina was annexed to the Metropolitan Water District of Southern California; and in 1981 Hacienda Water District was assigned to Tulare Lake Basin Water Storage District.

On January 1, 1992, Castaic Lake Water Agency assumed all rights and obligations granted to Devil's Den Water District according to its long-term supply contract.

As of June 30, 1992, 29 agencies or districts have long-term contracts with the Department. Those agencies or districts, listed according to geographical area, include:

Upper Feather River
City of Yuba City
County of Butte
Plumas County Flood Control and Water Conservation District

North Bay Area
Napa County Flood Control and Water Conservation District
Solano County Water Agency

South Bay Area
Alameda County Flood Control and Water Conservation District
Alameda County Water District
Santa Clara Valley Water District

San Joaquin Valley Area
County of Kings
Dudley Ridge Water District
Empire West Side Irrigation District
Kern County Water Agency
Oak Flat Water District
Tulare Lake Basin Water Storage District

Central Coastal Area
San Luis Obispo County Flood Control and Water Conservation District
Santa Barbara County Flood Control and Water Conservation District

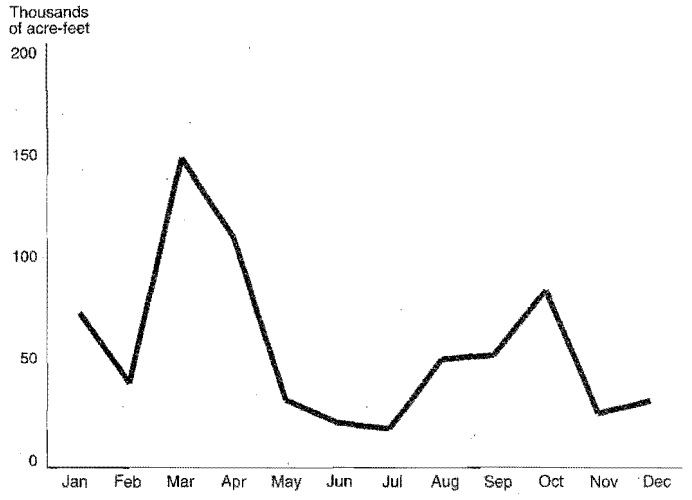


Fig. 2-3. Amount of water diverted through Sacramento-San Joaquin Delta each month during 1991

Southern California Area
Antelope Valley-East Kern Water Agency
Castaic Lake Water Agency
Coachella Valley Water District
Crestline-Lake Arrowhead Water Agency
Desert Water Agency
Littlerock Creek Irrigation District
Metropolitan Water District of Southern California
Mojave Water Agency
Palmdale Water District
San Bernardino Valley Municipal Water District
San Gabriel Valley Municipal Water District
San Gorgonio Pass Water Agency
Ventura County Flood Control District

Currently, SWP delivers entitlement and entitlement-related water to 27 of the 29 agencies or districts that have signed a contract for water delivery service with the Department.

One agency, County of Kings, did not take delivery of SWP water in 1991. Deliveries of entitlement water to San Luis Obispo County Flood Control and Water conservation District are planned to begin in 1996 and to San Gorgonio Pass water Agency in 2000. See Figure 2-1, "Names and locations of and first year of service to long-term contracting agencies, June 30, 1992," at the end of this chapter.

In 1991 SWP delivered a total of 549,116 acre-feet of entitlement and entitlement-related water to 27 long-term contractors and 3,521 acre-feet of unscheduled water to two contractors. In addition, 413,474 acre-feet of nonproject water was delivered through SWP facilities.

Also in 1991 the Department loaned a total of 124,097 acre-feet of SWP water to three contractors in the San Joaquin Valley Area for agricultural uses. By December 31, 1991, 103,002 acre-feet of the water had been repaid; by June 30, 1992, the balance of 21,095 acre-feet had been repaid. See Figure 2-2, "Amounts of water delivered and delivery locations, 1991," at the end of this chapter for information about water deliveries to specific areas.

Other Agencies

In 1991 approximately 686,800 acre-feet of water was delivered by SWP to 25 other agencies, including Central Valley Project (CVP) contractors and 14 agencies entitled to water as part of water rights agreements.[1]

SeeTable 6-2, "Total Amounts of Water Delivered in 1991, by Month." That table may be found in Chapter 6, "Delivering Water."

Delivery Routes

Water delivered by SWP originates in the Upper Feather River and is stored in Lake Oroville, the project's largest storage facility. From Lake Oroville the water flows through Oroville Dam,

[1] Information concerning water deliveries and related power generation and recreational activities, including information contained in chapters 2, 3, 6, 9, 15, 19, 20, and 21, is based on the 1991 calendar year. Except where indicated for information concerning water years, information contained in the remaining chapters is based on the 1991-92 fiscal year; that is, the period from July 1, 1991, to June 30, 1992

the tallest and one of the largest earthen dams in the United States, into the Feather River and then on to the Sacramento River.

From the Sacramento River, water flows to the Delta, where it is pumped for delivery through the North Bay and South Bay aqueducts and through the California Aqueduct.

Napa and Solano counties receive water through the North Bay Aqueduct; Alameda and Santa Clara counties, through the South Bay Aqueduct. Seven contractors in western San Joaquin Valley and 13 in southern California receive water through the 444 mile-long California Aqueduct. See Figure 2-2 at the end of this chapter.

Diversions from the Delta

Generally, water diverted from the Sacramento-San Joaquin Delta is delivered to SWP storage facilities and to contractors through Harvey O. Banks Delta Pumping Plant and Barker Slough Pumping Plant.

In 1991 SWP diverted approximately 1,696,000 acre-feet of water at Harvey O. Banks Delta Pumping Plant. See Figure 2-3, "Amount of water diverted through the Sacramento-San Joaquin Delta each month during 1991."

Water Conveyed South of San Luis Reservoir

Water is conveyed south of San Luis Reservoir, a joint-use facility shared between SWP and CVP, to two areas—the San Joaquin Valley and southern California.

San Joaquin Valley

Generally, water conveyed to the San Joaquin Valley is represented by the difference between the amount of water pumped over the Tehachapi Mountains and the amount conveyed past Kettleman City, which marks the end of the joint-use facilities shared with CVP.

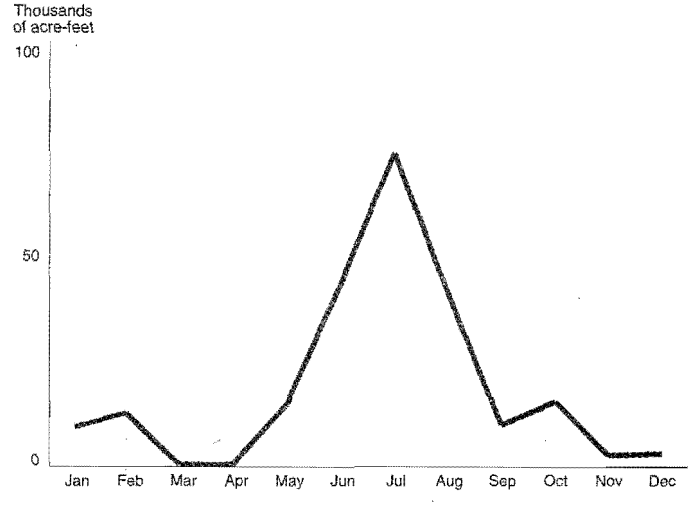


Fig. 2-4. Amount of water conveyed to San Joaquin Valley each month during 1991

In 1991 approximately 230,000 acre-feet of water was conveyed to the San Joaquin Valley. See Figure 2-4, "Amount of water conveyed to San Joaquin Valley each month during 1991."

Southern California

In 1991 approximately 801,000 acre-feet of water was delivered to southern California through the California Aqueduct and the A.D. Edmonston Pumping Plant. See Figure 2-5, "Amount of water

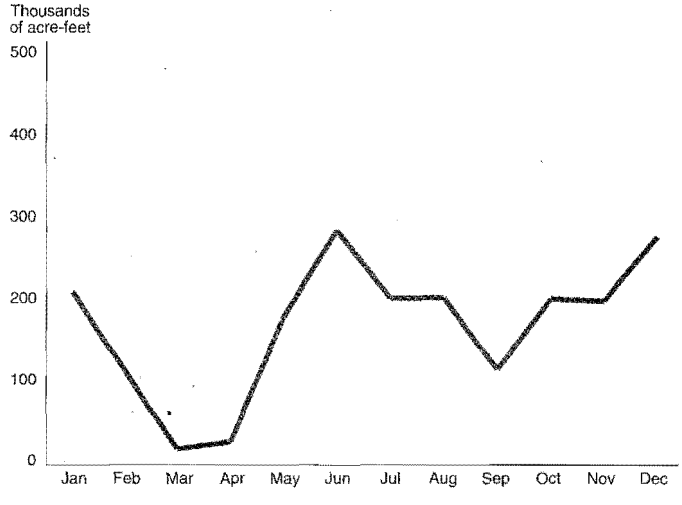


Fig. 2-5. Amount of water pumped each month at A.D. Edmonston Pumping Plant during 1991

pumped each month at A.D. Edmonston Pumping Plant during 1991."

Before water can be delivered to southern California, though, it first must cross the Tehachapi Mountains. Pumps at A.D. Edmonston Pumping Plant, which is located at the foot of the Tehachapi Mountains, raise water 1,926 feet up the mountians—the highest single lift of any pumping plant in the world.

Lifted to enter 8.5 miles of tunnels and siphons, water flows through the California Aqueduct into the Antelope Valley, where it is divided into the East Branch and West Branch. The East Branch carries water through the valley, into Silverwood Lake in the San Bernardino Mountains.

From Silverwood Lake, the water enters the San Bernardino Tunnel; drops 1,418 feet into Devil Canyon Powerplant; then flows to Lake Perris, SWP's southernmost reservoir.

Water in the West Branch flows through the William E. Warne Powerplant into Pyramid Lake in Los Angeles County. From there it flows through the Angeles Tunnel and Castaic Powerplant into Castaic Lake, terminus of the West Branch.

TABLE 2-1

Total Amounts of Water Delivered, by Category, 1962 Through 1991

	Water Delivered (Acre-feet)								
	Entitlement Water (a			Other Water Deliveries					
				Surplus and Unscheduled					
Year	Municipal and Industrial (1)	Agricultural (2)	Total (3)	Municipal and Industrial (4)	Agricultural (5)	Other Water (b (6)	Feather River Diversions (c (7)	Recreation Water (8)	Total Deliveries (9)
1962						18,289			18,289
1963						22,456			22,456
1964						32,507			32,507
1965						44,105			44,105
1966						67,928			67,928
1967	5,747	5,791	11,538	0	0	53,605			65,143
1968	46,472	125,237	171,709	10,000	111,534	14,777	866,926		1,174,946
1969	34,434	158,586	193,020	0	72,397	18,829	794,374		1,078,620
1970	47,996	185,997	233,993	0	133,024	38,080	759,759		1,164,856
1971	85,286	272,054	357,340	2,400	293,619	44,119	778,362	8	1,475,848
1972	181,066	430,735	611,801	22,205	401,759	66,638	817,398	6,489	1,926,290
1973	293,824	400,564	694,388	3,161	293,255	42,511	800,743	1,155	1,835,213
1974	418,521	455,556	874,077	4,753	412,923	46,224	911,613	2,118	2,251,708
1975	641,621	582,369	1,223,990	21,043	601,859	63,793	862,218	3,377	2,776,280
1976	818,588	554,414	1,373,002	32,488	547,622	115,217	946,440	1,745	3,016,514
1977	280,919	293,236	574,155	0	0	389,065	581,994	1,111	1,546,325
1978	742,385	710,314	1,452,699	3,566	13,348	121,225	786,517	1,691	2,379,046
1979	690,659	969,237	1,659,896	66,081	582,308	187,630	882,549	1,766	3,380,230
1980	730,545	799,204	1,529,749	19,722	384,835	46,459	875,045	2,131	2,857,941
1981	1,057,273	852,289	1,909,562	12,000	896,428	279,161	838,557	4,688	3,940,396
1982	928,721	821,303	1,750,024	0	215,873	154,882	776,330	4,646	2,901,755
1983	483,499	701,370	1,184,869	0	13,019	181,453	602,905	7,849	1,990,095
1984	725,925	862,694	1,588,619	3,663	259,254	381,024	832,332	7,040	3,071,932
1985	992,538	1,002,915	1,995,453	9,638	298,034	404,842	870,008	4,033	3,582,008
1986	998,611	997,025	1,995,636	2,595	34,025	193,606	791,737	3,865	3,021,464
1987	1,096,368	1,033,718	2,130,086	6,949	107,958	377,592	831,947	7,672	3,462,204
1988	1,316,820	1,068,302	2,385,122	0	0	516,481	794,834	4,889	3,701,326
1989	1,602,454	1,251,293	2,853,747	0	0	487,567	809,250	8,135	4,158,699
1990	1,876,072	706,079	2,582,151	0	90	457,316	851,247	9,262	3,900,066
1991	536,672	12,444	549,116	3,521	0	551,048	565,395	4,912	1,673,992
Total	**16,633,016**	**15,252,726**	**31,885,742**	**223,785**	**5,673,164**	**5,418,429**	**19,228,480**	**88,582**	**62,518,182**

a) Includes amounts of deliveries of carry-over entitlement water and advance entitlement water.
b) Includes amounts of SWP and non-SWP water conveyed for SWP and non-SWP water contractors.
c) Includes amounts of water diverted according to various water rights agreements.

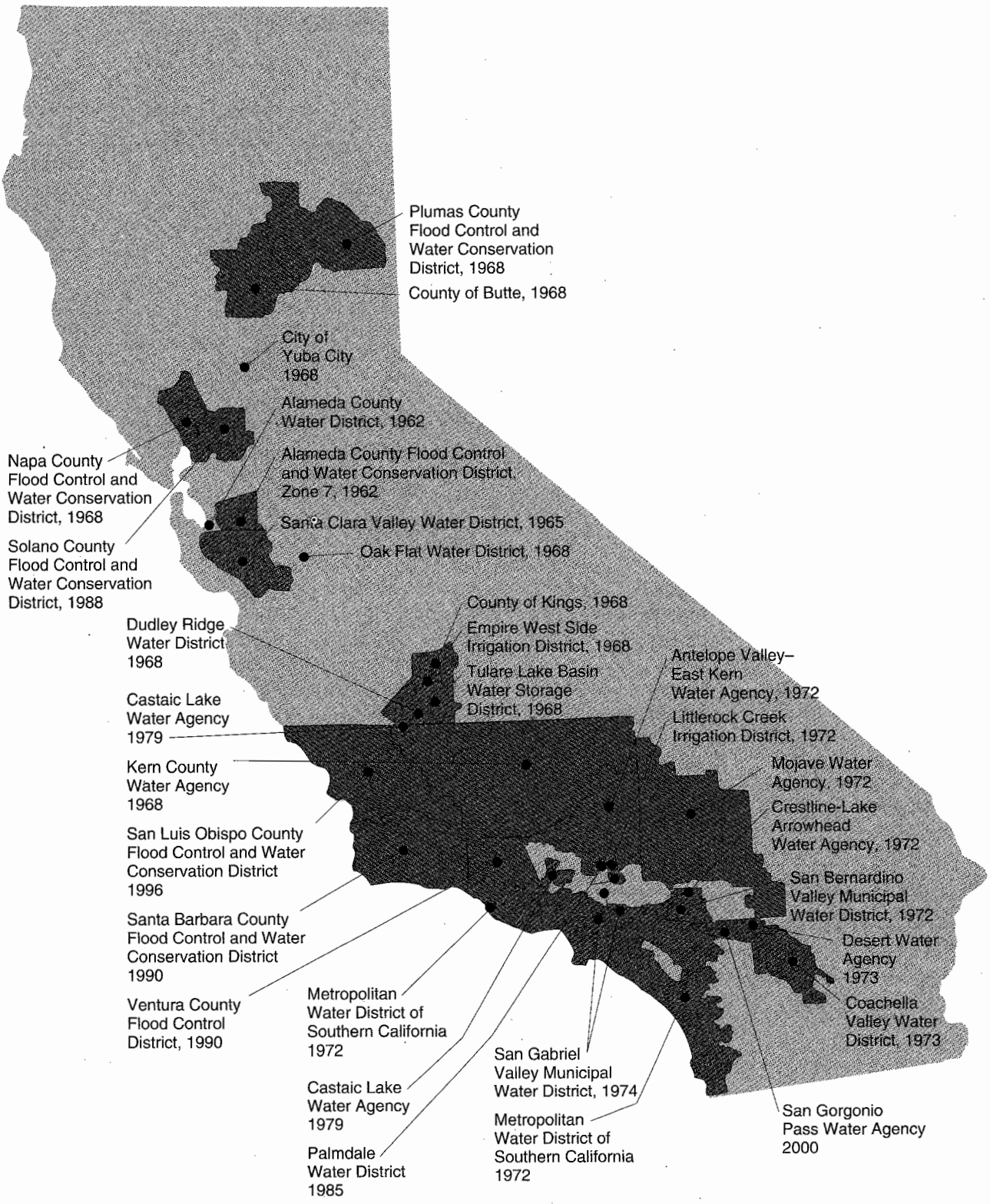


Fig. 2-1. Names and location of and first year of service to long-term contracting agencies, June 30, 1992

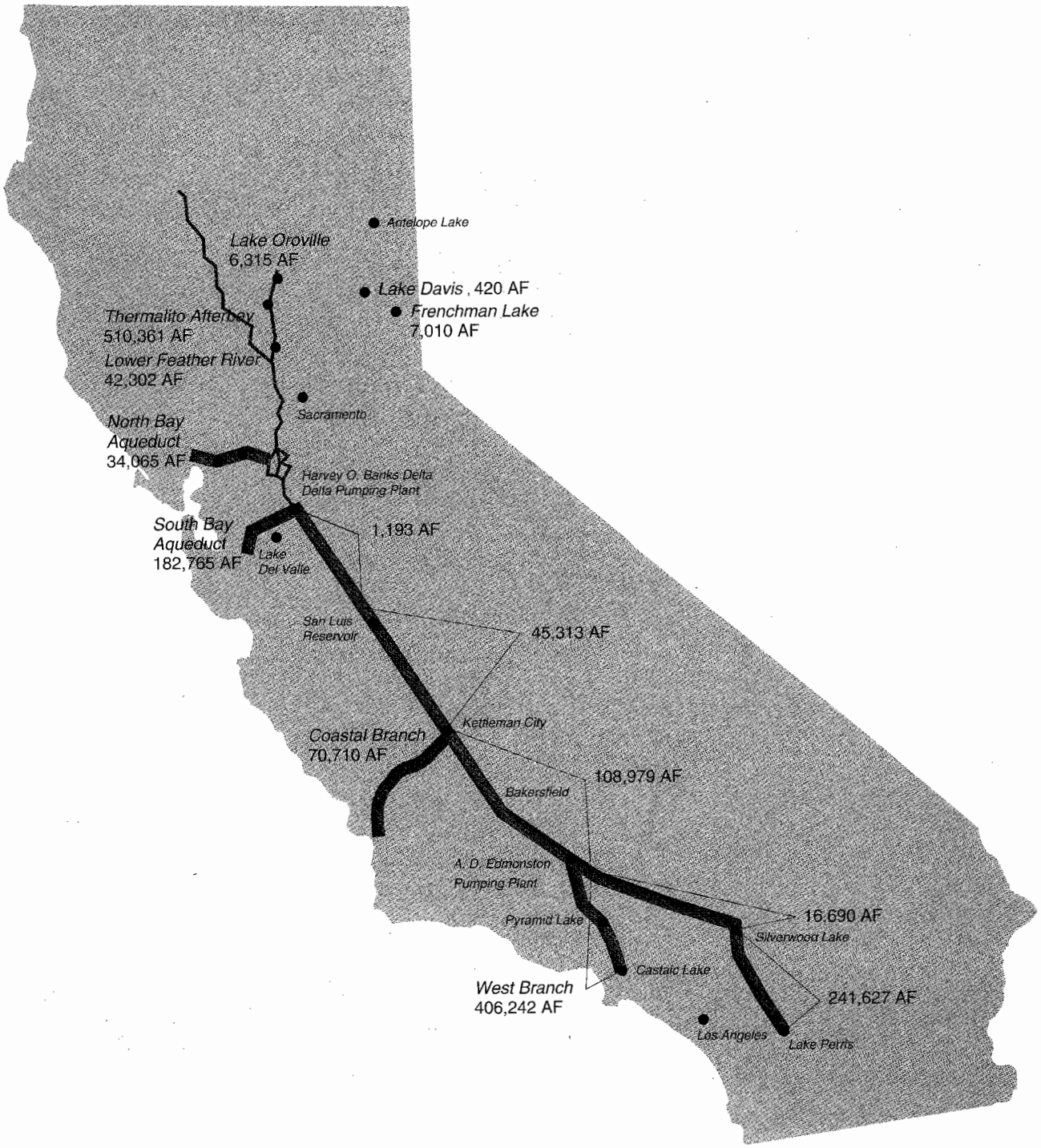


Fig. 2-2. Amounts of water delivered and delivery locations, 1991

3. Recreational Facilities

The State Water Project (SWP), managed by the Department of Water Resources, is a multipurpose project designed to provide many benefits to California residents.

In addition to providing water supply, flood control, and habitats for fish and wildlife, SWP provides extensive and varied recreational opportunities—tours, sight-seeing, and areas or sites that include facilities for fishing, hunting, camping, boating, water skiing, bicycling, and swimming.[1]

Information about SWP's recreational areas, sites, and facilities, including information about methods of financing, follows.

Recreational Areas

The State Water Project includes 36 recreational areas or sites, located throughout California; however, the majority of sites are located along the California Aqueduct. See Figure 3-1, "Locations of recreational areas," on the next page for the location of each area. Numbers in the figure correspond to the numbers in the following list:

1. Antelope Lake Recreation Area
2. Frenchman Lake Recreation Area
3. Lake Davis Recreation Area
4. Lake Oroville State Recreation Area
5. White Slough Wildlife Area
6. Bethany Reservoir
7. Lake Del Valle State Recreation Area
8. Bikeway from Bethany Reservoir to O'Neill Forebay (70 miles)
9. Grant Line Road Fishing Access Site
10. Niels Hansen Fishing Access Site
11. Orestimba Fishing Access Site
12. Walk-In Fishing (63 miles)
13. Cottonwood Road Fishing Access Site
14. San Luis Reservoir State Recreation Area
15. Canyon Road Fishing Access Site
16. Mervel Avenue Fishing Access Site
17. Fairfax Fishing Access Site
18. Access to Walk-in Fishing (208 miles of accessibility along the aqueduct)
19. Three Rocks Fishing Access Site
20. Huron Fishing Access Site
21. Avenal Cutoff Fishing Access Site
22. Kettleman City Fishing Access Site
23. Lost Hills Fishing Access Site
24. Buttonwillow Fishing Access Site
25. Pyramid Lake State Recreation Area
26. Castaic Lake State Recreation Area
27. Munz Ranch Road Fishing Access Site

[1]According to the Davis-Dolwig Act (1961, *Water Code* sections 11900-11925), the Department has overall responsibility to acquire land, plan recreation, and ensure that enhancement of fish and wildlife habitat is included as part of the State Water Project. In addition, Federal Energy Regulatory Commission License Number 2100 and License Number 2426 require the Department to plan for recreational and associated activities at licensed SWP facilities.



Fig. 3-1. Locations of recreational areas

28. Bikeway from Quail Lake to Silverwood Lake (107 miles, not all accessible)
29. 70th Street West Fishing Access Site
30. Walk-In Fishing (83 miles)
31. Avenue S Fishing Access Site
32. 77th Street East Fishing Access Site
33. Longview Road Fishing Access Site
34. Silverwood Lake State Recreation Area
35. Lake Perris State Recreation Area
36. San Jacinto Wildlife Area

Use of Facilities

Use of facilities at SWP's 36 recreational areas is measured in terms of visitors' days and recreation days. A visitor's day is counted when one person enters a visitors' center, stops at an overlook, or participates in a guided tour of SWP facilities.

A recreation day is counted when one person uses the recreational facilities for camping, boating, bicycling, swimming, or some other recreational activity for any part of a day.

Visitors' Days

In 1991, 467,300 visitors' days were recorded at SWP facilities, a 4.3 percent increase when compared with the 441,500 visitors' days recorded in 1990. See Table 3-1, "Total Number of Visitors' Days Accumulated in 1991, by Location."

Recreation Days

In 1991, 5,768,700 recreation days were recorded at SWP facilities as compared with 6,060,100 recreation days recorded in 1990. That decrease was due to three factors: (1) Recreational activities at some facilities were limited because of low water levels; (2) Frenchman Lake in the Oroville Field Division was closed most of the season due to chemical treatment of the lake by Department of Fish and Game; and (3) sections of the bikeway along the California Aqueduct were closed for repairs.

See Table 3-2, "Total Number of Recreation Days Accumulated in 1991, by Division and Facility."

Because of population, recreational facilities in southern California were used most often. The four largest SWP reservoirs in southern California, Pyramid Lake, Castaic Lake, Silverwood Lake, and Lake Perris, accounted for 59 percent of the total recreation days accumulated in 1991.

Since SWP first began delivering water in 1962, more than 116 million people have used SWP's recreational facilities.

Improvements to Facilities

Improvements were made at Lake Oroville, Pyramid Lake, Castaic Lake, and Silverwood Lake during 1991 to help meet recreational demands. Information about those improvements follows.

Lake Oroville

Rehabilitation of the boat ramp and extension were completed at the Lime Saddle launching area, and boat-boarding floats were provided at the spillway launch area and Thermalito Afterbay boat ramp.

Pyramid Lake

Construction on the Vista del Lago interchange on Interstate 5 was completed. The interchange provides access to the proposed Vista del Lago Visitors' Center and proposed recreational facilities on Liebre Peninsula. Those facilities should be completed by late 1992.

Also, at the Emigrant Landing area, six table and stove units were converted to be accessible for wheelchair users; and a wheelchair ramp was completed to provide access from the parking lot to the fishing area ramadas.

Castaic Lake

At Castaic Lake the launch ramp at the lagoon was upgraded; and a second aerator was installed in the afterbay.

Silverwood Lake

At Silverwood lake the Department of Boating and Waterways provided a boat-boarding float at the Cleghorn area.

Fish Plantings

The Department of Fish and Game continued its fish-planting activities at 11 SWP facilities and one facility owned by the Metropolitan Water District of Southern California (Lake Skinner) during 1991.

About 11 percent more catchable trout and fingerlings were planted in 1991 than were planted in 1990. See Table 3-3, "Total Number of Fish Planted in 1991," for listing of facilities and number of fish planted at each facility.

TABLE 3-1
Total Number of Visitors' Days Accumulated in 1991, by Location

Location	*Visitors' Days*
Project Operation Control Center, Sacramento	800
Oroville Field Division	183,100
Delta Field Division	2,100
San Luis Field Division	194,800
San Joaquin Field Division	5,800
Southern Field Division	80,700
Total	**467,300**

In addition, a total of 8,555,100 fish were reared in the ponds located at the Feather River Hatchery and Thermalito Bay Rearing Pond, down 42 percent from 1990. That figure includes a total of 8,051,300 Chinook salmon and 503,800 yearling steelhead trout.

Of the Chinook salmon reared, 988,000 were fingerlings; 5,568,100 were planted as advanced fingerlings; and 445,200, as yearlings.

Safety

Safe use of facilities at all 36 recreational areas is important to the Department. However, safety along the 23 sites located along the California Aqueduct, a 444-mile long open canal used to deliver water to cities, farms, and industries in the San Francisco Bay Area, San Joaquin Valley, and southern California, is particularly important. Recreationists use those sites for fishing and biking. In 1991, approximately 61,000 people fished and 2,000 people rode bicycles along the aqueduct.

Because the aqueduct is an open canal, water flowing in it is clearly visible and often appears to be shallow and calm. However, the calm surface is deceptive. The water is as much as 30 feet deep in some places and can start to flow rapidly without warning, creating turbulence and strong currents.

TABLE 3-2

Total Number of Recreation Days Accumulated in 1991, by Division and Facility

Division	*Number of Days*
Oroville Field Division	
Antelope Lake	67,000
Lake Oroville and Thermalito Forebay	595,800
Thermalito Afterbay and Oroville Wildlife Area	157,500
Lake Davis	271,000
Frenchman Lake	20,500
Total	**1,111,800**
Delta Field Division	
Lake Del Valle	524,400
Bethany Reservoir	30,000
White Slough Wildlife Area	10,500
Fishing Access Sites	
Niels Hansen	100
Cottonwood Road	100
California Aqueduct	
Walk-in fishing	25,900
Bikeway	1,300
Total	**592,300**
San Luis Field Division	
San Luis Reservoir	209,400
O'Neill Forebay	334,600
Los Banos Reservoir	80,200
Fishing Access Sites	
Canyon Road	100
Mervel Avenue	100
Three Rocks	100
Huron	200
Avenal Cutoff	500
California Aqueduct	
Walk-in fishing	11,200
Wildlife areas	18,500
Total	**654,900**
San Joaquin Field Division	
Fishing Access Sites	
Kettleman City	3,600
Lost Hills	3,200
Buttonwillow	3,500
California Aqueduct	
Walk-in fishing	6,200
Total	**16,500**
Southern Field Division	
Pyramid Lake	391,700
Silverwood Lake	676,200
Castaic Lake	1,083,900
Lake Perris	1,235,000
Fishing Access Sites	
77th Street East	500
Longview Road	100
California Aqueduct	
Walk-in fishing	5,400
Bikeway	400
Total	**3,393,200**
Grand Total	**5,768,700**

Suction currents created by inverted pipelines or siphons used to carry water under roadways, streams, and railroad crossings, are not visible from the surface. Also, the concrete sides of the aqueduct are steep and slippery, making it difficult if not impossible to climb out of the canal without help.

To minimize risks to recreationists, the Department has posted safety notices along the aqueduct; and in the aqueduct, installed float lines and safety ladders at regular intervals. Through various media, including brochures available at recreational facilities, the Department regularly notifies visitors of safety precautions to take while fishing or walking along the aqueduct.

Also, trainers from the Department's field divisions regularly visit schools, churches, and other community organizations to discuss safety precautions and dispense brochures, posters, and video cassettes.

Methods of Financing

Recreational facilities are financed according to legislation enacted in 1966, the Davis-Dolwig Act, with modifications in 1989, and Assembly Bill 12 (1966). Information about that legislation follows.

Davis-Dolwig Act

When the legislature passed the Davis-Dolwig Act in 1966, it established a procedure for reimbursing the Department for SWP funds spent to enhance habitats for fish and wildlife and provide recreational facilities.

In passing the act, the legislature reasoned that because enhancing habitats for fish and wildlife and providing recreational facilities benefit all Californians, costs should be borne by all Californians.

Consequently, the Davis-Dolwig Act included provisions for reimbursing the Department for expenses each year. The reim-

bursements would be included in the Department's budget as appropriations from the General Fund and used by the Department to pay for operations, maintenance, power, and replacement costs associated with operating SWP.

However, those appropriations have not been made since the 1981-82 fiscal year. Instead, according to legislation enacted in 1989 (Assembly Bill 1442), the amount owed to SWP by the state for fish and wildlife and recreation enhancement is offset against the amount SWP owes the California Water Fund for monies used to construct SWP facilities.

As of December 31, 1991, the state had spent $16,656,865 for operations and maintenance costs associated with SWP's recreational facilities.

Assembly Bill 12 (1966)

In 1966 the legislature passed Assembly Bill 12 (*Public Resources Code* Section 6217) to provide for a $5 million annual appropriation from tideland oil and gas revenues for joint costs of state water projects allocated to (1) recreation; (2) enhancement of fish and wildlife; and (3) purchases of land for recreational purposes.

Since the bill was passed, the Department has received approximately $90 million from the state's tideland oil and gas revenues for funding joint capital costs and purchasing land for recreational purposes. However, those appropriations have not been made since the 1985-86 fiscal year.

See Chapter 24, "Forecasting Revenues, Expenses, and Future Costs of Water Service," for additional information. In addition, *Appendix D, Costs of Recreation and Fish and Wildlife Enhancement,* to Bulletin 132 contains specific information about costs allocated to fish and wildlife enhancement and recreational development. This report to the legislature is published annually by the Department's State Water Project Analysis Office.

TABLE 3-3
Total Number of Fish Planted in 1991
(Thousands)

Location and Size	*Trout*				*Chinook*	
	Rainbow	*Eagle Lake*	*Brown*	*Brook*	*Salmon*	*Total*
Antelope Reservoir						
Catchable	16.2			4.7		20.9
Lake Davis						
Catchable	10.1	21.0				31.1
Frenchman Reservoir						
Catchable	35.5		1.7			37.2
Fingerling	135.5					135.5
Broadfish			0.1			0.1
Lake Oroville						
Catchable			33.8			33.8
Subcatchable					60.8	60.8
Fingerling					143.1	143.1
Thermalito Forebay						
Catchable	54.4					54.4
Lake Del Valle						
Catchable	59.4					59.4
Los Banos Reservoir						
Catchable	16.5					16.5
Pyramid Lake						
Catchable	42.5					42.5
Castaic Lake						
Catchable	207.2					207.2
Subcatchable	180.9					180.9
Fingerling	52.5					52.5
Castaic Lagoon						
Catchable	35.7					35.7
Silverwood Lake						
Catchable	93.8					93.8
Subcatchable	30.1					30.1
Fingerling	128.9					128.9
Lake Perris						
Catchable	41.6					41.6
Lake Skinner						
Catchable	51.6					51.6
Total	**1,192.4**	**21.0**	**35.6**	**4.7**	**203.9**	**1,457.6**

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4. Collecting and Storing Water

To meet its contractual obligations to State Water Project (SWP) long-term contractors, the Department of Water Resources is involved in activities ranging from monitoring precipitation and calculating runoff to coordinating the operation of a complex system of dams and reservoirs, including conservation and storage facilities and regulatory storage facilities.

This chapter includes information about those activities, based on the 1991 calendar year and the 1990-91 water year.

Precipitation and Runoff

In a typical year, California receives about 193 million acre-feet of water as rain or snow (an acre-foot consists of approximately 326,000 gallons, the amount normally used each year by a family of five).

Of the 193 million acre-feet received in California, about 107 million acre-feet—about 75 percent— falls in northern California. However, about 75 percent of the demand for it originates in highly populated southern California.

Most of that 107 million acre-feet—about 77 million—either soaks into the ground, is consumed by plants, or evaporates. The remaining 30 million acre-feet runs off into streams or rivers and eventually flows into the Sacramento-San Joaquin Delta, the primary source of SWP's water supply.

The Department carefully monitors and calculates precipitation and runoff according to the water year, the natural cycle in which rainfall and runoff occur. In California the water year extends from October 1 through September 30.

The data recorded throughout the water year is used by the Department to determine, in part, the amount of water that can be delivered, the amount to be retained in storage, depending on the water year classification, and the amount needed for delivery in the future.[1]

Precipitation

Precipitation is measured according to the 50-year average of amounts of rainfall recorded at each of the ten hydrological areas located throughout the state. Those areas include:

- North Coast
- San Francisco Bay
- Central Coast
- South Coast

[1]Water year classifications (*wet, above normal, below normal, dry*, and *critical*) are based on criteria included in Table II of *Water Right Decision 1485: Sacramento-San Joaquin Delta and Suisun Marsh*, issued by the State Water Resources Control Board in August, 1978. See Chapter 15, "Forecasting Water Delivery Capabilities," for information about the procedure used by the Department to estimate the amount of water needed for future deliveries.

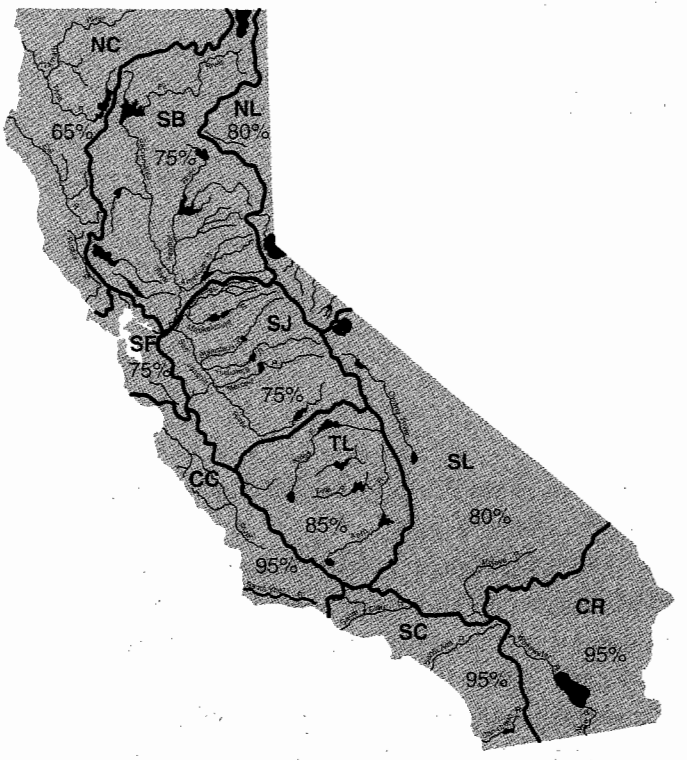


Fig. 4-1. Statewide precipitation by hydrological area, 1990-91 water year

- Sacramento River Basin
- San Joaquin
- Tulare Lake
- North Lahontan
- South Lahontan
- Colorado River

See Figure 4-1, "Statewide precipitation by hydrological area, 1990-91 water year."

During the 1990-91 water year, early winter precipitation was extremely low, only 35 percent of average as of March 1. March was a wet month, however, with about three times the average amount of precipitation. As a result, statewide precipitation increased to 75 percent of average by April 1, 1991.

During March the Sierra snowpack increased from 15 percent to 75 percent of average. Nevertheless, the heavy March precipitation was not enough to overcome the effects of successive dry years in many areas of the state, including the vital watersheds within the Sacramento River Basin.

As drought conditions continued for a fifth year, the 1990-91 water year ended with statewide precipitation at 75 percent of the average annual rainfall.

Runoff

During the water year, the Department calculates in acre-feet the amount of unimpaired runoff to streams in all hydrological areas in California.[2] Those amounts are reported in *Water Conditions in California* (Bulletin 120), published by the Department in February, March, April, and May of each water year.

In addition to including information about first-of-the-month conditions for the months of February through May, those bulletins include forecasts of unimpaired runoff for the remaining months of the water year.

All forecasts of unimpaired runoff are used by SWP when planning operations. However, the May 1 forecast of the amount of unimpaired runoff to streams in the Sacramento River Basin is particularly significant: SWP's operations are regulated according to the water year classification based on that forecast.

The water year classification is used to set water quality and flow requirements for the Delta according to standards included in Decision 1485. In cooperation with the Central Valley Project (CVP), SWP works to ensure those requirements are met by:

- Monitoring water quality at various points in the Delta
- Modifying releases and exports when necessary

As reported in the May 1, 1991, edition of *Water Conditions in California*, the amount of

[2]*Unimpaired runoff* is defined as the natural water production of a river basin, unaltered by upstream diversions, storage, or exports or imports of water to or from other watersheds.

unimpaired runoff to streams in the Sacramento River for the 1990-91 water year was forecast to be 8.7 million acre-feet or 46 percent of average.

Based on the 1990-91 water year forecast, the water year was classified as *critical* for fish and wildlife and for agricultural, municipal, and industrial uses. The actual amount of unimpaired run-off recorded for the 1990-91 water year was 8.4 million acre-feet or 44 percent of average.

Conservation and Storage Facilities

To collect and store water for deliveries in the future, SWP operates a complex system of 22 dams and reservoirs. Two reservoirs, Lake Oroville in northern California and San Luis in the central part of the state, are SWP's primary conservation facilities. The remaining 20 reservoirs are used primarily to regulate the conserved supply into water delivery patterns designed to fit local needs.

Information about those reservoirs, including amounts of unimpaired runoff to Lake Oroville and storage levels for SWP's conservation and other storage facilities, follows. The information is based on the 1990-91 water year.

Lake Oroville

Lake Oroville, the keystone of SWP, has a normal maximum operational capacity of 3,537,580 acre-feet. Runoff from the Feather River is collected and stored in the reservoir; and its release to the Sacramento-San Joaquin Delta is regulated through the Oroville Dam, Thermalito Diversion Dam, and Thermalito Afterbay. At full reservoir, Lake Oroville has a surface area of 15,805 acres and a shoreline of 167 miles. Located 85 miles north of Sacramento, Lake Oroville is one of SWP's most popular recreational facilities.

The total amount of unimpaired runoff to Lake Oroville for the 1990-91 water year totaled only about 2.1 million acre-feet, 47 percent of average. Because of the low storage at the begin-

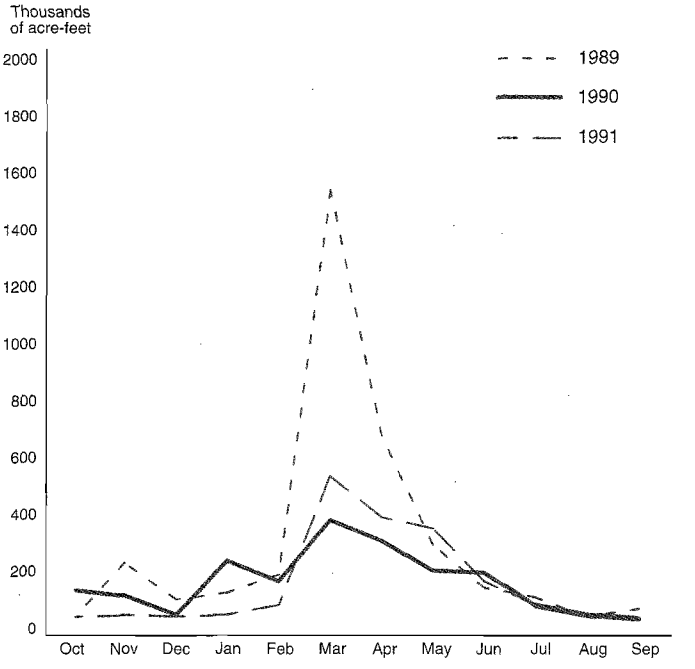


Fig. 4-2. Monthly amounts of unimpaired runoff into Lake Oroville from Feather River, 1989 through 1991 water years

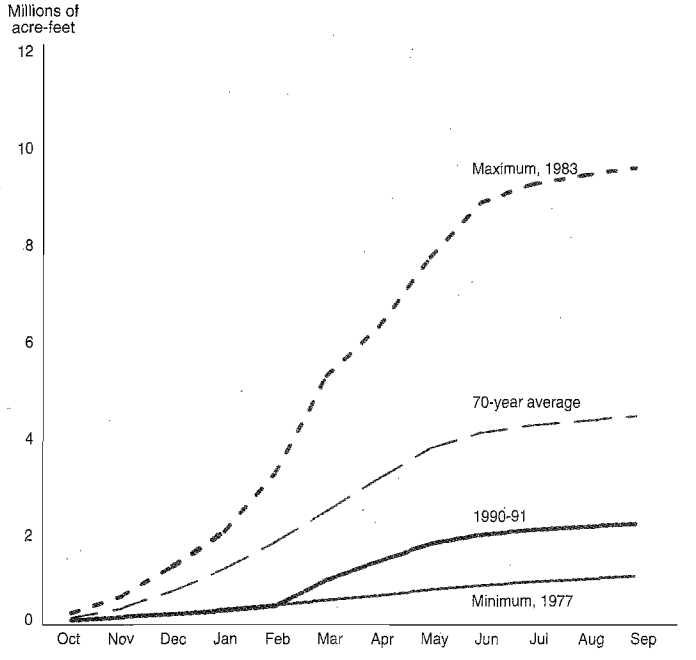


Fig. 4-3. Cumulative amount of unimpaired runoff into Lake Oroville from Feather River, 1991 water year

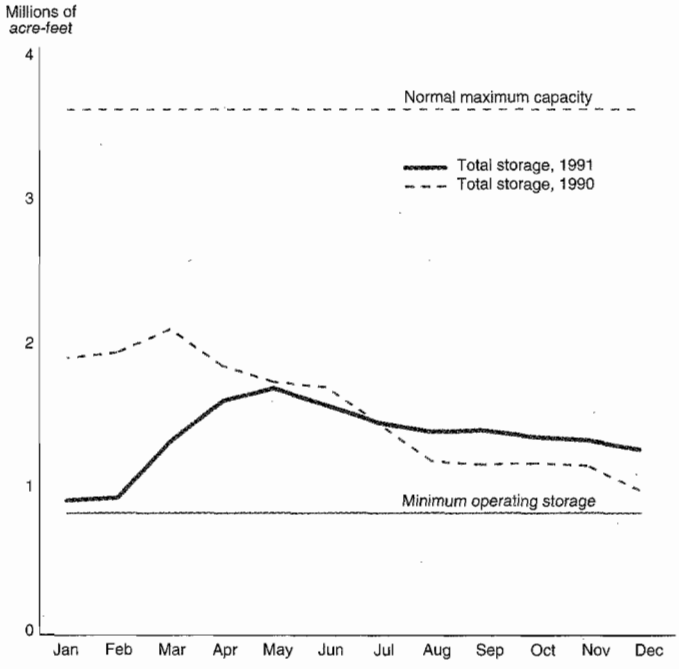


Fig. 4-4. End-of-month storage levels in Lake Oroville, 1990 and 1991 calendar years

ning of 1991 and the small amount of runoff, storage peaked at only 1,691,870 acre-feet (or 48 percent of normal maximum operating capacity) on June 2, 1991, and declined to 1,265,730 acre-feet (or 36 percent of normal maximum operating capacity) by December 31, 1991.

See Figure 4-2, "Monthly amounts of unimpaired runoff into Lake Oroville from Feather River, 1989 through 1991 water years," and Figure 4-3, "Cumulative amount of unimpaired runoff into Lake Oroville from Feather River, 1991 water year."

In years of normal operations, Lake Oroville is drawn down prior to the flood season to create the storage capacity necessary to prevent flooding downstream. Because of the ongoing drought, however, storage levels remained far below any draw down requirements for flood control during 1991.

Specifically, storage during January through July 1991 remained below levels for the same periods in 1990. However, because Oroville was used to store water purchased through the Drought Water Bank, storage for the last half of 1991 remained above storage for the same period in 1990. See Figure 4-4, "End-of-month storage levels in Lake Oroville, 1990 and 1991 calendar years." (Additional information about the Drought Water Bank may be found in Chapter 16, "Augmenting the Water Supply."

San Luis Reservoir

San Luis Reservoir, located about 12 miles west of the city of Los Banos in the eastern foothills of the Diablo Mountain Range, is operated jointly with the U.S. Bureau of Reclamation according to operating procedures finalized in June 1981.

With a normal operating capacity of 2,027,840 acre-feet, San Luis Reservoir is the largest off-stream reservoir in the United States (an off-stream reservoir is filled with water pumped from a source other than its natural watershed).

San Luis was designed to store surplus water pumped from the Sacramento-San Joaquin Delta through the California Aqueduct and the Delta-Mendota Canal during periods of high runoff. Later in the year, the stored water is released for distribution to state and federal service areas. The State Water Project's share of San Luis's capacity is 1,062,000 acre-feet.

At the beginning of 1991, San Luis Reservoir contained 24 percent of its normal maximum operating capacity; and SWP's share was only 5,555 acre-feet.

By the end of April, storage in San Luis reached 1,542,231 acre-feet (76 percent of normal maximum operating capacity), its maximum for 1991. The State Water Project's share was 593,428 acre-feet. See Figure 4-5, "End-of-month storage levels in San Luis Reservoir, 1990 and 1991 calendar years."

Regulatory Storage Facilities

Twenty reservoirs are used by SWP for regulatory and emergency storage. Of those 20 the five largest are Lake Del Valle, located in Alameda County; and Pyramid Lake, Castaic Lake, Silverwood Lake, and Lake Perris, located in southern California. In addition, those reservoirs are extensively used for recreational activities.

Lake Del Valle is located approximately four miles from the city of Livermore. The four southern reservoirs, Pyramid Lake, Castaic Lake, Silverwood Lake, and Lake Perris, are located near the metropolitan areas of southern California, where water supplies are primarily imported.

Lake Del Valle

Lake Del Valle, located off the South Bay Aqueduct, is used primarily to store water used in Santa Clara and Alameda counties. At the beginning of 1991, Lake Del Valle held 29,527 acre-feet of water, 74 percent of normal maximum operating capacity.

By May 21, storage was 40,790 acre-feet or 100 percent of normal maximum operating capacity to provide for recreational activities and to serve as a buffer during the summer months when the demand for water is high.

At the end of 1991, storage in Lake Del Valle had dropped to 24,980 acre-feet, 62 percent of normal maximum operating capacity.

Southern Reservoirs

During normal operating conditions, the Department maintains its four southern reservoirs, Pyramid, Castaic, and Silverwood lakes and Lake Perris, at or near full operating capacity to ensure uninterrupted deliveries of water to southern California contractors.

At the beginning of 1990, those reservoirs held 77 percent of their combined normal maximum operating capacity. At the end of 1991, they held 635,732 acre-feet, 92 percent of normal maximum operating capacity.

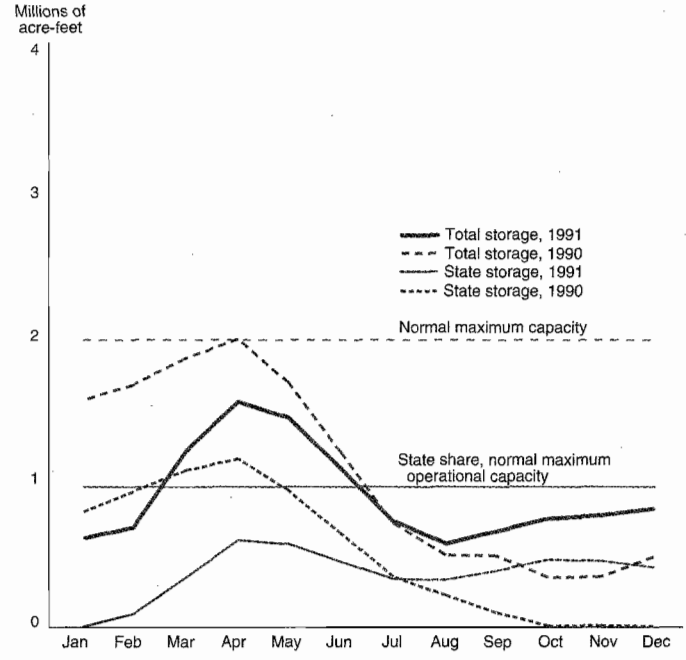


Fig. 4-5. End-of-month storage levels in San Luis Reservoir, 1990 and 1991 calendar years

5. Negotiating Contracts and Agreements

The long-term water service contracts between the Department of Water Resources and local agencies for water service from the State Water Project (SWP) are basic to its construction and operation. In return for water service, the agencies contractually agree to repay the major share of SWP's capital and operating costs.

This chapter includes information about SWP's long-term service contracts as well as about amendments to them. In addition, information about agreements with other agencies and amendments to those agreements is included as well as information about the Department's contracts concerning claims to rights of usable water in the Delta.

Long-Term Contracts

The first water service contract was signed with the Metropolitan Water District of Southern California on November 4, 1960. The contract was negotiated by the Department and the district according to terms contained in *Contracting Principles for Water Service Contracts*. Those terms, some of the most rigid ever devised for a water project, were announced by Governor Edmund G. Brown on January 20, 1960.

Metropolitan Water District's contract served as the prototype for all water contracts; and by the end of 1967, 31 agencies had contracted for water. Today, SWP has long-term water service contracts with 29 agencies (see Chapter 2, "Water Deliveries,"for a listing of long-term water supply contractors).

Terms

Basically, all water contracts signed in the 1960s included an estimate of the date water would first be delivered as well as a schedule of the amount of water the agency could expect to be delivered annually (annual entitlement). Those amounts were designed to increase gradually until the maximum amount of annual entitlement was reached.

The contracts were designed to be valid for 75 years or until all bonds sold as part of the California Water Resources Development Bond Act were repaid, whichever period was longer. (See Chapter 22 for additional information about the Water Resources Development Bond Act.) The total combined annual entitlement for all water contracting agencies was limited to 4,230,000 acre-feet of water.

As a result of amendments to contracts in the 1980s, the terms of the contracts are now defined to extend until 2035 and the combined annual entitlements total 4,217,786 acre-feet of water.

Amendments

Since the original contracts were signed by the Department and local agencies, many have

TABLE 5-1
Amendments to Water Supply Contracts, by Category

Category (a	*Description*
1. Revision of annual entitlements	Amendments to Table A, "Annual Entitlements," of water supply contracts resulting in changes in amounts of entitlement water
2. Enlargement of East Branch of California Aqueduct	Amendments for allocating (1) costs of the enlargement of the East Branch of the California Aqueduct to contractors in southern California; and (2) benefits of increased conveyance capacity
3. Purchase of excess capacity	Amendments to allow contractors to purchase extra water service capacity from the California Aqueduct
4. Provisions to carry over entitlement water [Article 12(e)]	Amendments to allow contractors to carry over entitlement water from one year for delivery in the next year, providing certain conditions are met
5. Surplus water provisions	Amendments to allow contractors to take delivery of surplus water; that is, water in excess of that required to meet all demands for entitlement water—water to be stored in reservoirs or to meet other SWP requirements, for example
6. Unscheduled water provisions	Amendments to allow contractors to take delivery of unscheduled water; that is water available for a very short period of time when excess water and SWP pumping capacity are available in the Delta
7. Wet-weather provisions	Amendments to allow contractors to take, under certain conditions, delivery of entitlement water in subsequent years if favorable local weather conditions result in adequate local water supplies

a) See Table 5-2, "Amendments to Water Supply Contracts, June 30, 1992, by Category and Contracting Agency," for names of contractors to which categories apply.

been amended to incorporate mutually desired changes. The amendments may be categorized as follows:

1. Revision of annual entitlements
2. Enlargement of East Branch of California Aqueduct
3. Purchase of excess capacity
4. Provision to carry over entitlement water
5. Surplus water provisions
6. Unscheduled water provisions
7. Wet-weather provisions

See Table 5-1, "Amendments to Water Supply Contracts, by Category," for a list and description of categories of amendments and Table 5-2, "Amendments to Water Supply Contracts, June 30, 1992, by Category and Contracting Agency," for a listing of contractors to which those categories apply.

From July 1, 1991 to June 30, 1992, three amendments were signed—two to Napa County Flood Control and Water Conservation District's contract and one to the long-term contract with Ventura County Flood Control District. Information about those amendments follows.

Napa County Flood Control and Water Conservation District

Two amendments, numbers 16 and 17, to the long-term water supply contract with Napa County Flood Control and Water Conservation District were signed. Amendment number 16 was written to allow Napa County Flood Control and Water Conservation District to receive delivery of surplus or unscheduled water when the Department declares it to be available.

Amendment number 17 was written to provide for an increase of the District's entitlement water for 1990 by 195 acre-feet because of excess deliveries during that year.

Ventura County Flood Control District

Amendment number 11 was added to Ventura County Flood Control District's water supply contract. That amendment was written to provide for carrying over a portion of annual entitlement water.

According to provisions in the amendment, a portion of water originally scheduled for delivery during October, November, and December of one year could be carried over for delivery during the first three months of the following year.

The delayed delivery of entitlement water, applicable if certain conditions are met, is allowed by the Department to ensure a more efficient and beneficial use of water. Delayed deliveries are subject to an annual agreement.

Short-Term Agreements and Amendments

From June 30, 1991, to June 30, 1992, the Department entered into various agreements with contractors and other agencies. Those agreements involved transactions such as using the Cross-Valley Canal, extracting groundwater, and delivering unscheduled water, among others.

During the same period, the Department also amended other agreements, including those involving conserving flood water and extending the date of turn-in agreements.

Information about new agreements and amendments to agreements previously signed follow. The information is arranged alphabetically according to subject.

Agreements

Information about agreements with Kern County Water Agency and Cross-Valley Canal owners (use of Cross Valley Canal); La Hacienda, Inc., for extracting groundwater; turn-in agreements; Napa County Flood Control and Water Conservation District and Solano County Water Agency (delivery of unscheduled water); and Kern County Water Agency (water payback agreement) follows.

Cross-Valley Canal Use

On February 21, 1991, the Department signed an agreement with Kern County Water Agency and owners of the Cross Valley Canal to provide for the Department's long-term use of the canal to transport groundwater purchased from La Hacienda, Inc., a local Kern County corporation.

TABLE 5-2
Amendments to Water Supply Contracts June 30, 1992, by Category and Contracting Agency

	State Water Project Amendment Category (a						
Contracting Agency	*1*	*2*	*3*	*4*	*5*	*6*	*7*
Upper Feather River Area							
City of Yuba City	•				•		
County of Butte	•			•	•		
Plumas County Flood Control and Water Conservation District				•			
North Bay Area							
Napa County Flood Control and Water Conservation District	•			•	•	•	
Solano County Water Agency	•		•	•	•	•	
South Bay Area							
Alameda County Flood Control and Water Conservation District, Zone 7	•			•	•		•
Alameda County Water District				•	•	•	•
Santa Clara Valley Water District	•			•	•	•	•
San Joaquin Valley Area							
County of Kings				•	•		•
Devil's Den Water Disrict	•			•	•	•	
Dudley Ridge Water District	•			•	•	•	
Empire West Side Irrigation District	•			•	•	•	
Kern County Water Agency	•				•	•	
Oak Flat Water District				•	•	•	•
Tulare Lake Basin Water Storage District	•			•	•	•	•
Central Coastal Area							
San Luis Obispo County Flood Control and Water Conservation District				•	•		
Santa Barbara County Flood Control and Water Conservation District	•			•	•		
Southern California Area							
Antelope Valley-East Kern Water Agency	•	•	•	•	•		
Castaic Lake Water Agency	•			•	•		
Coachella Valley Water District	•	•		•	•		
Crestline-Lake Arrowhead Water Agency	•			•	•		
Desert Water Agency	•	•		•	•	•	
Littlerock Creek Irrigation District	•			•	•		
Metropolitan Water District of Southern California	•	•	•	•	•	•	
Mojave Water Agency	•	•		•	•		
Palmdale Water District	•	•		•	•		
San Bernardino Valley Municipal Water District	•	•		•	•		
San Gabriel Valley Municipal Water District	•		•	•	•		
San Gorgonio Pass Water Agency				•	•		
Ventura County Flood Control District				•	•		

a) Categories correspond to those listed in Table 5-1, "Amendments to Water Supply Contracts, by Category."

The water was diverted during past high-flow years on the Kern River and recharged in the Kern County groundwater basin.

Groundwater Extraction

In 1990 the Department purchased 98,005 acre-feet of groundwater from La Hacienda, Inc. The water was located in the Kern County water basin and could be extracted according to terms of an operating agreement between the Department and the Kern County Water Agency, using facilities to be constructed by the Department on property used for the Kern Fan Element of the Kern Water Bank.

According to the operating agreement, water could only be extracted from La Hacienda during years in which (1) SWP could not deliver full entitlement requests to long-term contractors; and (2) the Department projected storage levels in Lake Oroville to drop below the minimum power pool. The operating agreement also limited the maximum amount to be extracted in any one year to 50,000 acre-feet.

After purchasing the water, the Department rehabilitated existing and constructed new facilities, which will be integrated into the first stage of the Kern Water Bank. In April 1992 the Department extracted approximately 1,000 acre-feet of water from the groundwater basin. The water was used to increase SWP's water supplies.

If the Department had wished to extract more than 1,000 acre-feet, it would have needed to negotiate the extraction with Kern County Water Agency and other users of water in the groundwater basin because up-dated projections for Lake Oroville indicated a drop in water levels to only 1.25 million acre-feet, a level not below the minimum power pool.

Turn-in Agreements

In 1991, because of the continuing drought, the Department was not able to deliver entitlement water to agricultural users and could only deliver 30 percent of entitlement water to municipal and industrial users. During 1992, the Department was able to deliver 45 percent of requested entitlement water to all agricultural and municipal and industrial water users.

To help contractors in the San Joaquin Valley and southern California in 1991, the Department signed turn-in agreements with the following agencies: Antelope Valley-East Kern Water Agency; Dudley Ridge Water District; Kern County Water Agency; Kern County Water Agency and Berrenda Mesa Water District; and Kern County Water Agency, Buena Vista Water Storage District, and Henry Miller Water District,

Also, Kern County Water Agency and West Kern Water District; Kern County Water Agency and Wheeler Ridge-Maricopa Water Storage District; Oak Flat Water District; and San Bernardino Valley Municipal Water District.

In May 1992 the Department signed a turn-in agreement with Westlands Water District. The agreement was retroactive to September 1991.

As a result of the agreements, those contractors, who were required to construct temporary turn-in facilities, were able to pump local groundwater into the California Aqueduct for immediate use and for storage in the San Luis Reservoir for delivery later in the year.

To ensure water quality, each well from which water was recharged into the California Aqueduct was tested and the water quality approved before the water was pumped into the aqueduct.

Unscheduled Water Deliveries

According to provisions of the surplus and unscheduled water amendment signed in 1991 with Solano County Water Agency (see Chapter 4, page 32, of Bulletin 132-91) and Napa County Flood Control and Water Conservation District, scheduling of water will be done according to an annual agreement. Those agencies also signed

annual agreements for delivery of unscheduled water in 1992.

Water Payback Agreement

According to provisions of letter agreements, in 1991 the Department provided water to Kern County Water Agency, Dudley Ridge Water District, and Oak Flat Water District in advance of the districts and agency introducing pumped groundwater into the California Aqueduct for use within their service area. The water was repaid to the Department in 1991 and 1992 with local groundwater.

Amendments

This section includes information about amendments to agreements previously signed by the Department. Those amendments involve modifications to a 1978 agreement designed to conserve flood waters originating in the watershed above Castaic Dam and turn-in agreements.

Conservation of Flood Water

An October 24, 1978, agreement to conserve flood waters originating in the watershed above Castaic Dam was modified to provide for storing runoff resulting from heavy precipitation in March 1991 beyond the May 1, 1992, deadline provided for in the original agreement. Approximately 4,700 acre-feet of water was stored.

The water was used by Castaic Lake Water Agency and the downstream users as well as to maintain water levels in Castaic Lagoon. All flood water stored according to this amendment was released to downstream users by December 31, 1991, the date the amendment expired.

Turn-in Agreements

Of the nine turn-in agreements carried out during 1991, seven were amended to extend the termination date into 1992. The general terms and conditions were not changed.

Names of agencies who extended contracts into 1992 follow. All contracts terminated on December 31, 1992, except for the contracts with Antelope Valley-East Kern Water Agency and Oak Flat Water District, which terminated on March 31, 1992.

Antelope Valley-East Kern Water Agency,
Kern County Water Agency (Cross Valley Canal)
Kern County Water Agency, Buena Vista Water Storage District, and Henry Miller Water District
Kern County Water Agency/West Kern Water District
Kern County Water Agency/Wheeler Ridge Water Storage District,
Oak Flat Water District
San Bernardino Valley Municipal Water District

Water Rights Management

This section includes information about water rights management contracts negotiated with Delta agricultural water users, including South Delta Water Agency and western Delta industrial and municipal water users.

Those agencies claim rights to usable water in the Delta, and contracts with those agencies help SWP to resolve those water rights issues.

Delta Agricultural Water Users

The Department has successfully negotiated contracts with various Delta agricultural agencies to help SWP meet necessary water level, circulation, and quality standards throughout each agency's area. Information about those contracts follows.

Agency Contracts

In 1974 the Delta Water Agency was replaced by six Delta agricultural water agencies, including the North Delta Water Agency, South

Delta Water Agency, Central Delta Water Agency, and East Contra Costa Irrigation District. Of those agencies, two—the North Delta Water Agency and East Contra Costa Irrigation District—signed contracts with the Department in 1981.

In September 1990 the Department completed negotiations for a long-term contract with South Delta Water Agency (SDWA) and the U.S. Bureau of Reclamation (USBR). The three agencies are now working to obtain approvals from control agencies to sign the contract, which includes provisions to address SDWA's concerns, including those about the quality of water entering SDWA through the San Joaquin River system. Information about the long-term contract with SDWA and USBR follows.[1]

Contract Provisions

According to provisions of the SDWA contract, parties agree to proceed with the design, construction, and operation of certain barrier facilities in the channels of SDWA, thus resolving those portions of the lawsuit relating to the alleged effects of export pumping by SWP or CVP or both.

Barrier Facilities

At this time the Department is conducting a project designed to test barriers in SDWA's channels. The test involves:

- Improving alternative barrier designs and reviewing alternative timing patterns for the barriers
- Monitoring fish and vegetation
- Evaluating and reviewing computer-modeled calibration
- Developing comprehensive environmental information
- Defining the potential effects on vegetation and fisheries
- Reducing or eliminating some adverse water levels
- Improving circulation

The biological information gathered during the implementation of this project will be used as a guide for finding solutions to fishery resources and water use problems in the south Delta.

Interim Releases

In addition, the contract includes amounts of certain interim releases to be made from New Melones Reservoir and other related actions to be taken by USBR as a temporary solution to that portion of the litigation relating to San Joaquin River flows and water quality as measured at Vernalis.

Additional Amendments

The contract also includes the framework for USBR and SDWA to use in negotiating an amendment for providing a permanent settlement to the remaining issues in dispute. Those issues concern the quantity of and quality of water and salt entering SDWA from the south through the San Joaquin River system.

Western Delta Industrial Water Users

Industries near Antioch and Pittsburg use offshore water for processing. When offshore water quality falls below the industries' requirements, a substitute supply is provided through the Contra Costa Canal. According to terms of contracts signed in 1987 and 1991, the Department pays for providing that water. Information about those contracts follows.

Payment for Suitable Water

According to terms of a water entitlement contract executed in 1987, the Department makes

[1]The Department also periodically conducts informational meetings with the Central Delta Water Agency and is requesting to begin negotiations on contracts designed to meet the needs of that agency.

payments to an operator of a mill located in the western Delta, Fibreboard Corporation and to its successors (now Gaylord Container Corporation) in water years that do not include a sufficient number of days in which water is deemed suitable for offshore use.

When the number of days in which water is deemed suitable for offshore use is less than the days to which Gaylord is entitled, the Department compensates Gaylord for added costs incurred by purchasing a substitute water supply and treating water needed to operate the mill. According to the provisions, payments were due in water years 1986-87, 1987-88, 1988-89, 1989-1990, and 1990-1991.

On May 6, 1992, the Department negotiated a second agreement with Gaylord Corporation regarding another mill it owns downstream of the mill it purchased from Fibreboard. The provisions of that agreement are similar to those contained in the 1987 water entitlement agreement.

Determination of Payments

The contracts contain a chart used by the Department to determine the number of days for which Gaylord Container Corporation should be paid. The determination is based on the relationship between the Sacramento River Index and the number of days the corporation is entitled to suitable water quality.

The formula on which the payment is based is the same in both contracts except for one factor relating to the method of obtaining water from the Contra Costa Canal. (The second mill obtains water by gravity flow; the first, by pumps.)

Western Delta Municipal Water Users

To compensate the Contra Costa Water District (CCWD) and the city of Antioch for purchasing water of usable quality when water of suitable quality is not available in the Antioch-Pittsburg area, the Department signed a contract with those agencies in 1967 (CCWD) and 1968 (city of Antioch). Information about those agreements follows.

Provisions for Payments

In 1992 the Department made compensation payments for the 1991 water year to CCWD for 3,679 acre-feet of water of usable quality ($18,762) and to Antioch for 1,404 acre-feet of usable water ($442,514).

According to terms of the contracts, the Department compensates each agency for additional costs of purchasing a substitute water supply from the Contra Costa Canal to replace offshore water supplies of usable quality lost because of SWP's operations. Credits for the number of days of above-average offshore water supplies of usable quality accrue to offset the number of below-average days in future years.

Basis for Payments

During the 1990-91 water year, water of usable quality was available to CCWD for 11 days of the water year; its standard is 142 days. For Antioch, usable water was available for 23 days; its standard is 208 days.

Because the 1989-90 water year was deficient in water of usable quality, the actual deficient number of days in the 1990-91 water year (131 for CCWD and 185 for Antioch) were not offset by any accumulated credits.

6. Delivering Water

Water is delivered by the State Water Project (SWP) for a variety of beneficial uses. In addition to delivering entitlement water to long-term water supply contractors, SWP:

- Transports water to other public agencies through exchanges or purchases
- Provides water for wildlife and recreational uses
- Conveys water to meet local water rights agreements

In 1991 a total of 1,673,992 acre-feet of water was conveyed to 27 long-term contractors and 25 other agencies. That amount includes the following deliveries:

Entitlement and entitlement-related water: 549,116 acre-feet to long-term SWP contractors.[1]

Nonentitlement water: 1,124,876 acre-feet classified as surplus or recreational water and water to satisfy agreements made with other agencies, including the U.S. Bureau of Reclamation (USBR) for the Central Valley Project (CVP).[2]

[1]Entitlement water is defined as the amount of water long-term contractors may request each year as part of Article 12(a), "Procedure for Determining Water Delivery Schedule," of their water supply contract.

[2]Surplus water delivered in 1991 consisted of unscheduled water; that is, water available only for short time periods when excess water and SWP pumping capacity were available in the Delta.

Specific information about water deliveries made to long-term contractors and other agencies during 1991 and from 1962 through 1991 has been organized into the following three sections, each with a corresponding table located at the end of this chapter:

1. Total amounts of water delivered and credits granted to long-term contractors in 1991 (Table 6-1, "Total Amounts of Water Delivered and Credits Granted to Long-Term Contractors in 1991, by Service Area")
2. Total amounts of water delivered in 1991, by month (Table 6-2, "Total Amounts of Water Delivered in 1991, by Month")
3. Total amounts of entitlements and water conveyed from 1962 through 1991 (Table 6-3, "Total Amounts of Annual Entitlements and Water Conveyed, by Type, 1962 Through 1991)

Information about each section follows.

Water Deliveries and Credits

Information about the total amounts of water delivered and entitlement credits granted to long-term contractors in 1991 is included in Table 6-1.

Information about specific columns included in the table follows. The information is arranged according to column numbers.

1991 Entitlement Water Delivered

Column 1 includes the amount of entitlement water scheduled to be delivered and delivered to each long-term water supply contractor in 1991.

In 1991 a total of 521,893 acre-feet of 1991 entitlement water was delivered.

1990 and 1992 Entitlement Water Delivered

In some instances, contractors may delay delivery of entitlement water to another year or request early delivery of entitlement water that normally would be delivered in the future. Column 2 includes amounts of 1990 and 1992 entitlement water delivered in 1991.

In 1991 a total of 27,223 acre-feet of 1990 and 1992 entitlement water was delivered to ten contractors.

Total Entitlement Water Delivered

Column 3 includes amounts of 1990, 1991, and 1992 entitlement water delivered in 1991. (In some instances, contractors may delay delivery of entitlement water to a later year or request early delivery of future entitlement.)

A total of 549,116 acre-feet of entitlement water for years 1990, 1991, and 1992 was delivered in 1991.

Other Water Deliveries

Column 4 includes amounts of other project and nonproject water delivered through SWP facilities. An example of other project water is unscheduled water; an example of nonproject water, water purchased by SWP contractors from other agencies and conveyed by the Department for SWP contractors.

In 1991 a total of 438,090 acre-feet of other project and nonproject water was conveyed by SWP for use by SWP contractors.

Total Deliveries

Column 5 includes total amounts of water delivered to long-term contractors. In 1991 SWP delivered 987,206 acre-feet to 27 long-term contractors, which included 549,116 acre-feet of entitlement water and 438,090 acre-feet of other project and nonproject water.

Make-up Water

Make-up water is allocated to contractors according to Article 12(d) and Article 14(b) of the long-term water supply contracts.

According to Article 12(d), if for some reason beyond the Department of Water Resources' control, water is not available for delivery according to the established schedule for that year, the water may be delivered at a later date.

Article 14(b) of the long-term water supply contracts provides for the delivery of water at a later time if water is not delivered due to necessary investigations, inspections, maintenance, repairs, or replacement of SWP facilities. No make-up water according to Article 12(d) or Article 14(b) was delivered in 1991.

Long-term contractors have earned credits for make-up water according to Article 12(d) and Article 14(b) of the long-term contracts. However, the exact amount of those credits is being negotiated with the Department.

Wet-Weather Water

According to provisions of their water supply contracts, South Bay and San Joaquin Valley contractors may reduce deliveries of entitlement water in years in which above-average amounts of local water are available and increase deliveries by an equal amount in later years.

No additional credits for wet-weather water were acquired during 1991. Column 7 includes the total amount of credits acquired in previous years, 283,668 acre-feet.

Carry-over Water Approved for Delivery

For several years the Department has offered contractors the opportunity to carry over for delivery during the next year a portion of their entitlement water approved for delivery in the current year. The carry-over program was designed to encourage the most effective use of water and to avoid obligating the contractors to use or lose the water by December 31.

Because operational constraints may change from year to year, an agreement in which the conditions of the approval are listed is signed each year with participating contractors.

Contractors were informed by the Department of its willingness to consider requests to carry over 1991 entitlement water to January, February, and March 1992 in *Water Service Contractors Council Memorandum* Number 2011.

Column 8 includes amounts of 1991 entitlement water approved for delivery in 1992. The total amount of 1991 entitlement water carried over for delivery in 1992 was 92,282 acre-feet.

Reduction Credits

According to the provisions of their water supply contracts, South Bay and San Joaquin Valley contractors may increase their allocation entitlement water (up to their maximum annual entitlement) in years of need, provided that additional water is available from SWP according to Article 7 or Article 45 of the long-term water supply contracts.

Contractors who have increased their allocation of entitlement water in previous years may in any one year reduce their supply to the amount the supply had been increased previously.

Oak Flat Water District has 2,466 acre-feet of future reduction credits available according to Article 45.

Total Amounts Delivered in 1991, by Month

During 1991 SWP provided water service to 52 agencies, including 27 long-term water contractors. The names of those agencies and amounts of water delivered to them by month may be found in Table 6-2, "Total Amounts of Water Delivered in 1991, by Month."

A summary of water deliveries is included in this section. Information is arranged according to the categories, "State Water Project Water" and "Nonproject Water."

State Water Project Water

State Water Project water is classified into the following categories: entitlement water; advance entitlement water; carry-over entitlement water; transfers of entitlement water; unscheduled water; and water for recreation, fish, and wildlife.

Also, SWP may approve transfers of entitlement water among various contractors if certain conditions are met and loan water to SWP contractors if water is available. Information about each category follows.

Entitlement Water

A total of 521,893 acre-feet of 1991 entitlement water was delivered to 27 long-term contractors.

Advance Entitlement Water

During 1991, 148 acre-feet of 1992 advance entitlement water was delivered, including 141 acre-feet to Oak Flat Water District and 7 acre-feet to Littlerock Creek Irrigation District.

Carry-over Entitlement Water

In 1991 SWP delivered 27,075 acre-feet of 1990 carry-over entitlement water to Solano County Water Agency, Alameda County Water District, Devil's Den Water District, Dudley Ridge Water District, Empire West Side Irrigation District, Kern County Water Agency, Tulare Lake Basin Water Storage District, and Metropolitan Water District of Southern California.

Transfers of Entitlement Water

During 1991 a total of 4,097 acre-feet of entitlement water was transferred between the following SWP long-term contractors: Devil's Den and Castaic Lake Water agencies; Kern County and Antelope Valley-East Kern Water agencies; and Mojave and Antelope Valley-East Kern Water agencies. Information about the transfers follows.

Devil's Den Water Agency

To cover deliveries within Devil's Den service area, 706 acre-feet of water was transferred from Castaic Lake Water Agency to Devil's Den Water Agency.

Kern County Water Agency

From Antelope Valley-East Kern Water Agency, 2,000 acre-feet of water was transferred to Kern County Water Agency.

Antelope Valley-East Kern Water Agency

From Mojave Water Agency, 1,391 acre-feet of water was transferred to Antelope Valley-East Kern Water Agency.

Unscheduled Water

In 1991 a total of 3,521 acre-feet of unscheduled water—water available for only a short period when excess water and SWP pumping capabilities were available in the Delta—was delivered. Napa County Flood Control and Water Conservation District received 768 acre-feet; Solano County Flood Control and Water Conservation District, 2,753 acre-feet.

Water for Recreation, Fish, and Wildlife

A total of 4,912 acre-feet of SWP water was conveyed for recreational use and enhancement of fish and wildlife. Information about those deliveries follows.

Recreational Use

The State Water Project delivered 929 acre-feet of water for facilities at Lake Del Valle, San Luis Reservoir, O'Neill Forebay, Silverwood Lake, Pyramid Lake, Castaic Lake, and Lake Perris.

In addition, 1,987 acre-feet was delivered to replace water losses at Castaic Lagoon, an impoundment downstream from Castaic Lake devoted entirely to recreational uses.

Trout Fishery

The State Water Project released 1,886 acre-feet of water to maintain a trout fishery in Piru Creek as a condition of obtaining a license from the Federal Energy Regulatory Commission to develop a power plant at Pyramid Lake.

Wildlife Management

To use in managing wildlife on the Pilibos Wildlife Area, 40 miles south of Los Banos, and on about 770 acres of land near O'Neill Forebay, the State Water Project delivered 110 acre-feet of water

Loans of SWP Water

In 1991 SWP loaned a total of 124,097 acre-feet of water to three long-term contractors

in the San Joaquin Valley, Kern County Water Agency, Oak Flat Water District, and Dudley Ridge Water District, as follows:

Dudley Ridge Water District. District loaned 1,000 acre-feet; water repaid in 1991.

Kern County Water Agency. Agency loaned 122,741 acre-feet; 101,646 acre-feet repaid as of December 31, 1991.

Oak Flat Water District. District loaned 356 acre-feet; water paid back in 1991.

The water, loaned for agricultural use, was repaid by contractors releasing water into the California Aqueduct.

Nonproject Water

In 1991 SWP facilities were used to convey nonproject water for other agencies, including CVP. In addition, SWP facilities were used to deliver water transfers—water purchased from the Drought Water Bank and by one agency from another. Information about those deliveries follows.

Central Valley Project Water

In 1991 the Department conveyed approximately 38,500 acre-feet of CVP water through SWP facilities.

The deliveries were accomplished according to agreements negotiated with USBR throughout the year as well as with participants of existing three-party contracts for the use of the Cross Valley Canal, a water conveyance facility that connects with the California Aqueduct in Kern County. Information about those deliveries follows.

Musco Oil Products and Tracy Golf and Country Club

According to terms of an annual conveyance agreement with USBR signed July 11, 1991, the Department agreed to convey to CVP water users water furnished by USBR at O'Neill Forebay.

From March to December 1991, the Department conveyed 43 acre-feet of water to Musco Oil Products, Inc., and one acre-foot to Tracy Golf and County Club.

U.S. Fish and Wildlife Service

The Department conveyed 6,200 acre-feet of CVP water for the U.S. Fish and Wildlife Service according to provisions of an agreement with USBR signed in September 1991. That water was conveyed from October through December 1991 to the Kern National Wildlife Refuge.

State Water Project facilities were also used to deliver 144 acre-feet of CVP water for recreational, fish, and wildlife use.

U.S. Department of Veterans' Affairs

According to provisions of an agreement signed in September 1990, the Department conveyed 33 acre-feet of CVP water in 1991 to the U.S. Department of Veterans' Affairs to use in constructing a national cemetery near Santa Nella, California.

Cross Valley Canal Contractors

The Cross Valley Canal in Kern County is used by nine water or irrigation districts and two counties to obtain water from the California Aqueduct. Those districts and counties include Ducor, Hills Valley, Lower Tule River, and Pixley Irrigation districts; Kern-Tulare, Rag Gulch, and Tri-Valley Water districts; and counties of Fresno and Tulare.

In 1991 all contractors except Ducor Irrigation District received USBR water either through a water exchange with another agency or through deliveries made from the canal. That water was made available by the Department by conveying USBR water through the California Aqueduct directly from the Delta and from storage in San Luis Reservoir.

Water conveyed in 1991 totaled 32,075 acre-feet and included the following deliveries:

Cross Valley Canal Contractors and Kern County Water Agency. Water delivered included 9,430 acre-feet exchanged between several Cross Valley Canal contractors and Kern County Water Agency.

Kern-Tulare Water District to Westlands Water District. From Kern-Tulare Water District, 1,675 acre-feet was transferred to Westlands Water District.

Lower Tule River Irrigation District to Tulare Lake Basin Water Storage District. From Lower Tule River Irrigation District, 3,722 acre-feet of water was transferred to Tulare Lake Basin Water Storage District.

Rag Gulch Water District to Westlands Water District. From Rag Gulch Water District, 3,325 acre-feet was transferred to Westlands Water District.

Electrical energy required to convey CVP water through Harvey O. Banks Delta Pumping Plant, Dos Amigos Pumping Plant, and Las Perillas Pumping Plant was supplied as needed by USBR.

Water Transfers

During 1991 the Department conveyed nonproject water according to terms of several water transfer agreements. Nonproject water includes water purchased through the 1991 Drought Water Bank as well as water purchased by other agencies from other agencies. Information about those transfers follows.

Agency Transfers

In 1991 SWP transferred 73,438 acre-feet of water for eight water districts or agencies, including Modesto Irrigation District, city of Napa, Oroville-Wyandotte Irrigation District, Placer County Water Agency, city of San Francisco, Santa Clara Water Agency, Westlands Water District, and Yuba County Water Agency. Information about those transfers follows

Modesto Irrigation District to City of San Francisco. For the city of San Francisco, 4,808 acre-feet made available by Modesto Irrigation District in January, February, and March 1991 according to an agreement signed on December 28, 1990.

Oroville-Wyandotte Irrigation District to Westlands Water District. For Westlands Water District, 8,500 acre-feet made available by Oroville-Wyandotte Irrigation District according to an agreement signed September 20, 1990.

Placer County Water Agency to City of San Francisco. For the city of San Francisco, 13,327 acre-feet made available by Placer County Water Agency during March through December 1991 according to an agreement signed November 9, 1990.

Placer County Water Agency to Santa Clara Valley Water District. For Santa Clara Valley Water District, 13,714 acre-feet made available by Placer County Water Agency according to a contract signed November 27, 1991.

Yuba County Water Agency to City of Napa. For the city of Napa, 7,500 acre-feet made available by the Yuba County Water Agency; 110 acre-feet of that water was conveyed to Solano County Water Agency. That water was made available according to a verbal agreement, which was confirmed by a contract signed March 19, 1992.

Yuba County Water Agency to Santa Clara Valley Water District. For Santa Clara Valley Water District, 25,589 acre-feet made available by Yuba County Water Agency according to a contract signed August 21, 1989.

Drought Water Bank

The Department conveyed a total of 393,319 acre-feet of 1991 Drought Water Bank water for nine SWP long-term contractors; 31,500 acre-feet for the Department of Fish and Game (DFG); and 49,991 acre-feet for the city of San Francisco.

Names of SWP's long-term contractors and amounts purchased in acre-feet include:

Alameda County Flood Control and Water Conservation District, Zone 7, 500
Alameda County Water District, 14,800
Dudley Ridge Water District, 12,527
Kern County Water Agency, 47,670
Metropolitan Water District of Southern California, 215,000
Napa County Flood Control and Water Conservation District (for American Canyon Water District), 370
Oak Flat Water District, 975
Santa Clara Valley Water District, 19,750
Crestline-Lake Arrowhead Water Agency, 236

Habitat Preservation

In 1991 DFG purchased 31,500 acre-feet of water from the 1991 Drought Water Bank.The water was conveyed by SWP from Harvey O. Banks Delta Pumping Plant to O'Neill Forebay and by CVP from O'Neill Forebay along the Delta-Mendota Canal.

The water, made available to the bank by Yuba County Water Agency and Western Canal Water District, was used by DFG to preserve habitat for wildlife within Los Banos, Volta, and Mendota State Wildlife Management areas and within Grassland Water District.

Water Rights Permit Water

Water in this category is transported through SWP facilities to long-term SWP contractors and other agencies according to terms of various local water rights agreements. Some of this water simply passes through SWP transportation facilities, and some is stored in SWP reservoirs for release at a later time.

In 1991 a total of 590,569 acre-feet of water in this category was delivered to the Feather River, North Bay, South Bay, and southern California areas. Information about those deliveries follows.

Feather River Area

Eight nonproject agencies in the Feather River area received 565,395 acre-feet. Those agencies included Last Chance Creek Water District; Thermalito Irrigation District; Oroville-Wyandotte Irrigation District; Western Canal Water District; Joint Water District Board; Tudor Mutual Water Company; Garden Highway Water Company; and Plumas Mutual Water Company.

North Bay Area

In the North Bay Area, 14,322 acre-feet of water was delivered. Of that amount, 14,106 acre-feet was delivered to the city of Vallejo's delivery structure; and 216 acre-feet was transferred to Napa Flood Control and Conservation District.

South Bay Area

In the South Bay Area, 4,190 acre-feet was delivered to Alameda County Flood Control and Water Conservation District, Zone 7, and 2,678 acre-feet to Alameda County Water District.

Southern California

In southern California 473 acre-feet was delivered to Crestline-Lake Arrowhead Water Agency; 3,511 acre-feet was delivered to Castaic Lake Water District.

Total Amounts of Annual Entitlements Delivered Since 1962

Information about the total amount of annual entitlements and water conveyed by type for the past 29 years is contained in Table 6-3, "Total Amounts of Annual Entitlements and Water Conveyed, by Type, 1962 Through 1991." Specific information about entitlements and water conveyed, arranged according to column numbers, follows.

Annual Entitlements

Columns 1 through 7 include the amount of each long-term contractor's entitlement water for years 1962 through 1991 as specified in the entitlement schedules (Table A, "Annual Entitlements") of the long-term water supply contracts. The information is arranged according to geographical area.

In some instances those entitlement schedules, projections of each contractor's need for water to 2035, have been amended to meet the needs of individual contractors.[3]

The amounts of entitlement water each contractor may request for years 1962 through 2035 may be found in Table B-4, "Annual Entitlements to Project Water," in Appendix B, "Data and Computations Used in Determining Water Charges for 1993."

Entitlement Water

Column 8 includes total amounts of entitlement water delivered each year from 1962 through 1991. In 1991 entitlement water delivered to 27 contractors totaled 549,116 acre-feet. That amount includes:

- 1990 carry-over entitlement water (entitlement water carried over from 1990 and delivered in 1991), 27,075 acre-feet
- 1991 transfer entitlement water (entitlement water delivered to another contractor), 4,097 acre-feet
- 1992 advanced entitlement water (1992 entitlement water delivered in 1991), 148 acre-feet

Chapter 15, "Forecasting Water Delivery Capabilities," includes information about the Department's procedure for determining amounts of entitlement water to be delivered.

Surplus and Unscheduled Water

Column 9 includes amounts of surplus and unscheduled water delivered during the year. During 1991 surplus water—water in excess of that required to meet all demands for entitlement water and water to be stored in reservoirs, for example—was not available.

In 1991 a total of 3,521 acre-feet of unscheduled water—water available for only a short period when excess water and SWP pumping capabilities were available in the Delta—was delivered. Napa County Flood Control and Water Conservation District received 768 acre-feet; Solano County Flood Control and Water Conservation District, 2,753 acre-feet.

Other Water

Column 10 includes amounts of water classified as *other water* delivered in 1991, including CVP water conveyed through SWP facilities; regulated delivery of local supply; water loaned by SWP; water paid back to SWP; purchased, emergency relief, and preconsolidation repayment water; Vallejo water rights permit water; 1991 Drought Water Bank water; and local water released and taken out of SWP's system.

[3]For 1991 the amount of Devil's Den Water District's entitlement is included in Column 4; however, on January 1, 1992, Devil's Den Water District was incorporated as part of Castaic Lake Water Agency (CLWA) and its entitlement transferred to CLWA.

In 1991 a total of 551,048 acre-feet of other water was delivered.

Feather River Diversions

Column 11 includes amounts of water from the Feather River delivered according to water rights water agreements. In 1991 a total of 565,395 acre-feet of water was delivered to contractors in the Feather River area.

Initial Fill Water

The quantities listed in Column 13 represent the amounts used to initially fill to maximum operational capacities the aqueducts and reservoirs south of the Delta.

Initial filling began in 1962 with the filling of the South Bay Aqueduct and was completed in 1979 when Lake Perris reached its maximum operational capacity of 127,000 acre-feet.

Operational Losses

Column 14 reflects amounts of water lost to evaporation and seepage from as well as increases or decreases in water stored in SWP's aqueducts and reservoirs south of the Delta. In 1991 that amount totaled 167,435 acre-feet.

Figures listed in Column 14 have been adjusted to account for changes in the amounts stored in reservoirs and for amounts of inflow from local drainage areas, including inflows from the Kern River Intertie and the Los Angeles Aqueduct.

Negative values are indicated for years in which withdrawals of water from reservoirs south of the Delta exceeded additions of water.

Recreational Water

Column 15 includes the amount of water conveyed for recreational use or to provide water or improve water quality for fish and wildlife.

In 1991 a total of 4,912 acre-feet of SWP water was conveyed for recreation use or to provide water or improve water quality for fish and wildlife.

TABLE 6-1

Total Amounts of Water Delivered and Credits Granted to Long-Term Contractors in 1991, by Service Area

(Acre-feet)

Long-Term Water Supply Contractor	Water Deliveries in 1991: Entitlement Water Deliveries: 1991 Entitlement (1)	1990 and 1992 Entitlement Delivered During 1991 (2)	Total Entitlement (3)	Other Water Deliveries (a (4)	Total Deliveries (5)	Future Entitlement Credits as of January 1, 1992: Make-Up Water Per Articles 12(d) or 14(b) (6) (b	Wet-Weather Water Per Articles 7 or 45 (7)	1991 Carry-over Approved for Delivery in 1992 (8)	Total Delivery Credit (9) (c	Future Entitlement Reduction Credit Per Articles 7 or 45 (10)
Upper Feather River Area										
City of Yuba City	265		265		265				0	
County of Butte	328		328		328				0	
Plumas County Flood Control and Water Conservation District	420		420		420				0	
North Bay Area										
Solano County Water Agency	5,222	1,750	6,972	17,339	24,311			1,468	1,468	
Napa County Flood Control and Water Conservation District	1,380		1,380	8,374	9,754			817	817	
South Bay Area										
Alameda County Flood Control and Water Conservation District, Zone 7	9,411		9,411	4,690	14,101		111,580		111,580	
Alameda County Water District	10,003	2,645	12,648	17,478	30,126		172,088	1,352	173,440	
Santa Clara Valley Water District	28,200		28,200	59,053	87,253				0	
San Joaquin Valley Area										
County of Kings	0		0		0				0	
Devil's Den Water District	706 (d	10	716		716				0	
Dudley Ridge Water District	0	927	927	12,366	13,293				0	
Empire West Side Irrigation District	0	221	221	0	221				0	
Kern County Water Agency	35,122 (e	8,965	44,087	95,347 (f	139,434			2,758	2,758	
Oak Flat Water District	0	141 (g	141	975	1,116				0	2,466
Tulare Lake Basin Water Storage District	0	2,180	2,180	3,722	5,902				0	
Central Coastal Area										
San Luis Obispo County Flood Control and Water Conservation District	0		0		0				0	
Santa Barbara County Flood Control and Water Conservation District	1,240		1,240		1,240				0	
Southern California Area										
Antelope Valley-East Kern Water Agency	8,959 (h		8,959	(352)	8,607			2,224	2,224	
Castaic Lake Water Agency	3,846		3,846	3,511	7,357			2,836	2,836	
Coachella Valley Water District	6,930		6,930		6,930				0	
Crestline-Lake Arrowhead Water Agency	852		852	709	1,561				0	
Desert Water Agency	11,430		11,430		11,430				0	
Littlerock Creek Irrigation District	515	7 (i	522		522				0	
Metropolitan Water District of Southern California	381,070	10,377	391,447	215,000	606,447			80,827	80,827	
Mojave Water Agency	2,032		2,032		2,032				0	
Palmdale Water District	3,914		3,914		3,914				0	
San Bernardino Valley Municipal Water District	3,661		3,661	(122)	3,539				0	
San Gabriel Valley Water District	5,399		5,399		5,399				0	
Ventura County Flood Control District	988		988		988				0	
Total	**521,893**	**27,223**	**549,116**	**438,090**	**987,206**		**283,668**	**92,282**	**375,950**	**2,466**

a) See Table 6-2 for information about other water deliveries.
b) State Water Project long-term contractors and the Department are negotiating amounts of make-up water; exact amounts not available at this time.
c) Amounts in this column do not include amounts of make-up water.
d) Includes entitlement water transferred from another agency.
e) Includes entitlement water transferred from another agency.
f) Includes water loaned by SWP not repaid by December 31, 1991.
g) Represents 1992 entitlement water delivered in 1991.
h) Includes entitlement water transferred from another agency.
i) Represents 1992 entitlement water delivered in 1991.

TABLE 6-2

Total Amounts of Water Delivered in 1991, by Month

(Acre-feet)

Contracting Agency and Type of Service	Month												1991 Total Deliveries	1991 Contract Entitlement	1991 Entitlement Not Delivered	Net Cumulative Entitlement Not Delivered Through (a)	
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.				1990	1991 (b)
Feather River Area																	
City of Yuba City																	
Entitlement water.	0	0	0	0	0	0	118	147	0	0	0	0	265	9,600	9,335	16,114	25,449
County of Butte																	
Entitlement water	2	27	167	125	0	0	0	0	0	0	0	7	328	1,200	872	16,906	17,778
Plumas County Flood Control and Water Conservation District																	
Entitlement water	38	18	5	4	16	67	80	71	53	41	12	12	420	1,080	660	7,648	8,308
Last Chance Creek Water District																	
Regulated delivery of local supply	0	0	0	167	2,194	1,963	1,694	716	276	0	0	0	7,010				
Thermalito Irrigation District																	
Regulated delivery of local supply	104	94	82	119	193	253	303	290	263	208	117	96	2,124				
Oroville-Wyandotte Irrigation District																	
Regulated delivery of local supply	180	164	22	0	716	881	982	994	1,030	845	281	220	6,315				
Transferred local water (8,500 AF to Westlands Water District [WWD	0	0	0	0	2,500	2,500	2,500	1,000	0	0	0	0	8,500				
Agency Total (excludes transferred water)	180	164	22	0	716	881	982	994	1,030	845	281	220	6,315				
Western Canal Water District																	
Regulated delivery of local supply	234	0	0	1,588	34,411	37,407	35,820	33,587	9,012	11,590	16,439	9,548	189,636				
Joint Water Districts Board																	
Regulated delivery of local supply	1,192	5,180	0	7,219	61,700	62,301	65,033	59,379	27,716	10,802	19,790	15,810	336,122				
Tudor Mutual Water Company																	
Regulated delivery of local supply	0	0	0	0	497	942	829	445	24	8	0	11	2,755				
Garden Highway Water Company																	
Regulated delivery of local supply	572	81	0	295	1,806	2,920	2,249	1,841	1,122	925	0	0	11,811				
Plumas Mutual Water Company																	
Regulated delivery of local supply	0	0	0	8	1,693	1,752	1,900	1,297	1,636	1,123	212	0	9,621				
SWP	40	45	175	129	16	67	198	218	53	41	12	19	1,013	11,880	10,867	40,668	51,535
Non-SWP	2,282	5,519	104	9,396	103,210	108,419	108,810	98,549	41,079	25,501	36,839	25,687	565,395				
Area Total	2,322	5,564	279	9,525	103,226	108,486	109,008	98,767	41,132	25,542	36,851	25,706	566,408	11,880	10,867	40,668	51,535
North Bay Area																	
Napa County Flood Control and Water Conservation District (NCFCWCD)																	
Entitlement water	797	410	0	68	9	0	9	6	0	0	1	80	1,380	7,290	5,910	353	6,263
Yuba County Water Agency (YCWA) water via SWP facilities	0	0	0	213	930	1,075	1,025	844	1,017	928	718	640	7,390				
(Transferred 110 AF to Solano County Water Agency [SCWA])	0	0	0	0	0	0	0	0	0	110	0	0	110				
1991 Drought Water Bank Water (all transferred to SCWA)	0	0	0	0	0	0	0	0	0	40	0	330	370				
Unscheduled water	0	0	488	260	0	0	0	0	0	0	0	0	768				
Transferred Vallejo permit water from SCWA	0	0	13	16	0	73	0	0	0	114	0	0	216				
Agency Total (excludes transferred water to SCWA)	797	410	501	577	939	1,148	1,034	850	1,017	1,042	719	720	9,754				
Solano County Water Agency																	
Entitlement water	0	0	0	101	0	0	1,552	2,106	736	269	18	440	5,222	22,300	17,078	5,633	20,961
Carry-over entitlement water	136	353	0	39	0	323	899	0	0	0	0	0	1,750				
Vallejo permit water	1,512	1,749	82	880	1,733	1,872	0	0	1,549	1,937	1,748	1,044	14,106				
(Transferred 216 AF to NCFCWCD)	0	0	13	16	0	73	0	0	0	114	0	0	216				
Unscheduled water	0	0	1,911	842	0	0	0	0	0	0	0	0	2,753				
Transferred water from NCFCWCD	0	0	0	0	0	0	0	0	0	150	0	330	480				
Agency Total (excludes transferred water to NCFCWCD)	1,648	2,102	1,993	1,852	1,733	2,195	2,451	2,106	2,285	2,356	1,766	1,814	24,311				
SWP	933	763	2,399	1,330	9	323	2,460	2,112	736	269	19	520	11,873	29,590	22,988	5,986	27,224
Non-SWP	1,512	1,749	95	1,109	2,663	3,020	1,025	844	2,566	3,129	2,466	2,014	22,192				
Area Total	2,445	2,512	2,494	2,439	2,672	3,343	3,485	2,956	3,302	3,398	2,485	2,534	34,065	29,590	22,988	5,986	27,224
South Bay Area																	
Alameda County Flood Control and Water Conservation District, Zone 7																	
Entitlement water	2,911	937	24	85	329	294	645	649	737	1,451	400	949	9,411	34,000	24,589	164,355	188,944
1991 Drought Water Bank water	0	0	0	0	0	0	0	0	0	0	500	0	500				
Regulated delivery of local supply	0	136	1,167	621	496	736	683	0	39	193	54	71	4,190				
Agency Total	2,911	1,073	1,191	706	825	1,030	1,328	649	776	1,644	954	1,020	14,101				
Alameda County Water District																	
Entitlement water	1,144	1,193	0	0	0	0	0	0	0	2,443	3,394	1,829	10,003	38,400	28,397	276,685	302,417
Carry-over entitlement water	2,545	0	0	0	0	0	0	0	0	0	0	0	2,545				
1991 Drought Water Bank water	0	0	0	0	1,424	2,661	2,519	3,816	2,992	1,388	0	0	14,800				
Regulated delivery of local supply	0	0	654	771	883	370	0	0	0	0	0	0	2,678				
Agency Total	3,789	1,193	654	771	2,307	3,031	2,519	3,816	2,992	3,831	3,394	1,829	30,126				
Santa Clara Valley Water District																	
Entitlement water	0	0	0	0	2,510	8,476	0	0	0	1,827	8,313	7,074	28,200	94,000	65,800	40,821	106,621
1991 Drought Water Bank water	0	0	0	0	0	0	5,197	0	7,218	7,335	0	0	19,750				
Placer County Water Agency (PCWA) water via SWP facilities	0	0	0	0	0	0	3,413	8,610	1,691	0	0	0	13,714				
Department of Water Resources YCWA water	8,263	3,295	2,129	6,608	5,294	0	0	0	0	0	0	0	25,589				
Agency Total	8,263	3,295	2,129	6,608	7,804	8,476	8,610	8,610	8,909	9,162	8,313	7,074	87,253				
City of San Francisco																	
PCWA and Modesto Irrigation District water via SWP facilities	1,966	3,029	4,620	2,435	0	0	0	0	0	1,429	1,846	2,810	18,135				
1991 Drought Water Bank water	0	0	0	1,969	4,518	5,783	6,149	5,725	5,525	3,331	0	0	33,000				
(Transferred 16,991 AF to Kern County Water Agency [KCWA])	0	0	0	0	0	0	0	0	0	0	0	16,991	16,991				
Agency Total (excludes transferred water to KCWA)	1,966	3,029	4,620	4,404	4,518	5,783	6,149	5,725	5,525	4,760	1,846	2,810	51,135				
Recreation/fish and wildlife water																	
Agency Total	8	5	3	6	15	22	20	21	21	16	6	7	150				
SWP	6,708	2,135	27	91	2,854	6,792	665	670	758	5,737	12,113	9,859	50,409	166,400	116,786	481,841	597,982
Non-SWP	10,229	6,460	8,570	12,404	12,615	9,550	17,961	18,151	17,469	13,676	2,400	2,881	132,356				
Area Total	16,937	8,596	8,597	12,495	15,469	16,342	18,626	18,821	18,217	19,413	14,513	12,740	182,765	166,400	116,786	481,841	597,982
San Joaquin Valley Area																	
SWP Water																	
County of Kings																	
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	4,000	4,000	2,000	6,000
Devil's Den Water District																	
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	12,700	12,700	6,478	19,178
Carry-over entitlement water	10	0	0	0	0	0	0	0	0	0	0	0	10				
Entitlement water transferred from Castaic Lake Water Agency	545	161	0	0	0	0	0	0	0	0	0	0	706				
Agency Total	555	161	0	0	0	0	0	0	0	0	0	0	716				
Dudley Ridge Water District																	
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	57,700	57,700	30,573	87,346
Carry-over entitlement water	216	233	0	181	0	297	0	0	0	0	0	0	927				
Loan water from SWP	0	0	0	0	600	400	0	0	0	0	0	0	1,000				
Payback for loan water	0	0	0	(19)	(144)	(132)	(77)	(161)	(160)	(149)	(158)	0	(1,000)				
1991 Drought Water Bank water	0	0	0	282	1,711	2,100	2,759	2,673	735	1,496	460	140	12,356				
(Transferred 161 AF to KCWA)	0	0	0	0	0	0	0	0	0	50	111	0	161				
Agency Total (excludes transferred water to KCWA)	216	233	0	444	2,167	2,665	2,692	2,512	575	1,347	302	140	13,293				
Empire West Side Irrigation District																	
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	3,000	3,000	13,744	16,523
Carry-over entitlement water	0	0	0	0	0	111	38	72	0	0	0	0	221				

a) These columns include amounts of entitlement not delivered, deferred or otherwise, regardless whether water contractor received remuneration.

b) Includes amounts of 1990 carry-over entitlement water delivered in 1991 for Solano County Water Agency; Alameda County Water District; Devil's Den Water District; Dudley Ridge Water District; and Empire West Side Irrigation District.

TABLE 6-2

Total Amounts of Water Delivered in 1991, by Month (Continued)

(Acre-feet)

Contracting Agency and Type of Service	Month												1991 Total Deliveries	1991 Contract Entitlement	1991 Entitlement Not Delivered	Net Cumulative Entitlement Not Delivered Through (a	
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.				1990	1991 (b
San Joaquin Valley Area (Continued)																	
Kern County Water Agency																	
Entitlement water	1,072	336	214	251	2,410	460	6,745	12,592	2,146	2,478	582	3,836	33,122	1,153,400	1,120,278	853,121	1,964,434
Carry-over entitlement water	904	1,185	0	0	0	1,372	2,765	1,828	911	0	0	0	8,965				
Transferred entitlement water (from Antelope Valley-East Kern Water Agency [AV-EKWA])	0	0	0	0	0	700	800	500	0	0	0	0	2,000				
Transferred 1991 Drought Water Bank water (from Dudley Ridge Water District)	0	0	0	0	0	0	0	0	0	50	111	0	161				
Loan water from SWP	3,417	4,024	2,015	6,916	9,560	22,671	36,118	13,310	7,929	10,994	4,354	1,233	122,741				
Payback for loan water	0	0	(3,078)	(10,927)	(15,184)	(10,446)	(2,795)	(4,994)	(9,457)	(10,400)	(8,071)	(26,294)	(101,646)				
Transferred 1991 Drought Water Bank water (from San Francisco to payback for loan water)	0	0	0	0	0	0	0	0	0	0	0	16,991	16,991				
1991 Drought Water Bank water	0	0	0	0	11,349	16,999	11,514	5,231	352	150	54	2,021	47,670				
Exchange water with Arvin Edison Water Storage District (Includes various CVC contractors)	0	0	0	1,099	0	0	0	2,458	2,853	2,827	193	0	9,430				
Agency Total	5,393	5,545	(849)	(2,661)	8,135	31,956	55,147	30,925	4,734	6,099	(2,777)	(2,213)	139,434				
Oak Flat Water District																	
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	5,700	5,700	3,490	9,049 (c
Advance entitlement water	110	26	0	0	3	0	0	0	0	0	0	0	141				
Loan water from SWP	0	0	0	0	61	36	77	66	63	28	0	25	356				
Payback for loan water	0	0	0	0	(20)	(86)	(84)	(109)	(57)	0	0	0	(356)				
1991 Drought Water Bank water	0	0	0	7	257	157	395	109	0	50	0	0	975				
Agency Total	110	26	0	7	301	107	388	66	6	78	0	25	1,116				
Tulare Lake Basin Water Storage District																	
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	118,500	118,500	142,092	258,412
Carry-over entitlement water	201	0	0	0	146	509	1,324	0	0	0	0	0	2,180				
Transferred water from Lower Tule River Irrigation District	0	0	0	0	0	0	18	3,296	360	11	19	18	3,722				
Agency Total	201	0	0	0	146	509	1,342	3,296	360	11	19	18	5,902				
Westlands Water District																	
Transferred local water from Oroville-Wyandotte Irrigation District	0	0	0	0	2,500	2,500	2,500	1,000	0	0	0	0	8,500				
Department of Parks and Recreation	2	0	1	5	2	9	12	10	9	6	2	1	59				
Department of Fish and Game																	
Recreation/fish and wildlife water	0	9	12	0	0	0	0	0	0	31	6	52	110				
1991 Drought Water Bank water	0	0	0	0	0	0	0	0	0	31,500	0	0	31,500				
Agency Total	0	9	12	0	0	0	0	0	0	31,531	6	52	31,610				
SWP	6,477	5,976	(836)	(3,574)	(3,063)	15,883	45,007	23,318	1,538	3,109	(3,127)	(21,172)	69,536	1,355,000	1,321,878	1,051,508	2,360,942
Non-SWP	0	0	0	1,369	16,314	21,974	17,112	14,563	4,146	35,963	679	19,195	131,315				
Area subtotal (SWP water)	6,477	5,976	(836)	(2,205)	13,251	37,857	62,119	37,881	5,684	39,072	(2,448)	(1,977)	200,851	1,355,000	1,321,878	1,051,508	2,360,942
CVP Water																	
Annual Contracts																	
Green Valley Water District	0	0	0	0	0	0	0	0	0	0	0	0	0				
Kings County Water District	0	0	0	0	0	0	0	0	0	0	0	0	0				
Lakeside Irrigation Water District	0	0	0	0	0	0	0	0	0	0	0	0	0				
Musco Olive Products, Inc.	4	2	3	4	0	4	2	1	5	8	6	4	43				
Tracy Golf and Country Club	1	0	0	0	0	0	0	0	0	0	0	0	1				
Cawelo Water District	0	0	0	0	0	0	0	0	0	0	0	0	0				
V A Cemetery	1	1	0	0	1	1	2	3	11	7	4	2	33				
Subtotal	6	3	3	4	1	5	4	4	16	15	10	6	77				
Cross Valley Canal Contracts																	
Fresno County	0	12	0	0	0	68	285	385	0	0	0	0	750				
Lower Tule River Irrigation District	0	127	0	0	0	706	2,951	270	0	0	0	0	4,054				
Transferred 3,722 AF to Tulare Lake Basin Water Storage District [TLBWSD]	0	0	0	0	0	0	18	3,296	360	11	19	18	3,722				
Agency Total (excludes 3,722 AF transferred to TLBWSD)	0	127	0	0	0	706	2,951	270	0	0	0	0	4,054				
Pixley Irrigation District	0	127	0	0	0	706	2,951	0	2,853	1,139	0	0	7,776				
Rag Gulch Water District [RGWD] (all transferred to WWD)	0	0	0	0	0	0	0	3,325	0	0	0	0	3,325				
Agency Total (excludes 3,325 AF transferred to WWD)	0	0	0	0	0	0	0	0	0	0	0	0	0				
Tulare County	0	21	0	0	0	120	504	682	0	0	0	0	1,327				
Kern-Tulare Water District (K-TWD)	481	4,750	114	1,099	0	0	0	0	0	1,688	193	0	8,325				
1,675 AF transferred to WWD	0	0	0	0	0	0	0	1,675	0	0	0	0	1,675				
Agency Total (excludes 1,675 AF transferred to WWD)	481	4,750	114	1,099	0	0	0	0	0	1,688	193	0	8,325				
Hills Valley Irrigation District	0	0	0	0	0	0	0	836	0	0	0	0	836				
Tri-Valley Water District	0	0	0	0	0	0	0	285	0	0	0	0	285				
Exchange transferred to KCWA	0	0	0	(1,099)	0	0	0	(2,458)	(2,853)	(2,827)	(193)	0	(9,430)				
Subtotal	481	5,037	114	0	0	1,600	6,691	0	0	0	0	0	13,923				
USBR																	
Federal wheeling (U.S. Fish & Wildlife Service)	0	0	0	0	0	0	0	0	0	2,972	2,154	1,074	6,200				
Decision 1485 water	0	0	0	0	0	0	0	0	0	0	0	0	0				
Subtotal	0	0	0	0	0	0	0	0	0	2,972	2,154	1,074	6,200				
WWD																	
Transferred water from K-TWD	0	0	0	0	0	0	0	1,675	0	0	0	0	1,675				
Transferred water from RGWD	0	0	0	0	0	0	0	3,325	0	0	0	0	3,325				
Agency Total	0	0	0	0	0	0	0	5,000	0	0	0	0	5,000				
Recreation/fish and wildlife water	1	9	10	4	1	9	10	9	7	32	8	44	144				
Non-SWP	488	5,049	127	8	2	1,614	6,705	5,013	23	3,019	2,172	1,124	25,344				
Area subtotal (CVP water)	488	5,049	127	8	2	1,614	6,705	5,013	23	3,019	2,172	1,124	25,344				
Area Summary																	
SWP	6,477	5,976	(836)	(3,574)	(3,063)	15,883	45,007	23,318	1,538	3,109	(3,127)	(21,172)	69,536	1,355,000	1,321,878	1,051,508	2,360,942
Non-SWP	488	5,049	127	1,377	16,316	23,588	23,817	19,576	4,169	38,982	2,851	20,319	156,659				
Total	6,965	11,025	(709)	(2,197)	13,253	39,471	68,824	42,894	5,707	42,091	(276)	(853)	226,195	1,355,000	1,321,878	1,051,508	2,360,942

a) These columns include amounts of entitlement water not delivered, deferred or otherwise, regardless whether water contractor received remuneration.
b) Includes amounts of 1990 carry-over entitlement water delivered in 1991 for Kern County Water Agency and Tulare Lake Basin Water Storage District.
c) Includes amounts of 1992 entitlement water delivered in 1991.

TABLE 6-2
Total Amounts of Water Delivered in 1991, by Month (Continued)
(Acre-feet)

Contracting Agency and Type of Service	Month												1991 Total Deliveries	1991 Contract Entitlement	1991 Entitlement Not Delivered	Net Cumulative Entitlement Not Delivered Through (a	
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.				1990	1991 (b
Central Coastal Area																	
San Luis Obispo County Flood Control and Water Conservation District																	
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	25,000	25,000	102,000	127,000
Santa Barbara County Flood Control and Water Conservation District																	
Entitlement water	0	17	131	128	315	305	276	68	0	0	0	0	1,240	45,486	44,246	184,624	228,870
SWP	0	17	131	128	315	305	276	68	0	0	0	0	1,240	70,486	69,246	286,624	355,870
Non-SWP	0	0	0	0	0	0	0	0	0	0	0	0	0				
Area Total	0	17	131	128	315	305	276	68	0	0	0	0	1,240	70,486	69,246	286,624	355,870
Southern California Area																	
Antelope Valley-East Kern Water Agency																	
Entitlement water	1,266	1,498	283	552	1,190	180	382	839	747	491	140	0	7,568	138,400	128,832	451,123	579,955
Transferred entitlement water (from Mojave Water Agency)	33	54	97	101	145	170	179	225	153	117	58	59	1,391				
Transferred entitlement water (to KCWA)	0	0	0	0	0	700	800	500	0	0	0	0	2,000				
Local water in	0	0	0	0	(275)	(1,330)	(1,542)	(1,673)	(1,519)	(1,664)	(1,552)	(1,645)	(11,210)				
Local water out	0	0	0	0	275	1,330	1,542	1,673	1,519	1,664	1,562	1,293	10,858				
Agency Total (excludes 2,000 AF transferred to KCWA)	1,299	1,552	380	653	1,335	350	561	1,064	900	608	198	(293)	8,607				
Castaic Lake Water Agency																	
Entitlement water	1,279	712	305	384	481	0	0	187	498	0	0	0	3,846	41,500	36,948	241,331	278,279
Transferred entitlement water (to Devil's Den Water District [DDWD])	545	161	0	0	0	0	0	0	0	0	0	0	706				
Regulated delivery of local supply	0	0	0	0	0	0	0	0	0	1,277	1,227	1,007	3,511				
Agency Total (excludes 706 AF transferred to DDWD)	1,279	712	305	384	481	0	0	187	498	1,277	1,227	1,007	7,357				
Coachella Valley Water District																	
Entitlement water	1,636	674	0	256	256	256	256	256	256	256	1,411	1,417	6,930	23,100	16,170	5,200	21,370
Crestline-Lake Arrowhead Water Agency																	
Entitlement water	189	131	0	0	0	0	103	156	0	55	111	107	852	5,800	4,948	36,890	41,838
1991 Drought Water Bank water	0	0	0	0	0	0	0	0	147	89	0	0	236				
Regulated delivery of local supply	0	11	105	108	91	124	34	0	0	0	0	0	473				
Agency Total	189	142	105	108	91	124	137	156	147	144	111	107	1,561				
Desert Water Agency																	
Entitlement water	2,699	1,111	0	423	423	423	801	348	348	1,618	1,618	1,618	11,430	38,100	26,670	8,000	34,670
Littlerock Creek Irrigation District																	
Entitlement water	206	72	0	0	0	0	0	0	0	136	69	30	515	2,300	1,785	15,404	17,182 (c
Advance entitlement water	0	0	0	0	0	0	0	0	0	0	0	7	7				
Agency Total	206	72	0	0	0	0	0	0	0	136	69	37	522				
Metropolitan Water District of Southern California																	
Entitlement water	54,802	59,643	4,771	9,138	400	380	377	384	10,284	98,171	80,251	62,439	381,070	2,011,500	1,630,430	10,206,907	11,826,960 (d
Carry-over entitlement water	7,400	2,977	0	0	0	0	0	0	0	0	0	0	10,377				
1991 Drought Water Bank water	0	0	0	0	33,342	36,685	49,254	45,968	49,751	0	0	0	215,000				
Agency Total	62,202	62,620	4,771	9,138	33,742	37,065	49,631	46,352	60,035	98,171	80,281	62,439	606,447				
Mojave Water Agency																	
Entitlement water	0	0	0	0	0	1,502	530	0	0	0	0	0	2,032	50,800	47,377	501,168	548,545
Transferred entitlement water																	
Transferred entitlement water (to AV-EKWA)	33	54	97	101	145	170	179	225	153	117	58	59	1,391				
Agency Total (excluded 1391 AF transferred to AV-EKWA)	0	0	0	0	0	1,502	530	0	0	0	0	0	2,032				
Palmdale Water District																	
Entitlement water	185	1,084	9	0	2	0	7	629	647	717	554	80	3,914	17,300	13,386	175,800	189,186
San Bernardino Valley Municipal Water District																	
Entitlement water	722	259	101	4	5	5	7	7	133	1,332	158	928	3,561	102,600	98,939	1,041,286	1,140,225
Local water in	0	0	0	(1,982)	(1,354)	(302)	0	0	0	0	0	0	(3,638)				
Local water out	0	0	0	0	0	0	822	1,690	1,004	0	0	0	3,516				
Agency Total	722	259	101	(1,978)	(1,349)	(297)	829	1,697	1,137	1,332	158	928	3,539				
San Gabriel Valley Municipal Water District																	
Entitlement water	0	0	0	0	0	1,758	1,839	0	0	212	1,494	96	5,399	28,800	23,401	226,891	250,292
San Gorgonio Pass Water Agency																	
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	17,300	17,300	131,300	148,600
Ventura County Flood Control District																	
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	988	988	20,000	19,012	83,164	102,176
Recreation/fish and wildlife water	211	75	124	103	170	184	219	667	860	775	1,116	89	4,593				
SWP	70,630	68,290	5,690	10,961	3,072	4,858	4,700	3,698	13,926	103,880	87,010	67,858	444,573	2,497,500	2,065,198	13,124,464	15,179,278
Non-SWP	0	11	105	(1,874)	32,079	36,507	50,110	47,658	50,902	1,366	1,227	655	218,746				
Area Total	70,630	68,301	5,795	9,087	35,151	41,365	54,810	51,356	64,828	105,246	88,237	68,513	663,319	2,497,500	2,065,198	13,124,464	15,179,278
All Agencies																	
Total 1991 entitlement water	69,528	68,337	6,110	11,620	8,491	14,976	14,706	19,170	16,736	111,614	98,614	81,989	521,893				
Total 1990 carry-over entitlement water	11,512	4,748	0	220	146	2,612	5,026	1,900	911	0	0	0	27,075				
Total 1992 advance entitlement water	110	28	0	0	3	0	0	0	0	0	0	7	148				
Subtotal (entitlement water delivered)	81,150	73,113	6,110	11,840	8,640	17,588	19,732	21,070	17,649	111,614	98,614	81,996	549,116				
Unscheduled water	0	0	2,399	1,122	0	0	0	0	0	0	0	0	3,521				
Total loan water from SWP	3,417	4,024	2,015	6,916	10,221	23,307	36,195	13,376	7,992	11,022	4,354	1,258	124,097				
Total payback for loan water	0	0	(3,078)	(10,946)	(15,348)	(10,664)	(2,956)	(5,264)	(9,674)	(10,549)	(8,229)	(26,294)	(103,002)				
Recreation/fish and wildlife water	221	89	140	114	187	215	251	698	890	828	1,130	149	4,912				
Subtotal (SWP water)	84,788	77,226	7,586	9,046	3,700	30,446	53,222	29,880	16,857	112,915	95,869	57,109	578,644				
Vallejo permit water	1,512	1,749	95	896	1,733	1,945	0	0	1,549	2,051	1,748	1,044	14,322				
Regulated delivery of local supply	2,282	5,666	2,030	10,896	104,680	109,549	109,527	98,549	41,112	26,971	38,120	26,765	576,247				
Total local water in	0	0	0	(1,982)	(1,629)	(1,632)	(1,542)	(1,673)	(1,519)	(1,664)	(1,562)	(1,645)	(14,848)				
Total local water out	0	0	0	0	275	1,330	2,364	3,363	2,523	1,664	1,562	1,293	14,374				
1991 Drought Water Bank water	0	0	0	2,258	52,601	64,385	77,797	63,522	66,720	45,429	1,125	19,482	393,319				
General Wheeling																	
Oroville-Wyandotte Irrigation District local water via SWP facilities	0	0	0	0	2,500	2,500	2,500	1,000	0	0	0	0	8,500				
YCWA water via SWP facilities	0	0	0	213	930	1,075	1,025	844	1,017	1,038	718	640	7,500				
PCWA water via SWP facilities	1,966	3,029	4,620	2,435	0	0	3,413	8,610	1,691	1,429	1,846	2,810	31,849				
DWR YCWA water (purchased water)	8,263	3,295	2,129	6,608	5,294	0	0	0	0	0	0	0	25,589				
KCWA exchange water with Arvin Edison Water Storage District	0	0	0	1,099	0	0	0	2,458	2,853	2,827	193	0	9,430				
Conveying CVP water—Annual Contract	5	3	3	4	1	5	4	4	16	15	10	6	77				
Conveying CVP water—Cross Valley Canal	481	5,037	114	0	0	1,600	5,709	8,296	360	11	19	18	22,645				
Conveying CVP water—Decision 1485	0	0	0	0	0	0	0	0	0	0	0	0	0				
Conveying CVP water—U.S. Fish and Wildlife	0	0	0	0	0	0	0	0	0	2,972	2,154	1,074	6,200				
Conveying CVP water—Recreation/fish and wildlife water	1	9	10	4	1	9	10	9	7	32	8	44	144				
Subtotal (other water)	14,511	18,788	9,001	22,431	166,386	180,866	201,807	184,982	116,329	82,775	45,941	51,531	1,095,348				
Grand Total	99,299	96,014	16,587	31,477	170,086	211,312	255,029	214,862	133,186	195,690	141,810	108,640	1,673,992	4,130,856	3,608,963	14,991,091	18,572,831

a) These columns include amounts of entitlement not delivered, deferred or otherwise, regardless whether water contractor received remuneration.
b) Includes amounts of 1991 entitlement water transferred to another agency for Antelope Valley-East Kern Water Agency; Castaic Lake Water Agency and Mojave Water Agency.
c) Includes amounts of 1992 entitlement water delivered in 1991.
d) Includes amounts of 1990 carry-over entitlement water delivered in 1991.

TABLE 6-3

Total Amounts of Annual Entitlements and Water Conveyed, by Type 1962 Through 1992

(Acre-feet)

	Annual Entitlements According to Long-Term Water Supply Contracts							Water Conveyed								
										Deliveries						
Year	Upper Feather River Area (1)	North Bay Area (2)	South Bay Area (3)	San Joaquin Valley Area (4)	Central Coastal Area (5)	Southern California Area (6)	Total (7)	1991 Entitlement Water (8)	Surplus and Unscheduled Water (a (9)	Other Water (b (10)	Feather River Diversions (c (11)	Subtotal (12)	Initial Fill Water (13)	Operational Losses and Storage Changes (d (14)	Recreation Water (15)	Total (16)
1962	0	0	0	0	0	0	0	0	0	18,289		18,289	9	272	0	18,570
1963	0	0	0	0	0	0	0	0	0	22,456		22,456	71	185	0	22,712
1964	0	0	0	0	0	0	0	0	0	32,507		32,507	171	152	0	32,830
1965	0	0	0	0	0	0	0	0	0	44,105		44,105	93	729	0	44,927
1966	0	0	0	0	0	0	0	0	0	67,928		67,928	0	1,746	0	69,674
1967	0	0	11,538	0	0	0	11,538	11,538	0	53,605		65,143	8,328	4,212	0	77,683
1968	550	0	109,900	81,050	0	0	191,500	171,709	121,534	14,777	866,926	1,174,946	498,926	117,906	0	1,791,778
1969	620	0	98,700	168,075	0	0	267,395	193,020	72,397	18,829	794,374	1,078,620	510,614	72,196	0	1,661,430
1970	700	0	114,200	207,700	0	0	322,600	233,993	133,024	38,080	759,759	1,164,856	23,947	2,435	0	1,191,238
1971	890	0	116,200	258,500	0	0	375,590	357,340	296,019	44,119	778,362	1,475,840	7,853	5,812	8	1,489,513
1972	970	0	118,300	420,766	0	201,723	741,759	611,801	423,964	66,638	817,398	1,919,801	100,274	53,062	6,489	2,079,626
1973	1,100	0	120,400	392,352	0	472,400	986,252	694,388	296,416	42,511	800,743	1,834,058	204,638	53,798	1,155	2,093,649
1974	1,230	0	122,400	470,350	0	588,220	1,182,200	874,077	417,676	46,224	911,613	2,249,590	237,554	10,657	2,118	2,499,919
1975	1,610	0	124,500	556,509	0	704,250	1,386,869	1,223,990	622,902	63,793	862,218	2,772,903	103,352	(94,606)	3,377	2,785,026
1976	1,990	0	126,500	555,117	0	824,780	1,508,387	1,373,002	580,110	115,217	946,440	3,014,769	61,122	(681,025)	1,745	2,396,611
1977	2,420	0	128,600	594,100	0	942,201	1,667,321	574,155	0	389,065	581,994	1,545,214	0	(131,151)	1,111	1,415,174
1978	1,850	0	130,700	647,262	0	1,038,222	1,818,034	1,452,699	16,914	121,225	786,517	2,377,355	64,443	717,370	1,691	3,160,859
1979	2,130	0	132,700	715,385	0	1,177,873	2,028,088	1,659,896	648,389	187,630	882,549	3,378,464	12,302	(83,430)	1,766	3,309,102
1980	1,810	500	134,800	770,800	1,946	1,304,914	2,214,770	1,529,749	404,557	46,459	875,045	2,855,810	0	(26,606)	2,131	2,831,335
1981	1,940	650	137,000	830,700	2,813	1,419,365	2,392,468	1,909,562	908,428	279,161	838,557	3,935,708	0	(802,263)	4,688	3,138,133
1982	1,970	800	139,200	889,200	5,626	1,537,749	2,574,545	1,750,024	215,873	154,882	776,330	2,897,109	0	480,752	4,646	3,382,507
1983	2,000	950	141,400	880,648	8,439	1,668,557	2,701,994	1,184,869	13,019	181,453	602,905	1,982,246	0	(90,997)	7,849	1,899,098
1984	3,630	1,100	143,600	991,911	12,698	1,731,398	2,884,337	1,588,619	262,917	381,024	832,332	3,064,892	0	(140,182)	7,040	2,931,750
1985	3,760	1,250	145,800	1,031,749	21,138	1,852,149	3,055,846	1,995,453	307,672	404,842	870,008	3,577,975	0	92,885	4,033	3,674,893
1986	4,190	1,400	148,100	1,139,200	28,210	1,971,190	3,292,290	1,995,636	(e 36,620	(f 193,606	791,737	3,017,599	0	284,380	3,865	3,305,844
1987	4,620	1,550	150,300	1,201,200	35,204	2,091,241	3,484,115	2,130,086	(g 114,907	377,592	831,947	3,454,532	0	(390,413)	7,672	3,071,791
1988	5,060	15,471	152,500	1,258,800	43,722	2,212,782	3,688,335	2,385,122	(h 0	516,481	794,834	3,696,437	0	(92,850)	4,889	3,608,476
1989	5,500	24,615	156,700	1,303,100	56,342	2,411,933	3,958,190	2,853,747	(i 0	487,567	809,250	4,150,564	0	447,917	8,135	4,606,616
1990	6,040	28,190	160,900	1,355,000	70,486	2,487,900	4,108,516	2,582,151	(j 90	457,316	851,247	3,890,804	0	(528,869)	9,262	3,371,197
1991	11,880	29,590	166,400	1,355,000	70,486	2,497,500	4,130,856	549,116	(k 3,521	551,048	565,395	1,669,080	0	167,435	4,912	1,841,427
Total	**68,460**	**106,066**	**3,231,338**	**18,074,474**	**357,110**	**29,136,347**	**50,973,795**	**31,885,742**	**5,896,949**	**5,418,429**	**19,228,480**	**62,429,600**	**1,833,697**	**(548,491)**	**88,582**	**63,803,388**

a) Values include amounts of deliveries to short-term contractors (Mustang Water District, 1970-1972; Tracy Golf and Country Club 1974, 1979, and 1980; Green Valley Water District, 1974, 1975, 1978, 1979, 1980, and 1985; Granite Construction Company, 1980).

b) Includes amounts of SWP and non-SWP water conveyed for SWP and non-SWP water contractors.

c) Includes amounts of water diverted under various water rights agreements.

d) Amounts reflect net effect of (1) operational losses from SWP transportation facilities; (2) changes in reservoir storage south of Delta; (3) storable local inflows to SWP reservoirs; (4) side inflow to San Luis Canal; and (5) inflow into California Aqueduct from Kern River Intertie.

e) Includes 37,170 acre-feet of entitlement water carried over from 1985.

f) Includes 12,270 acre-feet of surplus water carried over from 1985.

g) Includes 639 acre-feet of 1988 entitlement water delivered during 1987 and 16,171 acre-feet of entitlement water recaptured from groundwater storage.

h) Includes 67,581 acre-feet of 1987 entitlement water delivered in 1988 and 8,749 acre-feet recaptured from groundwater storage.

i) Includes 149,880 acre-feet of 1988 entitlement water delivered in 1989 and 89 acre-feet of 1990 delivered during 1989.

j) Includes 126,546 acre-feet of 1989 water delive nt water delivered in 1990.

k) Includes 27,075 acre-feet of 1990 entitlement water and 148 acre-feet of 1992 entitlement water delivered in 1991.

7 Designing and Constructing Facilities

The State Water Project (SWP) is being built in stages to match the Department of Water Resources' need for facilities necessary to meet its contractural obligations.

Construction of the project's initial facilities began in 1957 with the beginning of the relocation of the Western Pacific Railroad yards and Highway 70 near Oroville. In 1962 the first water deliveries were made from the partially completed South Bay Aqueduct; and work was started on the Oroville Dam and joint-use San Luis facilities.

In 1963 work began on the California Aqueduct; and by 1968 SWP was able to deliver water in the San Joaquin Valley. By 1973 the initial facilities were completed; and SWP was able to deliver water to Lake Perris, its most southern point. Since the 1970s, design and construction activities have centered on:

- Building power plants and pumping units that were deferred initially
- Enlarging or extending aqueduct reaches and facilities to ensure water quality in the Suisun Marsh

In the1990s design and construction acitivites will center around completing authorized facilities necessary to deliver water to San Luis Obispo and Santa Barbara counties and to augment the project's water supply.

This chapter includes information about the Department's design and construction activities for the period from July 1991 through June 1992. In addition, the chapter also includes information about purchases of land and rights-of-way, activities that must be completed before the Department can begin constructing facilities.

Design and Construction Activities

Designs for about 60 projects were in process or completed between July 1991 and June 1992. A listing of those projects, along with expected completion dates, if applicable, may be found in Table 7-1, "Design Activities, July 1991 Through June 1992, by Division," at the end of this chapter.[1]

Approximately 95 construction projects were in progress or completed during the same time. A listing of those projects, including cost, date notice to begin work was given to contractor,

[1]Information included in Table 7-1 and Table 7-2 is organized geographically according to construction divisions. Within each division, facilities at which design or construction activities occurred are listed alphabetically. Descriptions of activities taking place at each facility are listed chronologically according to date work began.

and date work was operationally complete and recommended for acceptance, may be found in Table 7-2, "Construction Activities, July 1991 Through June 1992, by Division," also located at the end of this chapter. Costs of contracts included in Table 7-2 represent actual costs of completed work or estimated costs of construction in progress.

Information about the most significant design and construction projects follows. The information is arranged geographically according to construction divisions (except for miscellaneous activities, which are listed last). Within each construction division, names of facilities at which projects occurred are arranged alphabetically.

Oroville Division

Design and construction work in the Oroville Division involved the Edward Hyatt Powerplant, Oroville Operations and Maintenance Center, and the Thermalito Powerplant.

Hyatt Powerplant

A contract to furnish automatic voltage regulators for units one through six was let in January 1990 and completed in June 1991.

In January 1991 a contract was also let to provide a fire protection system for the powerplant's high voltage tunnel. This contract was completed in June 1991.

Oroville Operations and Maintenance Center

Design work, which also included developing plans and specifications for modifying rest rooms, removing asbestos, and constructing a building for storing hazardous materials, was completed and a contract for installing and connecting two spurs of fiber-optic cable to the fiber-optic cable backbone was let in summer 1991.

One spur runs from the Oroville Operations and Maintenance Center to the backbone near the Oroville Dam spillway; the other, from the California Department of Forestry's building to the backbone at the Thermalito power canal.

Thermalito Powerplant

Resealing of asphalt-paved areas was accomplished according to provisions of a contract completed in August 1991. A contract for replacing 13.8-kV breakers was completed in January 1992.

North San Joaquin Division

Design and construction activities in the North San Joaquin Division involved the Harvey O. Banks Delta Pumping Plant; rock barriers at Old River and Middle River; John E. Skinner Fish Protection Facility; South Bay Aqueduct; South Bay Pumping Plant; Suisun Marsh salinity control gates; and various miscellaneous projects.

Banks Delta Pumping Plant

The second-phase enlargement of Harvey O. Banks Delta Pumping Plant, which included furnishing and installing four vertical centrifugal pumps, motors, discharge valves, transformers, switchboards, switch gear, and appurtenant electrical and mechanical equipment, has been completed.

The first two units (numbers 8 and 9) were operational in January 1992; the other two units (numbers 10 and 11) were operational in April 1992.

Rock Barriers at Old River and Middle River

Temporary barriers on Old River were constructed at the head and at Delta Mendota Canal in August 1991. Those barriers were removed for the winter in October and November and replaced through separate contracts in April 1992.

The annual reconstruction of the Middle River barrier was completed in March 1992. The barrier will remain in place until September 1992.

Skinner Delta Fish Protection Facility

Construction of new holding tanks, a building to house the tanks, and appurtenant equipment at the John E. Skinner Delta Fish Protection Facility was completed in July 1992.

Other construction activities during this period included installing additional acoustic velocity flow meters and modifying the existing control and vehicle storage buildings. Modifications are scheduled to be completed in early 1993.

South Bay Aqueduct

Design work for upgrading the communication and control system has been completed. Construction work for modifying sites and installing a remote terminal unit was completed in January 1992.

South Bay Pumping Plant

Design activities included preparing plans and specifications to furnish spare pumps and motors.

A construction contract for interior and exterior painting was completed in February 1992.

Suisun Marsh Salinity Control Gates

The Suisun Marsh salinity control gates have been operational since October 1988. The radial gate hoist mechanism was modified through a construction contract, which was completed in October 1991.

A contract to modify the channel, gates, and appurtenant equipment was let in August 1991 and completed in September 1991.

Miscellaneous Projects

The Design Office completed plans and specifications for modifying the administration building and repairing the roof on the carpenter shop at the Delta Operations and Maintenance Center. Design support was provided for installing a remote terminal unit in the Delta Field Division.

Other construction activities completed in North San Joaquin Division included repairs to roads. Work continues on a contract to furnish replacement pump impellers for Harvey O. Banks Delta Pumping Plant. The contract is scheduled to be completed in December 1992.

San Luis Division

Design work included preparing contract documents for inspecting the stone slope protection on B. F. Sisk San Luis Dam and for supporting the installation of a remote terminal unit in the field division.

Construction contracts involved repairing and maintaining existing facilities. At William R. Gianelli Pumping-Generating Plant, the coating of the plant exterior siding was completed in July 1991.

Work continues on a contract to replace impellers at Dos Amigos Pumping Plant. That contract is scheduled to be completed in December 1992.

A contract for replacing air conditioners in the control buildings at check structures 14 through 21 was completed in March 1992.

South San Joaquin Division

Projects in the San Joaquin Division involved the Buena Vista, Ira J. Chrisman Wind Gap, and Wheeler Ridge pumping plants; Kern Water Bank; and San Joaquin Operations and Maintenance Center.

Buena Vista, Chrisman, and Wheeler Ridge Pumping Plants

Work let through two contracts for furnishing replacement pump impellers is scheduled to be completed in late 1992.

The Design Office also completed contracts for furnishing replacement stator coils for the three plants.

Kern Water Bank

Two construction contracts for rehabilitating wells and constructing conveyance facilities were let in December 1990.

Difficulties in obtaining environmental permits delayed completion of some work and required shifting of other work to future contracts. The contract for the conveyance facility was completed in June 1992.

Contracts for rehabilitating additional pumps and motors and constructing another conveyance facility were completed by the Design Office.

San Joaquin Operations and Maintenance Center

Additions to the training center and warehouse were constructed during this reporting period. In addition, contracts for modifying the mobile equipment and storage buildings, replacing fuel tanks, and installing remote terminal units were completed.

Tehachapi Division

Division activities include replacing unit circuit breakers, rewinding several pumping unit motors, and recoating discharge lines and surge tank at A. D. Edmonston Pumping Plant.

Mojave Division

Activities in the Mojave Division involved the Alamo Powerplant, the California Aqueduct, Mojave Siphon Powerplant, and Pearblossom Pumping Plant and Subcenter.

Alamo Powerplant

Work on resolving vibration and bearing problems with the turbine/generator shaft at Alamo Powerplant continued into 1992.

Based on an analysis of data gathered in 1988 and 1991, the Department's consultants recommended that a new shaft be installed, an intermediate shaft bearing be provided, and an existing bearing be stiffened.

Contracts have been let for performing the necessary remedial work. Manufacture of the new generator shaft and a new lower generator guide bearing bracket is in progress.

California Aqueduct

Enlargement of the East Branch of the California Aqueduct by raising the lining on the canal reaches between Alamo Powerplant and Mojave Siphon was completed in June 1988.

Modification of existing check structures from Alamo Powerplant to Mojave Siphon was completed during this period. Construction required for enlarging the 15 existing siphons is well ahead of schedule; work has been completed on 14 of the siphons.

A construction contract was awarded in mid-1991 to construct a third barrel for the Antelope Siphon; work was completed in June 1992.

A contract for constructing a second pipeline for Mojave Siphon was let in March 1992 with a completion date in February 1995.

Mojave Siphon Powerplant

Construction of the initial Mojave Powerplant structure and fabrication of a gantry crane were started in fall 1990.

The construction of the initial plant structure was halted by the contractor after excavating

approximately 95 percent of the plant bowl and discharge line. The contractor claimed unstable ground conditions.

The Department disagreed with the contractor's assessment; and after numerous meetings and discussions, the contractor was directed to resume work. Construction of the plant structure is again underway.

Manufacturing of the three vertical Francis turbines, generators, and governor for the new Mojave Siphon Powerplant is well underway.

Pearblossom Pumping Plant and Subcenter

Construction work for the enlargement of Pearblossom Pumping Plant continued. Construction of the plant's structure will be completed in August 1992. Installation of three new pumping units was started in October 1990; all three units are scheduled to be operational in late 1992.

The contractor of the initial plant structure was directed to replace a roof damaged in a 1991 fire. That work has been completed.

The contractor hired to complete the third discharge line has connected the discharge line to the manifold at the plant outlet and is completing this work.

Contracts were prepared for expanding the warehouse at the Pearblossom Subcenter.

Santa Ana Division

Activities in the Santa Ana Division involved enlarging Devil Canyon Powerplant, modifying the Rialto Pipeline, and placing post-tensioned cables on the Santa Ana Pipeline at various locations.

Devil Canyon Powerplant

Work currently in progress for enlarging Devil Canyon Powerplant involves completing expansion of the plant structure; constructing a second penstock; and installing two turbines, governors and valves, bypass equipment, generators, switch gear, switchboards, 115-kV power circuit breakers, and a penstock butterfly valve.

The two new generating units (numbers 3 and 4) are scheduled to be operational in early fall 1992.

Rialto Pipeline

A construction contract for modifying the Rialto Pipeline in the vicinity of Devil Canyon Powerplant was let in April 1991 and completed November 1991.

West Branch

Construction work for Vista del Lago Visitors' Center and Vaquero Recreational Facility at Pyramid Lake was started in mid-1991 and is well underway. Those facilities are scheduled for completion in late 1992.

Miscellaneous Construction Activities

Miscellaneous construction activities include making repairs and modifications to existing facilities according to master repair contracts and installing acoustic flow meters at various pumping plants and power plants. See "Miscellaneous Activities" in Table 7-2 for additional information.

In addition, the Department plans to relocate the control center from the Resources Building in Sacramento to a new water operation control center to be constructed adjacent to the abandoned Pacific Gas & Electric power station on Jibboom Street in Sacramento.

The first construction contract for improving the foundation was awarded in March 1991 and completed December 1991. Contracts for constructing the new control center as well as reno-

vating the existing building, which will serve as a visitors' center, will be let in late 1992 and early 1993.

Land and Right-of-Way Activities

In fiscal year 1991-92, the Department spent $4.3 million in excess of credits for sales of surplus property and return of condemnation deposits to acquire land. Eleven parcels (approximately 2,900 acres) were acquired during this fiscal year; one parcel (0.17 acre) of excess land was sold.

The total net amount spent to acquire rights-of-way and mitigation lands for SWP through June 30, 1992, was $182 million. The Department also monitored 46 leases, which resulted in a revenue of $370,000 during the 1991-92 fiscal year.

The Department's land and right-of-way program for fiscal year 1991-92 included actions involving Arroyo Pasajero, the Coastal Branch of the California Aqueduct, East Branch Enlargement of the California Aqueduct, Los Banos Grandes, North Delta, Oroville, South Bay, South Delta, and West Delta. Information about those activities follows.

Arroyo Pasajero

The Department prepared value estimates for lands within the 50-year and 100-year flood zones.

Coastal Branch

The Department acquired rights to enter 225 properties to conduct environmental and geological studies. To perform those studies, court-ordered entries were obtained for five parcels.

East Branch Enlargement Project

The Department completed acquisition for this project with the purchase of 0.15 acre in fee and 3.10-acre temporary easement for a price of $15,180.

Los Banos Grandes

The Department acquired rights to perform environmental and geological studies on 13 ownerships within the reservoir's site and 32 ownerships within the mitigation areas. Three parcels were also purchased (38.67 acres) at the Orestimba Creek mitigation area adjacent to Interstate 5 for $972,000.

Currently the Department is processing signed documents for purchasing four parcels (461 acres) at a price of $3 million and has reached verbal agreement to purchase an additional six parcels (1,234 acres) for $6.13 million.

North Delta

The Department acquired six parcels of land on Twitchell Island (2,862 acres) at a cost of $3.3 million. The Department now owns almost 80 percent of the island.

Four permits for installing seepage monitoring wells along the Mokelumne River were obtained as well as 16 permits to allow drilling for soil samples and 56 permits to perform studies for the North Delta Water Management Program.

Oroville

The Department obtained a permit to store equipment used in the cloud seeding program, which is designed to increase inflow to Lake Oroville Reservoir from the Feather River.

South Bay

The Department purchased an easement over one 0.17 acre parcel for $2,300. The easement was necessary to accommodate the installation of a fiber optics communication cable.

South Delta

Two temporary entry permits were obtained to construct the rock barriers in Old River; seven permits were obtained to construct the Middle River seasonal tide barrier, including permits to perform vegetation and wildlife studies and 22 permits to conduct environmental studies for the South Delta Water Management Program.

West Delta

The Department began negotiations to acquire up to 31 parcels of land on Sherman Island (10,086 acres) at a cost of $23.2 million.

TABLE 7-1

Design Activities, July 1991 Through June 1992, by Division

Construction Division and Facility	*Construction Contract*	*Date Design Began*	*Date Design Completed*
Oroville Division			
Oroville Operations and Maintenance Center	Install fiber optic cable.	December 1990	November 1992
	Modify restroom.	August 1991	August 1991
	Construct hazardous storage facility.	February 1992	June 1992
	Remove asbestos.	April 1992	June 1992
North San Joaquin Division	Construct tidal barrier, Middle River.	November 1991	June 1992
	Construct rock barrier, Old River.		
	Spring 1992	November 1991	January 1992
	Fall 1992	May 1992	June 1992
Harvey O. Banks Delta Pumping Plant	Replace 480-V switchgear and install station transformer.	June 1991	September 1992
Clifton Court Forebay	Seal-coat roads.	April 1992	June 1992
Delta Field Division	Install remote terminal unit.	February 1992	July 1992
Delta Operations and Maintenance Center	Reroof carpenter shop.	September 1990	April 1992
	Modify administration building.	September 1990	July 1992
South Bay Aqueduct	Upgrade control buildings.	October 1990	December 1991
South Bay Pumping Plant	Upgrade communication system.	November 1990	July 1992
	Furnish and install spare pumps and motors.	July 1991	July 1992
San Luis Division			
San Luis Field Division	Install remote terminal unit.	February 1992	July 1992
B. F. Sisk San Luis Dam	Protect stone slope.	March 1992	May 1992
South San Joaquin Division			
Badger Hills Pumping Plant	Modify HVAC.	March 1992	August 1992
Ira J. Chrisman Wind Gap Pumping Plant	Furnish stator coils 22,000 h.p. motors.	October 1991	March 1992
	Furnish stator coils 44,000 h.p. motors.	October 1991	May 1992
Coastal Aqueduct	Repair Mile 12.9.	February 1991	August 1991
	Furnish spare coils 8,500 h.p. motors.	February 1992	May 1992
	Furnish spare coils 17,000 h.p. motors.	February 1992	May 1992
Kern Water Bank	Kern fan element, stage 1:		
	Rehabilitate pumps and motors.	July 1991	April 1993
	Construct conveyance facility.	July 1991	April 1993
La Hacienda Water Extraction Facility		July 1990	July 1992
Las Perillas Pumping Plant	Modify HVAC.	March 1992	August 1992
South San Joaquin Operations and Maintenance Center	Construct training center additions.	September 1988	May 1992
	Replace roof.	April 1990	May 1992
	Modify storage building.	June 1990	May 1992
	Construct civil maintenance shop and warehouse.	October 1990	May 1992
	Modify mobile equipment building.	March 1992	
Tehachapi Division			
A. D. Edmonston Pumping Plant	Recoat surge tank, discharge line, and appurtenance.	February 1991	November 1991
	Furnish stator rewind/spare coils, unit 9.	January 1992	September 1992
	Replace unit circuit breakers.	January 1992	September 1992
Mojave Division			
Mojave Siphon Powerplant	Award completion contract.	July 1989	July 1992
	Install switchboards.	March 1990	December 1991
	Install control switchgear.	May 1990	September 1991
	Install power transformer.	March 1991	April 1992
	Install flowmeters.	April 1992	December 1992
Pearblossom Subcenter	Expand warehouse.	April 1991	May 1992
Southern Field Division	Install remote terminal unit.	April 1990	January 1992
Santa Ana Division	Repair Santa Ana Pipeline.	Not applicable	October 1991
Devil Canyon Powerplant	Expand second afterbay.	October 1988	May 1992
San Bernardino Tunnel	Construct intake structure.	May 1991	April 1993
West Branch			
William R. Gianelli Pumping Plant	Replace roof.	February 1992	June 1992
Vista del Lago Visitors' Center	Construct exhibits.	March 1990	June 1992
	Modify Gorman Creek Channel.	May 1992	January 1993
Miscellaneous Activities	Conduct seismic survey, DWR buildings.	March 1991	July 1991
	Furnish Operations and Maintenance surface-mounted fuel tanks.	October 1991	June 1992
Operations and Maintenance Communications Network/ Control Center	Modify third floor.	March 1992	July 1992

TABLE 7-2

Construction Activities, July 1991 Through June 1992, by Division

Construction Division and Facility	*Construction Contract (Specification number)*	*Starting Date*	*Ending Date*	*Contract Costs (Thousands of dollars)*
Oroville Division				
Edward Hyatt Powerplant	Furnish voltage regulators, units 1-6 (89-51).	January 1990	July 1991	$971
Oroville Complex	Install high voltage tunnel fire protection system (90-39).	January 1991	July 1991	472
Thermalito Powerplant	Reseal paved areas (91-14).	July 1991	August 1991	59
	Replace 12.8-kV breakers (91-22).	October 1991	January 1992	350
North San Joaquin Division				
Harvey O. Banks Delta Pumping Plant (a	Install four centrifugal pumps (87-18).	September 1987	July 1992	7,733
	Install pump discharge valves (88-25).	September 1988	July 1992	4,900
	Install motors (88-49).	November 1988	July 1992	11,888
	Install transformers (89-02).	May 1989	February 1991	1,481
	Install switchboards and switchgear (89-10).	July 1989	February 1991	1,354
	Award completion contract (89-09).	August 1989	September 1992	8,400
John E. Skinner Delta Fish Protection Facility	Construct new holding tank building and make improvements, Phase II (90-35).	December 1990	July 1992	4,351
	Modify control and vehicle storage buildings, Phase III (92-01).	May 1992	January 1993	262
Suisun Marsh	Modify radial gate hoist, salinity control gates (91-21).	August 1991	October 1991	60
	Modify channel and gate, salinity control gates (91-27).	August 1991	September 1991	530
Miscellaneous Activities	Reconstruct Tidal Barrier IV, Middle River (91-01).	March 1991	September 1991	20
	Construct temporary closure, 1991, Old River at head (91-28).	August 1991	November 1991	18
	Construct rock barrier, Old River at Delta-Mendota Canal (91-30).	August 1991	October 1991	300
	Paint exterior and interior of South Bay Pumping Plant (91-25).	September 1991	February 1992	172
	Reconstruct Tidal Barrier V, Middle River (92-03).	March 1992	September 1992	41
	Replace rock barrier, Old River at Delta-Mendota Canal, San Joaquin Division (92-06).	April 1992	November 1992	173
	Replace rock barrier, spring 1992, Old River at San Joaquin River (92-07).	April 1992	June 1992	114
San Luis Division				
William R. Gianelli Pumping-Generating Plant	Recoat siding (91-09).	May 1991	July 1991	43
South San Joaquin Division				
Buena Vista and Wheeler Ridge pumping plants	Replace pump impellers (88-13).	July 1988	October 1992	6,575
Ira J. Chrisman and Oso pumping plants	Replace pump impellers (88-14).	July 1988	October 1992	3,700
Tehachapi Division				
A. D. Edmonston Pumping Plant	Rewind stator, units 6 and 8 (90-07).	March 1990	October 1992	1,016
	Rewind stator, unit 1 (90-36).	October 1990	October 1992	2,117
	Rewind stator, unit 13 (90-41).	November 1990	January 1992	684
	Recoat surge tank, discharge line, and appurtenances (92-05).	May 1992	June 1992	54
Mojave Division				
Alamo Powerplant	Work on turbine.	October 1980	June 1993	2,117
	Work on generator (83-14).	August 1983	June 1993	2,100
	Furnish acoustic flowmeter (84-07).	April 1984	May 1993	108
East Branch Enlargement	Canals and siphons:			
	Modify canal structure, Alamo Powerplant to Pearblossom Pumping Plant (88-49).	April 1989	January 1992	3,320
	Modify canal structure, Pearblossom Pumping Plant to Mojave Powerplant (89-39).	September 1989	November 1991	1,493
	Construct third barrel, Antelope Siphon (90-44).	March 1991	August 1992	4,967
	Construct temporary diversion (91-23).	August 1991	December 1991	309

a) Work has been accepted for transformers, switchboards, and switchgear, but close-out activities continue.

TABLE 7-2

Construction Activities, July 1991 Through June 1992, by Division (Continued)

Construction Division and Facility	*Construction Contract (Specification number)*	*Starting Date*	*Ending Date*	*Contract Costs (Thousands of dollars)*
East Branch Enlargement (Continued)	Install pipe jacking under railroad, Antelope Siphon third barrel (91-24).	September 1991	November 1991	$189
	Construct second pipeline, Mojave Siphon (91-33).	March 1992	February 1995	51,000
Pearblossom Pumping Plant Enlargement, Phase II	Install vertical centrifugal pumps (87-04).	May 1987	March 1992	3,591
	Install motors (87-48).	June 1988	December 1992	9,600
	Install pump discharge valve units (88-18).	July 1988	December 1992	1,523
	Install switchboards (88-24).	July 1988	September 1992	624
	Award initial contract (88-17).	August 1988	August 1992	22,925
	Install switchgear (88-30).	September 1988	September 1992	946
	Install bridge cranes (88-37).	September 1988	June 1992	574
	Install 230-kV equipment (88-50).	May 1989	September 1992	762
	Connect third discharge line (89-24).	September 1989	July 1991	9,272
	Install power transformer (89-33).	October 1989	May 1992	798
	Award completion contract (89-36).	November 1989	December 1992	9,865
	Complete third discharge line (90-02).	March 1990	September 1992	6,044
Mojave Siphon Powerplant	Manufacture turbines, generators, and governors (89-13).	August 1989	December 1994	14,482
	Award initial contract (90-22).	October 1990	December 1992	22,600
	Construct seventy-five-ton gantry crane (90-38).	December 1990	October 1992	794
	Furnish butterfly valves (91-15).	August 1991	September 1993	996
	Furnish control switchboards (91-31).	March 1992	November 1993	769
	Furnish switchgear, MCC, station service substation, transformer, and load tank (91-34).	April 1992	December 1993	773
Santa Ana Division				
Devil Canyon Powerplant Enlargement	Install bypass equipment, sleeve valve (87-05).	July 1987	February 1991	457
	Install turbines, governors, and valves (87-15).	July 1987	January 1992	12,717
	Award initial contract (88-07).	July 1988	August 1992	24,200
	Install generators (88-47).	May 1989	April 1992	10,179
	Install power transformers (89-32).	October 1989	July 1991	2,071
	Install penstock butterfly shutoff valve (89-46).	December 1989	August 1992	1,032
	Award completion contract (90-20).	August 1990	September 1992	11,400
	Modify Rialto Pipeline (91-07).	April 1991	December 1991	935
	Install butterfly valves (91-15).	August 1991	September 1993	1,630
West Branch	Construct Vista del Lago Visitors' Center (91-16).	July 1991	December 1992	3,400
	Construct Vaquero Recreational Facility (91-04).	September 1991	October 1992	2,508
Miscellaneous Activities	Furnish multiplant acoustic flowmeters: Oroville, Delta, San Luis, San Joaquin, and Southern Field divisions (89-28).	July 1989	December 1992	483
	Repair electrical power apparatus: Oroville, Delta, San Luis, San Joaquin, and Southern Field divisions (89-30).	August 1989	June 1992	2,894
	Make machining and mechanical repairs, Southern and San Joaquin Field divisions (89-29).	October 1989	June 1992	820
	Make machining and mechanical repairs, Oroville, Delta, and San Luis Field divisions (89-31).	October 1989	June 1992	897
	Replace pump impeller: Banks and Dos Amigos pumping plants (89-35).	October 1989	December 1992	7,415
	Furnish 230-kV circuit breakers and gas processing cart: Edmonston and Gianelli pumping plants (90-16).	June 1990	October 1991	2,673
	Improve foundation, water operations center (91-03).	March 1991	January 1992	1,151
	Modify site and install remote terminal unit, South Bay Aqueduct (91-05).	April 1991	February 1992	801
	Construct addition to general maintenance warehouse, San Joaquin Operations and Maintenance Center (91-11).	June 1991	December 1991	125

TABLE 7-2

Construction Activities, July 1991 Through June 1992, by Division (Continued)

Construction Division and Facility	*Construction Contract (Specification number)*	*Starting Date*	*Ending Date*	*Contract Costs (Thousands of dollars)*
Miscellaneous Activities (Continued)	Seal-coat primary operating road, Phase I, San Joaquin Field Division (91-13).	June 1991	August 1991	$153
	Reseal paved areas, Oroville Field Division (91-14).	July 1991	August 1991	59
	Excavate pipe, Santa Ana Valley Pipeline, stations 22, 26, 39, and 65 (91-19).	July 1991	December 1991	84
	Check HVAC, control buildings, structures 14 through 21, San Luis Field Division (91-17).	September 1991	March 1992	70
	Furnish fiber optic cable, Phase II, Oroville Division (91-29).	November 1991	May 1992	362
	Excavate and repair pipe, Santa Ana Valley Pipeline, Day Street to Ellsworth Street (91-36).	December 1991	August 1992	3,400
	Furnish bulkhead gate, Perris Dam Outlet Works Tower (91-37).	January 1992	May 1992	54
	Modify site and install remote terminal unit, Southern Field Division (92-04).	May 1992	April 1993	493

8. Ensuring Safety of Facilities

The Department of Water Resources, through the Division of Operations and Maintenance, monitors the performance of State Water Project (SWP) facilities to ensure that they are safe and reliable.

Operations and Maintenance staff continually collects and evaluates data relating to the performance of each facility. Those data are summarized in performance reports, which are reviewed by the divisions of Operations and Maintenance, Design and Construction, and Safety of Dams. The Division of Safety of Dams evaluates SWP's dams, as it does other dams operated throughout the state, to ensure each dam is safe. Generally, dams are inspected twice each year.

Although the Department's staff inspects and maintains SWP's facilities on a continual basis, the Department periodically contracts with independent consultants to review each facility. In addition, the Federal Energy Regulatory Commission (FERC) reviews current and past records of facilities under its jurisdiction, evaluates the information, and makes recommendations for correcting problems to the director.

This chapter includes information about the Department's inspection and maintenance activities as well as information about the activities of independent consultants and federal agencies.

Inspection and Maintenance

As part of the Department's program to continually monitor and maintain SWP facilities, various dams, power plants, intake towers, and canal embankments were inspected between July 1, 1991, and June 30, 1992. Also, throughout the year, routine and scheduled maintenance was performed on all plants and the California Aqueduct.

In addition, the Division of Operation and Maintenance at the Department's headquarters in Sacramento ensures that SWP facilities are inspected each year by appropriate headquarters personnel; and their findings are consolidated in an annual inspection report for each field division.

Also, as part of its responsibilities for maintaining the California Aqueduct, the Department, working with the U.S. Bureau of Reclamation (USBR), developed a program for minimizing the damage to a section of the California Aqueduct affected by the Arroyo Pasajero watershed during heavy flooding.

Information about those activities, organized in two sections, "Inspection of Facilities" and "Maintenance of Facilities," follows.

Inspection of Facilities

Performance reports on the following dams were started or completed during July 1, 1991, to June 30, 1992:

Antelope Lake
Bethany Reservoir
Castaic
Cedar Springs
Clifton Court Forebay
Frenchman Lake
Grizzley Valley
Lake Oroville
Lake Perris
San Luis Reservoir
Thermalito Diversion and Afterbay

During the same time, performance reports were started or completed on the following power plants:

Alamo Powerplant
Devil Canyon Powerplant
William E. Warne Powerplant

In addition, the Department of Operations and Maintenance performed specific tasks related to individual facilities. Information about those tasks follows, arranged alphabetically according to name of facility.

Bethany Dam

In late 1990 Department personnel noted cracking along the crests of Bethany Dam One and Two, which suggested movement of the common abutment between the two dams. An exploration trench was dug to determine the extent of cracking. Fifteen new surface monuments on survey lines were installed near the common abutment; since January 1991, readings have been collected monthly.

As a precautionary measure, the Division of Design and Construction and the Division of Safety of Dams recommended installing four slope indicators to monitor movement of the dams' foundation. Those indicators were installed in November 1991.

Little Panoche Detention Dam

The U.S. Bureau of Reclamation is studying remedial alternatives necessary for the dam to safely pass the revised probable maximum flood estimates, which are based on statistics and historical data about rainfall and runoff.

Los Banos Detention Dam

The U.S. Bureau of Reclamation agreed to delay safety studies for the dam until final plans for Los Banos Grandes dam have been determined.

In a feasibility study of the dam's early warning system, USBR indicated that during a major flood the existing warning system would not be effective. Hence, USBR reasoned that the system is not needed. The Department agrees with USBR; however, the Department believes that the current operations plan for emergency conditions is appropriate for the interim period.

O'Neill Dam

A performance report was completed for O'Neill Dam; in addition, drawings and specifications for the seismic strengthening of the dam were prepared by USBR and reviewed and commented on by the Department.

A contract for $7.3 million to strengthen the dam, which involved removing unsuitable material in several locations along the toe of the dam and building stability berms at those locations, was awarded on April 12, 1991. Work began on May 2, 1991, and was completed in 1991.

Oroville Dam

The Division of Design and Construction began to evaluate and make recommendations

concerning the status of all instrumentation tubing at Oroville and to evaluate anomalous data received from the lower horizontal movement measuring device.

Patterson Dam

The dewatering of Patterson Dam for the inspection and repair, if needed, of the asphalt lining was delayed because of environmental concerns. The inspection is planned for the end of calendar year 1992.

Peace Valley and Quail Embankments

Seismic stability analyses of Quail Detention and Peace Valley embankments were performed for FERC. Both embankments were found to be stable.

San Bernardino Tunnel Intake Tower

The seismic stability of the San Bernardino tunnel intake tower was evaluated at the recommendation of the 1989 FERC consulting team. As a result of the evaluation, the Department concluded that the tower would be severely distressed during a large earthquake. Corrective methods are being investigated.

B. F. Sisk San Luis Dam

Monitoring for cracks in the dam and for movement in the upstream slope protection riprap is continuing. No new cracks have been observed since 1986. At the Division of Operations and Maintenance's request, the Division of Design and Construction's Design Office is studying the dam's instrumentation and testing riprap construction methods.

Thermalito Diversion and Afterbay Dams

Several of the spillway energy dissipater dentates at the Thermalito Diversion Dam were damaged by fish-release flows from a 42-inch diameter fixed-cone valve (before the new power plant became operational) and by flood releases in February 1986.

Costs for repair, excluding environmental considerations, as estimated by the Division of Design and Construction range from $230,000 to $270,000. Repairs may be scheduled when funds are available.

Maintenance of Facilities

Facilities are monitored throughout the year and repairs and modifications are performed to ensure the safe, reliable delivery of water.

Information about those activities, including those involving a section of the California Aqueduct affected by the Arroyo Pasajero watershed, follows.

Arroyo Pasajero Improvements

The Arroyo Pasajero drains approximately 500 square miles west of the California Aqueduct near Coalinga in Fresno County. During periods of heavy rainfall, the Arroyo Pasajero watershed carries much sediment, which has resulted in an alluvial fan covering about 500 square miles and extending into the San Joaquin Valley.

The California Aqueduct, constructed across the alluvial fan, was designed taking drainage and sediment into account. However, by observing the effects of floods in 1969, the Department

discovered that the amount of both the watershed runoff and sediment load was greater than estimated in the original design.

Since then the Department has developed short-term and long-term actions designed to minimize damage. Information on the Department's activities follows.

Short-Term Actions

Since 1969 the Department and USBR, the agency responsible for the design of the section of aqueduct affected by Arroyo Pasajero, have been working to minimize the damage during heavy flooding. In addition, in 1980 a significant amount of asbestos was discovered in runoff from Arroyo Pasajero. Since then, the Department has adopted operating procedures to minimize runoff entering the aqueduct.

The Department uses existing facilities to protect the aqueduct and plans to purchase additional land on the west side to capture runoff from rains occurring within the watershed. Those measures are viewed as interim solutions because they do not meet the Department's standard design criteria for protection against a 100-year storm flood.[1]

Long-Term Actions

Alternative plans for a long-term remedy to the drainage problem includes:

1. Purchasing additional land to further enlarge the impoundment basin
2. Building upstream dams to retain the water and sediment in the upper watershed, which could be used in combination with a smaller enlargement of the west-side impoundment
3. Constructing an overchute to carry flood waters over the aqueduct and dispersion facilities on the aqueduct's east side

The Department also is investigating the possibility of carrying the storm waters across the aqueduct into east-side impoundments.

In May 1991 the U.S. Army Corps of Engineers (USACE) began a reconnaissance study of the entire watershed to develop a broader, multipurpose solution to drainage problems in this area. The study is expected to be completed by November 1992. A feasibility study will begin in March 1993 if:

1. The benefit-cost ratio included in the reconnaissance study is greater than 1.0.
2. Federal interest is determined.
3. A nonfederal sponsor is identified.

If conducted, the expected completion date of the feasibility study is March 1996.

At the request of SWP contractors, a final proposed solution of the Arroyo Pasajero drainage problem will not be selected until USACE completes its examination of the entire watershed. In the meantime, the Department will continue to rely on existing facilities to protect the aqueduct.

Repairs and Modifications

Table 8-1, "Repairs and Modifications to Facilities in 1991, by Month," includes information, arranged chronologically, about significant maintenance activities at two power plants, nine pumping plants, and one power-generating plant.

The table, which includes information about mishaps resulting in outages exceeding 120 hours, may be found at the end of this chapter.

Independent Reviews

Information about activities conducted in response to independent reviews by federal agencies and consultants is included in this section.

[1]The Department and USBR have completed a joint environmental impact report/statement (EIR/EIS) for the interim procedures. However, the document will not be released until issues associated with ownership of lands selected for purchase have been resolved.

Federal Agencies

During July 1991 FERC conducted an exercise for a simulated sudden failure of Lake Almador Dam, a Pacific Gas & Electric (PG&E) facility in the Upper Feather River area.

The exercise, involving both the Department and PG&E, was designed to coordinate and test responses of operations personnel from the Department, PG&E, and other agencies that would be affected by a failure of the dam— California Office of Emergency Services, the Butte County Sheriff's Office, the California Highway Patrol, and Butte County's Office of Emergency Services, for example.

Consultants

The Department contracts with professional civil engineers and geologists to periodically review the safety and assess conditions of SWP facilities. Information about the process the Department uses to select consultants, typical duties of consultants, and performance reports prepared by consultants follows.

Selection and Duties

Consultants are selected based on their geotechnical engineering expertise, knowledge of and expertise in inspecting dams and knowledge of SWP's facilities.

After consultants are hired, they may be required to:

1. Prepare reports for the director of the Department of Water Resources any time a dam undergoes a major modification or a certificate of approval is issued or renewed.
2. Review facilities licensed by FERC every five years and prepare a report for review by FERC. None were reviewed during the period of this report.
3. Every five years review the safety and operational performance of all department dams under jurisdiction of the Division of Safety of Dams. No dams were reviewed during this reporting period.

Information from performance reports prepared by Operations and Maintenance staff members is used to brief consultants, who also (1) review the reports in detail; (2) make physical inspections of each facility; and (3) issue independent reports on each facility. The Department prepares action plans based on recommendations submitted by consultants.

Review Boards

The last two independent consultant's review boards were convened in October 1990 and May 1991. The 1990 review board met to inspect and report on the safety of four dams: Bethany, Clifton Court Forebay, Del Valle, and Patterson.

The 1991 review board met to inspect and report on recommendations for Upper Feather River dams (Antelope, Frenchman, and Grizzly Valley). All dams were found to be safe for continued use. (Chapter 7 of Bulletin 132-91, *Management of the California State Water Project,* includes specific information about consultants' recommendations for those three dams.)

TABLE 8-1

Repairs and Modifications to Facilities in 1991, by Month

Month	*Facility*	*Description*
January 1991	William E. Warne Powerplant	Unit 1 out of service from January 3 to March 1 due to oil slick in afterbay. Leaking needle valve removed and repaired.
	A. D. Edmonston Pumping Plant	Unit 3 out of service from January 26 to November 20 forinspection of pump impeller. Unit 3 out of service pending completion of east wing discharge valve work.
	Ira J. Chrisman Wind Gap Pumping Plant	Units 6 and 8 out of service from January 16 through 29 to reinsulate 13.2 kV bus.
February 1991	A. D. Edmonston Pumping Plant	Unit 4 out of service from February 7 through 17 to repair dashpot.
March 1991	Pearblossom Pumping Plant	Painting of Pearblossom canceled due to moisture. Units 3, 4, 5, and 6 out of service due to wet switchgear. Bus sections and insulation disassembled, cleaned, and reinstalled.
April 1991	Pearblossom Pumping Plant	Pearblossom Pumping Plant shut down on April 13 due to fire. Units 4 and 6 again operational on April 16; unit 2, on April 26; unit 3, on April 29; and unit 5, on May 28. Unit 1 not operational due to other repairs, and unit 7 stator returned for repair.
July 1991	William R. Gianelli Pumping-Generating Plant	Unit 1 out of service from July 5 to January 7, 1992, to repair coupling flanges, resurface excitator commutator, and rebore bolt holes.
	Oso Pumping Plant	Plant evacuated after units 3, 5, 6, and 8 tripped with indication of differential and CO_2 release. Units 6 and 8 returned to service July 8. Unit 3 stator completely rewound.
	Buena Vista Pumping Plant	Unit 10 out of service from July 26 to October 29 to replace one pole.
August 1991	Badger Hill Pumping Plant	Unit 5 out of service from August 3 to May 18, 1992, to rewind stator.
	Ira J. Chrisman Wind Gap Pumping Plant	Unit 8 out of service from August 26 to December 13 to install oil containment booms and remove and rebuild discharge valve.
September 1991	South Bay Pumping Plant	Unit 7 out of service from September 5 to September 30 to replace motor.
	Oso Pumping Plant	Units 1, 2, 3, and 6 out of service September 13 due to failure of station service transformer.
October 1991	Alamo Powerplant	Unit 1 out of service from October 3 to December 20 to replace shaft seal, fabricate and install new shoes, and conduct runout testing.
November 1991	Harvey O. Banks Delta Pumping Plant	Unit 4 out of service from November 7 to February 24, 1992, to repair oil-contaminated motor windings.
	Dos Amigos Pumping Plant	Unit 6 out of service from November 18 to December 24 to repair fastener heads in pump.

9. Generating, Buying, and Selling Power

To deliver water to its 29 long-term water service contractors, the State Water Project (SWP) requires a dependable and economical source of electric power. To obtain that power, the Department of Water Resources has operated SWP as bulk power agency since 1983; that is, SWP produces power from its own facilities and buys and sells power on the open market.

For the names and locations of SWP's facilities as well as facilities from which the Department purchases power, see Figure 9-1, "Names , locations, and total generating capacity of primary power facilities," at the end of this chapter.

Through an extensive computerized network, SWP controls the timing of its pumping load. That control system allows the Department to minimize the cost of power it purchases by maximizing pumping during off-peak periods when power costs are lower—usually at night—and to sell power to other utilities during on-peak periods when power costs are high—usually during the day. By taking advantage of this flexibility in timing its pumping load, SWP is able to reduce the cost of power needed to deliver water.

Information about the total energy used by SWP, including energy produced at its own facilities and energy purchased, as well as information about energy sold by SWP on the open market is included in this chapter.

Total Energy Used

In calendar year 1991, the total amount of energy used at SWP's 19 pumping and power plants for its operations was 4.55 billion kWh. That amount is approximately 46 percent less than the amount used in 1990 due to the decrease in water deliveries as a result of the drought.

Table 9-1, "Amounts of Energy Used at Pumping Plants and Power Plants in 1991, by Month," includes information about the amount of energy used each month at its 19 pumping and power plants to operate SWP. That table as well as others referenced in this chapter may be found at the end of the chapter.

In addition, according to terms and conditions of various water conveyance contracts and exchange agreements, some water belonging to the Central Valley Project (CVP) is pumped through SWP's Harvey O. Banks Delta Pumping Plant and through the CVP-SWP joint-use facilities at Dos Amigos Pumping Plant and William R. Gianelli Pumping-Generating Plant. The U.S. Bureau of Reclamation (USBR) furnishes the energy for pumping its water.

Energy Produced at SWP Facilities

During median water years, a majority of SWP's energy is produced by the Hyatt-Ther-

malito power complex located in Oroville, California. In 1991, 811 million kilowatt-hours (kWh) of energy was generated at Hyatt-Thermalito. That amount was approximately 47 percent less than the amount generated in 1990.

However, due to the continued drought and lower-than-normal rainfall in the Feather River watershed during calendar year 1991, the output of Hyatt-Thermalito was substantially less than the average annual output of 2.1 billion kWh.

Energy generated at SWP's recovery plants, Alamo, Devil Canyon, William R. Gianelli, and William E. Warne, totaled about 719 million kWh in 1991, about 37 percent less than the amount generated in 1990. In 1991 SWP's share of energy generated at Reid Gardner Unit 4 totaled 1.324 billion kWh.

Table 9-2, "Sources and Amounts of Energy Generated and Purchased in 1991, by Month," includes information about energy produced at SWP's facilities.

Energy Purchased

The State Water Project purchases capacity and energy from other utilities through long-term contracts and short-term purchases. Table 9-2 includes the names of those utilities.

In 1991 the Department purchased 1.44 billion kWh of energy at a cost of $35.65 million. Associated costs for transmission, and dispatching services totaled $11.93 million. Other SWP power costs, including those for station services at Bottle Rock Powerplant and debt service at Pine Flat Powerplant, totaled $9.11 million.

See Table 9-3, "Amounts of Power, Transmission, and Other Services Purchased in 1991 and Costs of Purchases, by Area.' The net amount of energy used by SWP as indicated in Table 9-3 is derived from data contained in Table 9-1.

Information about energy obtained through long-term contracts and short-term purchases follows.

Long-Term Contracts

Long-term SWP hydroelectric power supplies are obtained through contracts with the Kings River Conservation District (KRCD), Los Angeles Department of Water and Power (LADWP), and the Metropolitan Water District of Southern California (MWDSC).

According to terms of the KRCD contract, the Department receives the total output of the 165-megawatt (MW) Pine Flat Powerplant. The plant furnished 145 million kWh to SWP in 1991.

Through a cooperative development agreement with LADWP, the Department receives energy in amounts based on the amount of water scheduled weekly through Castaic Powerplant. In 1991, 456 million kWh was provided to the Department.

As part of the MWDSC contract, the Department receives 153 million kWh of energy from five small hydroelectric power plants on the MWDSC system (30 MW total capacity).

The Department also has two exchange agreements with the Southern California Edison Company (SCE). According to terms of the 1979 power contract between the Department and SCE (in effect since April 1983), part of the output of Devil Canyon and the Hyatt-Thermalito complex and all output of Alamo powerplants are delivered to SCE.

Generally, the energy is delivered during on-peak periods and is returned to the Department during off-peak periods. Additional energy also is delivered during off-peak periods for payment of capacity made available to SCE.

According to terms of the1981 capacity exchange agreement with SCE, which has been in effect since April 1987, the Department delivers energy to SCE each year during on-peak periods and, in return, receives a greater amount of off-peak energy as well as transmission considerations. Those two exchange agreements resulted in a net of about 1.99 billion kWh to SWP in 1991.

The Department also has a contract with TERA Power Corporation for purchasing energy produced at Bethany Wind Park near the South Bay Pumping Plant. About 55 wind turbines were operational at the end of 1991, providing about 4 million kWh of wind-generated energy during the year.

The net gain to SWP during 1991 from its long-term contracts was 2.74 billion kWh. See "Energy Sources from Long-Term Agreements" in Table 9-2. In addition, Table 19-1, "Power Contracts, by Title and Date Signed," in Chapter 19 includes additional information about those contracts and agreements.

Short-Term Purchases

Existing resources and long-term power and transmission contracts ensure that SWP has enough power to meet long-term needs. When SWP's power requirements exceed resources short-term purchases are made to meet the difference.

In 1991 SWP purchased short-term energy from 16 utilities. The total amount of short-term energy purchased was 1.14 billion kWh. See "Purchases" in Table 9-2.

Power Sold

When generation from SWP's power resources exceeds requirements, the Department sells this excess power on the market. Currently, the Department has contracts with approximately 30 utilities. Through these contracts, the Department sells excess capacity and energy at market rates.

In determining the most advantageous time to sell power, the Department considers projected SWP operations and changes in the power market as well as energy losses and transmission and dispatching costs.

Total energy sold to 15 utilities in 1991 was 2.19 billion kWh, which resulted in revenues of $48.78 million. The Department also received a total of $12.97 million in revenues for capacity payments or transmission sales from the following utilities:

City of Azusa (capacity)
City of Colton (capacity)
Los Angeles Department of Water and Power (capacity foregone)
Modesto Irrigation District (capacity)
Nevada Power Company (capacity)
Northern California Power Agency (transmission)
City of Santa Clara (transmission)
Southern California Edison (transmission payments)
Turlock Irrigation District (capacity)
City of Vernon (capacity)

Information about the amount of energy sold and the revenue received may be found in Table 9-4, "Total Amounts of Energy Sold in 1991 and Revenue from Sales, by Area."

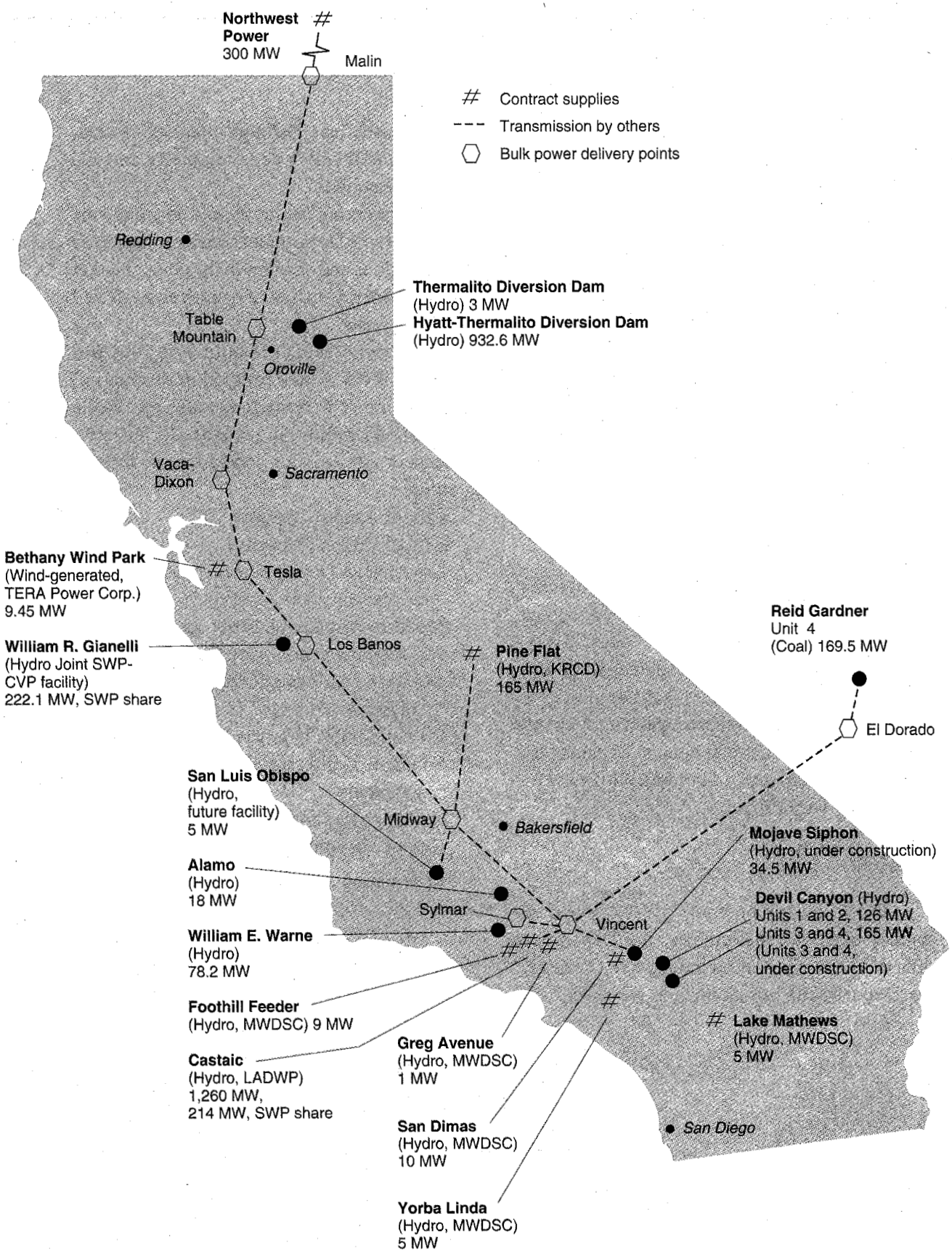


Fig. 9-1. Names, locations, and total generating capacity of primary power facilities

TABLE 9-1

Amounts of Energy Used at Pumping Plants and Power Plants in 1991, by Month

(Millions of kilowatt-hours)

Pumping Plants and Power Plants	*Month*												
	Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*	*Total*
Alamo Powerplant (station service)	0.02	0.02	0.04	0.05	0.05	0.01	0.01	0.05	0.03	0.06	0.05	0.04	0.43
Badger Hill Pumping Plant	0.35	0.12	0.07	0.69	2.12	3.53	3.46	1.88	0.82	1.55	0.39	0.56	15.54
Barker Slough Pumping Plant	0.42	0.41	0.46	0.44	0.47	0.60	0.62	0.52	0.59	0.60	0.44	0.44	6.01
Buena Vista Pumping Plant	20.57	11.74	2.13	3.06	18.80	29.92	22.19	21.77	12.47	20.45	19.72	27.49	210.31
Ira J. Chrisman Wind Gap Pumping Plant	53.42	30.20	5.55	7.97	46.01	72.06	51.64	52.24	30.15	51.42	50.65	70.68	521.99
Cordelia Pumping Plant	0.73	0.64	0.50	0.58	0.85	0.92	0.90	0.81	0.89	0.92	0.73	0.74	9.21
Del Valle Pumping Plant	0.08	0.44	0.07	0.01	0.11	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.77
Devil Canyon Powerplant (station service)	0.00	0.00	0.03	0.05	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.10
Dos Amigos Pumping Plant (SWP share)	12.76	7.86	1.33	1.01	11.09	19.88	19.15	14.23	6.85	12.30	10.45	14.48	131.39
A. D. Edmonston Pumping Plant	189.22	106.00	18.94	26.85	160.36	252.89	179.46	181.39	104.55	182.55	180.40	250.99	1,833.60
William R. Gianelli Pumping-Generating Plant (SWP share)	16.21	11.22	96.60	82.68	5.86	2.58	1.57	12.74	17.12	24.13	10.95	3.12	284.78
Harvey O. Banks Delta Pumping Plant	46.51	29.68	109.44	81.23	23.72	15.79	13.75	37.85	39.70	55.26	19.51	24.16	496.60
Hyatt-Thermalito Pumping-Generating (pumpback and station servic	0.24	7.95	7.18	15.36	41.43	58.38	32.02	0.30	0.21	0.03	0.07	0.23	163.40
Las Perillas Pumping Plant	0.15	0.06	0.04	0.26	0.78	1.27	1.24	0.68	0.29	0.59	0.16	0.23	5.75
Pearblossom Pumping Plant	38.64	20.02	3.34	2.95	6.85	22.43	22.46	11.29	10.33	29.07	19.52	15.77	202.67
Oso Pumping Plant	7.22	4.33	1.21	2.10	16.24	21.27	12.03	17.16	8.28	9.44	13.56	24.12	136.96
South Bay Pumping Plant	15.35	12.42	5.55	9.49	14.46	14.67	15.04	15.01	12.83	13.15	10.15	10.52	148.64
Wheeler Ridge Pumping Plant	23.36	13.24	2.47	3.46	20.46	32.15	23.28	22.98	13.32	22.89	22.30	31.20	231.11
William E. Warne Powerplant (station service)	0.06	0,09	0.15	0.11	0.03	0.00	0.04	0.01	0.07	0.06	0.04	0.00	0.66
Subtotal	425.31	256.44	255.10	238.35	369.69	548.35	398.89	390.92	258.51	424.48	359.10	474.78	4,399.92
Scheduled high voltage transmission line losses	7.49	14.16	12.12	11.57	6.87	16.28	16.93	13.66	14.80	16.81	10.39	12.92	154.00
Total Energy Required	**432.80**	**270.60**	**267.22**	**249.92**	**376.56**	**564.63**	**415.82**	**404.58**	**273.31**	**441.29**	**369.49**	**487.70**	**4,553.92**

TABLE 9-2

Sources and Amounts of Energy Generated and Purchased in 1991, by Month

(Millions of kilowatt-hours)

Sources of Energy	Month												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total
SWP On-Aqueduct Energy Sources													
Alamo Powerplant	2.28	1.77	0.34	0.19	0.15	2.44	2.53	0.76	1.53	0.10	0.00	0.86	12.95
Bottle Rock Powerplant (required for station service)	(0.18)	(0.17)	(0.15)	(0.15)	(0.12)	(0.10)	(0.08)	(0.09)	(0.07)	(0.09)	(0.12)	(0.14)	(1.46)
Devil Canyon Powerplant	46.93	41.67	3.79	3.34	16.92	32.04	33.95	20.93	23.20	43.59	33.62	27.76	327.74
Reid Gardner Unit 4	154.33	149.88	160.86	18.32	96.16	92.78	97.79	108.95	111.94	126.96	120.16	85.50	1,323.63
William R. Gianelli Pumping-Generating Plant (SWP share)	0.00	2.22	0.00	(0.05)	12.23	27.16	23.20	10.26	1.85	2.51	5.42	4.96	89.76
Hyatt-Thermalito Pumping-Generating Plant	48.89	23.14	22.07	21.30	123.03	159.43	135.41	73.92	53.71	49.39	33.45	67.41	811.15
William E. Warne Powerplant	15.40	8.84	1.69	3.92	33.53	45.36	25.65	37.26	17.37	20.62	28.41	50.21	288.26
Energy Sources from Short-Term Agreements													
Bonneville Power Administration, power exchange	0.00	0.00	0.00	0.00	7.80	3.60	0.60	11.40	(21.34)	(21.20)	(68.36)	0.00	(87.50)
Northern California Power Agency, power exchange	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
San Bernardino Valley Municipal Water District-Southern California Edison (SCE) exchange	0.00	0.00	(0.36)	(0.62)	0.00	0.00	0.00	0.00	0.00	(0.25)	(0.29)	0.00	(1.52)
Energy Sources from Long-Term Agreements													
Castaic Powerplant	24.32	11.62	0.50	4.98	52.86	71.59	43.07	53.98	24.55	27.53	63.49	77.66	456.15
Metropolitan Water District of Southern California hydroelectric plants	14.84	8.86	6.25	5.94	11.75	16.37	16.22	12.93	13.20	17.96	14.14	14.34	152.80
Pine Flat Powerplant	(0.23)	(0.21)	(0.24)	7.60	20.92	67.39	50.87	0.15	(0.20)	(0.13)	(0.20)	(0.24)	145.48
Power exchange delivered to SCE	(115.70)	(91.66)	(48.12)	(49.16)	(120.16)	(161.18)	(146.58)	(99.02)	(90.60)	(114.01)	(91.85)	(87.68)	(1,215.72)
Power exchange received from SCE	191.52	112.14	168.89	184.91	189.88	218.12	234.99	505.90	414.13	400.17	236.69	348.41	3,205.75
TERA Power Corporation	0.00	0.07	0.11	0.31	0.49	0.68	0.78	0.93	0.38	0.14	0.11	0.02	4.02
Power system deviations account transactions	(2.88)	0.02	(0.36)	1.91	(0.36)	(0.47)	(3.40)	0.78	2.65	(2.25)	(2.11)	0.67	(5.80)
Purchases													
Arizona Public Service Company	2.85	0.00	0.00	2.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	5.41
Bonneville Power Administration	37.56	69.52	67.10	68.21	108.75	81.71	44.97	5.80	0.00	0.00	0.00	0.00	483.62
British Columbia Power Export Corporation	6.00	0.00	11.24	11.46	0.00	0.00	2.68	0.00	0.00	4.20	5.30	2.90	43.78
Eugene Water and Electric Board	0.00	0.00	0.51	0.37	0.00	0.00	0.08	0.45	0.00	0.20	0.00	0.00	1.61
Los Angeles Department of Water and Power	1.86	3.04	6.48	0.85	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	12.32
Montana Power Company	31.51	6.81	16.76	0.00	0.00	0.00	0.34	0.00	0.00	0.28	0.00	0.00	55.70
Nevada Power Company	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Pacific Gas & Electric Company	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64	0.00	0.73
Pacific Power and Light Company	33.46	8.54	0.99	1.35	0.00	45.00	46.80	48.40	43.20	48.62	74.92	82.66	433.94
Portland General Electric Company	2.30	0.00	0.00	8.76	0.00	4.68	0.30	0.00	0.00	0.00	0.00	3.59	19.63
Power Services of New Mexico	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05
Puget Sound Power and Light Company	0.00	0.75	0.00	0.00	0.00	2.20	7.58	1.40	0.00	0.00	0.00	0.00	11.93
Salt River Agricultural Improvement and Power District	2.17	3.79	0.10	11.96	0.91	6.62	7.45	0.00	0.00	1.60	0.00	3.45	38.05
Southern California Edison	1.60	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	1.63
Washington Water Power Company	0.00	0.36	1.91	0.00	0.00	0.00	0.10	0.00	0.00	3.80	4.90	2.90	13.97
Western Area Power Administration, Lower Colorado	0.00	0.38	1.08	6.80	1.30	7.11	0.00	0.00	0.00	0.00	0.00	0.00	16.67
Subtotal	498.88	361.38	421.53	315.01	556.04	722.65	625.30	795.09	595.50	609.74	458.32	685.34	6,644.78
Less Sales	(66.08)	(90.78)	(154.31)	(65.09)	(179.48)	(158.02)	(209.48)	(390.51)	(322.19)	(168.45)	(88.83)	(197.64)	(2,090.86)
Total Energy Provided to SWP	**432.80**	**270.60**	**267.22**	**249.92**	**376.56**	**564.63**	**415.82**	**404.58**	**273.31**	**441.29**	**369.49**	**487.70**	**4,553.92**

TABLE 9-3

Amounts of Power, Transmission, and Other Services Purchased in 1991 and Costs of Purchases, by Area

Name of Supplier	*Type of Service Purchased*	*Energy (kWh)*	*Energy Cost (Dollars)*	*Transmission Cost (Dollars)*	*Total Cost (Dollars)*
Power and Transmission Purchases					
Northwest Area					
Bonneville Power Administration	Firm and nonfirm energy	483,624,000	$8,083,217		$8,083,217
British Columbia Power Export Corporation	Nonfirm energy	43,782,000	1,142,357		1,142,357
Eugene Water and Electric Board	Nonfirm energy	1,600,000	33,520		33,520
Montana Power Company	Nonfirm energy	55,702,000	1,624,814		1,624,814
Pacific Power and Light Company	Firm and nonfirm energy	433,940,000	14,681,835		14,681,835
Portland General Electric Company	Nonfirm energy	19,625,000	299,124		299,124
Puget Sound Power and Light Company	Nonfirm energy	11,930,000	206,720		206,720
Washington Water Power Company	Nonfirm energy	13,971,000	373,575		373,575
Northern California Area					
Pacific Gas & Electric Company, Southern California Edison Company, and San Diego Gas and Electric Company	EHV transmission			$1,500,000	$1,500,000
Kings River Conservation District	Hydroelectric energy	145,467,133	$1,163,998		1,163,998
Pacific Gas & Electric Company	Firm and nonfirm energy; transmission	727,000	24,544	6,215,373	(a 6,239,917
TERA Power Corporation	Wind energy	4,009,896	342,076	(12,066)	330,010
Southwest Area					
Arizona Public Service Company	Nonfirm energy	5,412,000	$117,636	$609	(b $118,245
Nevada Power Company	Nonfirm energy; transmission	54,000	1,512	1,468,740	1,470,252
Public Service Company of New Mexico	Nonfirm energy	45,000	1,080		1,080
Salt River Agricultural Improvement and Power District	Nonfirm energy	38,048,000	780,099		780,099
Western Area Power Administration, Lower Colorado	Nonfirm energy	16,665,000	308,205		308,205
Southern California Area					
Los Angeles Department of Water and Power	Nonfirm energy; transmission	12,316,000	$332,023	$82,211	$414,234
Metropolitan Water District of Southern California	Hydroelectric energy	152,790,103	6,066,136		6,066,136
Southern California Edison Company	Nonfirm energy; transmission	1,628,000	67,379	2,672,602	(c 2,739,981
Subtotal		1,441,336,132	$35,649,850	$11,927,469	$47,577,319
Other Purchases					
Kings River Conservation District	Pine Flat operations and maintenance				$2,459,517
	Pine Flat debt service				5,504,598
Los Angeles Department of Water and Power	Hydro power plant scheduling				1,150
Northern California Power Agency	Bottle Rock steam field operation				646,858
Pacific Gas & Electric Company	Midway-Wheeler Ridge, Bottle Rock transmission and operations and maintenance				483,265
	Pine Flat transmission facilities ownership				15,071
Subtotal					$9,110,459
Total					**$56,687,778**

a) Amount includes credit of $4,093,731 from Pacific Gas & Electric Company for extra high voltage (EHV) reinforcements.
b) Amount represents pro rata share of Western Systems Power Pool operating expenses.
c) Amount includes capacity exchange credit of $7,372,299 from Southern California Edison.

TABLE 9-4

Total Amounts of Energy Sold in 1991 and Revenue from Sales, By Area

Name of Purchaser	*Amount of Energy Sold (kWh)*	*Revenue from Energy Sales (Dollars)*	*Revenue from Capacity and Transmission Sales (Dollars)*	*Total Power Sales (Dollars)*
Northern California Area				
Modesto Irrigation District	333,989,000	$7,766,806	$1,206,000	$8,972,806
Northern California Power Agency	50,791,000	1,457,103	336,457	1,793,560
Pacific Gas & Electric Company	41,737,000	777,884		777,884
Sacramento Municipal Utility District	637,045,000	13,589,833		13,589,833
City of Santa Clara			85,886	85,886
Turlock Irrigation District	151,466,000	3,883,218	2,241,540	6,124,758
Southwest Area				
Nevada Power Company	299,485,000	$7,354,967	$1,323,793	$8,678,760
Southern California Area				
City of Anaheim	523,000	$14,784		$14,784
City of Azusa	2,580,000	92,880	$118,000	210,880
City of Colton	2,580,000	92,880	118,000	210,880
Los Angeles Department of Water and Power			696,100	696,100
Metropolitan Water District of Southern California	55,065,000	830,045		830,045
City of Riverside	1,525,000	39,150		39,150
Southern California Edison (SCE) (a	340,162,000	5,041,356	900,000	5,941,356
City of Vernon	275,002,000	7,840,479	5,940,000	13,780,479
Total	**2,191,950,000**	**$48,781,385**	**$12,965,776**	**$61,747,161**

a) In addition to amounts listed, total value of 1,524,000 kWh of energy delivered to SCE according to the generation replacement agreement with the Department is $37,944. The Department delivered that energy to replace generation lost because of water diverted from Santa Ana and Mill Creek by San Bernardino Valley Municipal Water District.

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10. Reviewing Environmental Regulations

Before 1960, the effects on the environment of constructing facilities to store and deliver water—damming rivers and building reservoirs, for example—were not emphasized as much as they are today. Water was often viewed as the means to growth and prosperity for all Californians.

In the late 1960s, however, perceptions began to change. Now, water is viewed as a common resource to be shared by all users—fish, plants, and wildlife as well as recreationists and naturalists. And increasingly, along with other natural resources, water is viewed as part of an ecosystem that deserves to be protected.

As a result of this new awareness, state and federal legislators have enacted laws to protect the environment. Some of the most comprehensive legislation includes:

- National Environmental Policy Act (Title 42, *United States Code* sections 4321-4370 [1970])
- Federal Endangered Species Act (Title 16, *United States Code* sections 1531-1544 [1973])
- Section 404 of the Federal Water Pollution Control Act or Clean Water Act (Title 33, *United States Code* Section 1344 [1977])
- California Environmental Quality Act (*Public Resources Code* sections 21000-21177 [1970])
- California State Endangered Species Act (*Fish and Game Code* sections 2050-2068 [1984])

Another authority for agencies to take into account is the public trust doctrine, the rationale for the landmark decision *National Audubon Society* v. *Superior Court of Alpine County* (33 Cal.3d 419,189 *Cal. Reptr.* 283).

When the Department of Water Resources plans and implements programs related to the State Water Project (SWP), it takes into account the appropriate environmental laws and doctrines, particularly those previously listed.

A basic understanding of those laws and doctrines will facilitate an understanding of the Department's complex environmental management activities. Therefore, information about those laws is included in this chapter. The information is organized in two categories, "Legislation" and "Public Trust Doctrine."

Legislation

Information about the National Environmental Policy Act (NEPA), California Environmental Quality Act (CEQA), Federal Endangered Species Act, California Endangered Species Act, and Section 404 of the Federal Water Pollution Control Act or Clean Water Act is included in this section.

Environmental Policy Acts

The National Environmental Policy Act mandates the federal government to use all practicable means consistent with other considerations of national policy to protect and enhance the quality of the environment. All federal agencies must prepare an environmental impact statement (EIS) for actions significantly affecting environmental quality.

California's Environmental Quality Act is one of the first state environmental assessment acts patterned after the National Environmental Policy Act. According to CEQA, agencies are required to (1) disclose, through an environmental impact report (EIR), the significant effects proposed projects would have on the environment; and (2) search for ways to reduce or avoid the environmental damage.

Through the environmental review process, citizens have an opportunity to learn about those significant effects and if the project is approved, the reasons for approving the project.[1]

The procedures involved in the environmental review process require agencies to:

1. Provide a description of the proposed project.
2. Identify the lead and cooperating agencies involved in the project.
3. Determine the scope of study with public and governmental agency participation.
4. Prepare and distribute a draft EIS or EIR.
5. Receive comments on the draft.
6. Prepare the final EIS or EIR.
7. Make findings and adopt a monitoring program to mitigate or avoid significant effects, if applicable.
8. If the project is approved, prepare and file applications for permits required to implement the project.

The Department follows those procedures when it considers the environmental impacts that could result from certain decisions it makes concerning SWP.

Of all procedures conducted by agencies, the scoping phase is particularly important. Occurring early in the review process, the scoping phase provides the public and governmental agencies with an opportunity to identify the issues and topics to be considered when preparing the report.

Those issues and topics are essential to agencies because they depend on the information received to:

1. Identify and evaluate responsible alternatives.
2. Identify potential environmental and socioeconomic impacts of the project.

Consequently, members of the public have the opportunity to raise issues during the scoping phase and not just after the draft environmental document is prepared. If questions are raised late in the review process, time may not be available to give those questions the same consideration as those raised earlier.

In addition, the scoping phase helps agencies to determine data and information still needed, develop a work schedule, and allocate resources for preparing and distributing the draft environmental document for public review and comment.

Endangered Species Acts

In planning for and operating SWP, the Department must consider the effects its actions will have on organisms—plants, birds, reptiles, fish, and mammals—listed as threatened or endangered according to the Federal Endangered Species Act and the California Endangered Species Act. An endangered species is one in danger

[1]The California Environmental Quality Act applies only to projects directly undertaken, funded, or approved by state or local agencies. The National Environmental Policy Act applies to projects directly undertaken, funded, or approved by federal agencies. The Department conducts many projects in cooperation with federal agencies. In those cases both CEQA and NEPA must be followed.

of extinction in all or a significant portion of its range; a threatened species is one that is likely to become endangered.

The acts are designed to protect threatened and endangered species by:

1. Listing endangered and threatened species
2. Ensuring federal and state agencies adopt measures to protect the species during the design and construction of the project
3. Prohibiting the taking of endangered species

One important aspect of the acts is preserving habitat that is critical to the survival of the threatened or endangered species.

Federal Water Pollution Control Act

Section 404 of the Federal Water Pollution Control Act or Clean Water Act requires that a permit be obtained from the U.S. Army Corps of Engineers for any activity that results in disposal of dredged material or placement of fill material in the waters of the United States.

On the surface that requirement may seem simple. However, the Federal Water Pollution Control Act, including Section 404, has been broadly interpreted by the federal courts to include its application to structures or fills introduced into U.S. bodies of water. Moreover, Section 404 applies to all interstate waters and waters within a state that may be used for interstate or foreign commerce. Waters include those from which fish may be taken and sold in interstate commerce and waters that:

1. Interstate travelers may use for recreation
2. Could be used for industrial purposes by industries in interstate commerce

In effect, Section 404 may apply to virtually all significant bodies of water within a state.

Public Trust Doctrine

In its 1983 decision in *National Audubon Society* v. *Superior Court of Alpine County,* the California Supreme Court first clarified the scope of the public trust doctrine. According to the doctrine, the state holds navigable waters and their underlying lands in trust to protect public interests.

The interests historically protected were commerce, navigation, and fisheries. Courts later expanded the doctrine to protect the public's stake in recreation, fish and wildlife habitats, scenic values, and environmental preservation.

In the *Audubon* case, the Supreme Court held that:

- Water rights licenses are subject to the public trust doctrine.
- When issuing water rights permits, the state must consider public trust values.
- The state has a continuing duty to supervise and reconsider existing water permits and licenses, if necessary, to take public trust uses into account.

11. Protecting Fish, Plants, and Wildlife

The Department of Water Resources has developed several programs to eliminate, minimize, or offset adverse environmental impacts while operating and maintaining the State Water Project (SWP). Those programs are conducted in addition to those environmental documentation and mitigation activities required for newly proposed facilities.

The Department's programs involve:

1. Examining impacts of water transfers
2. Minimizing environmental impacts along the California Aqueduct right-of-way
3. Minimizing impacts of water operations on Delta smelt and Chinook salmon habitats
4. Reducing losses of fish at Harvey O. Banks Delta Pumping Plant
5. Funding other programs to increase fish populations, such as restoring gravel beds and eradicating weeds
6. Identifying and protecting threatened and endangered plants and animals in Suisun Marsh

Water Transfers

California has adopted a statewide policy of encouraging water transfers, which may consist of both short-term transfers and long-term transfers. Some transfers must be approved by the State Water Resources Control Board (SWRCB) to determine the effects of transfers on fish and wildlife, among other things.

In 1990 the Department contracted for several one-time water purchases from Yuba County Water Agency (YCWA). The transfers, necessitated because of the drought, were deemed short-term actions; and studying the effects of the transfers on fish and wildlife was not required. However, because the drought has continued, the Department is considering purchasing water from YCWA for an extended period. Consequently, the Department must assess the effects of those transfers on fish and wildlife.

Scope and Purpose of Study

As part of its responsibilities for approving certain transfers, SWRCB mandated that the Department conduct a four-year study to examine the effects on the Feather River and Lake Oroville of purchasing water from YCWA over an extended period of time.

The techniques used to examine effects are based on in-stream flow incremental methodology (IFIM), a system developed by the U.S. Fish and Wildlife Service (USFWS) to help determine fish-flow needs.

Methodology

At selected transects across the Feather River, the depth, water surface elevation, velocity, and gravel composition of streams and rivers are measured at several discharge rates. The data are

entered into a computer and used to develop data on fish habitats. Fish are observed by divers to determine their habitat preferences in the river relative to the measured physical and flow parameters. A combination of physical and biological measures is then used to determine habitat available at different flows and life stages.

A daily temperature model is also being developed for the Feather River. The Department will present results of the study to SWRCB in 1994.

Mitigation Along the Aqueduct

To minimize environmental impacts along the California Aqueduct right-of-way, the Department adopted a program through which environmental specialists from districts and the Environmental Services Office are assigned to work with field division staff members to help determine if routine operation and maintenance procedures affect streambeds, wetlands, and threatened or endangered species. When necessary, maintenance activities are modified to comply with environmental regulations.

The Department modifies all activities possible to minimize impacts; however, some activities involving endangered species cannot be modified. In those situations the Department works with staff members from USFWS and California Department of Fish and Game (DFG) to obtain an incidental take permit as mandated by the Federal Endangered Species Act (Title 16, *United States Code*, Sections 1531-1544 [1973]). An incidental take permit contains conditions, limitations, and mitigation measures for the Department to follow when developing a project in which take of a legally protected species is incidental to but not the purpose of the project or activity.

Because of the length of the California Aqueduct, the process of obtaining permits has been organized sequentially according to the Department's San Joaquin Field Division, Delta Field Division, and San Luis Field Division. Those divisions are located in the San Joaquin Valley. Currently, a habitat conservation plan, a necessary part of the incidental take permit process, is being developed for the San Joaquin Field Division by an independent consulting firm.

The permit process for the three San Joaquin Valley field divisions is expected to be completed in 1994. A similar process may be used to obtain permits for the Southern Field Division, although at this time not as many endangered species are listed along the southern right-of-way as are listed in the right-of-way in the San Joaquin Valley.

Preservation of Habitats

One important aspect of the federal and state endangered species acts (California *Fish and Game Code*, sections 2050-2068 [1984]) is preserving habitat critical to the survival of threatened or endangered species.

Two fish proposed for listing or listed as *threatened* or *endangered*—the Delta smelt and Chinook salmon—are of special concern to the Department. Information about the Department's activities follows.

Delta Smelt

The Delta smelt (*Hypomesus transpacificus*) is found and spends much of its one-year life cycle only in the Sacramento-San Joaquin estuary. The smelt has been proposed for listing as *endangered* according to state and federal endangered species acts, and the Department and USBR are conducting an interagency three-year study to assess the smelt's population.

Petition for Listing

In June 1990 the California-Nevada chapter of the American Fisheries Society submitted a petition to USFWS to list the Delta smelt as *endangered* according to provisions of the Feder-

al Endangered Species Act. In June 1989 a petition was submitted to the California Fish and Game Commission to list the smelt as *endangered* according to the state's endangered species act. According to petitioners, the numbers of Delta smelt have declined. Although the cause of decline was not demonstrated in the evidence for listings, the petitioners implicated water development as the cause of the decline.

In September 1990 the California Fish and Game Commission announced that it would not list the Delta Smelt as endangered at that time. Instead, the commission recommended that additional studies be performed.

At that time the Department agreed to conduct a three-year study to obtain the additional information needed to assess the population of the Delta smelt. (The next section includes specific information about the study.)

In December 1990 USFWS accepted the petition to list the Delta smelt as a protected species. The decision to approve or deny listing may occur as early as October 3, 1992; however, a six-month extension may be granted.

Population Assessment

At the time the California Fish and Game Commission decided not to list the Delta smelt as *endangered*, the Department agreed to fund a three-year study to assess the population of the Delta smelt.

The study, developed through the Interagency Ecological Study Program, is divided into several components designed to result in methodology for separating larvae and early juvenile Delta smelt from longfin smelt (a process necessary to accurately determine population levels) and to provide information about (1) requirements for spawning and nursery habitats; (2). feeding patterns; (3) toxicity effects; (4) losses due to agricultural diversions; and (5) mathematical modeling of population dynamics.

The study to develop objective procedures to separate larvae and early juvenile Delta smelt from long fin smelt has been completed. And work at University of California, Davis, and by a private consultant has demonstrated that Delta smelt can be spawned in the laboratory, although problems with diseases and ammonia toxicity were encountered when trying to keep the larvae alive. Researchers expect to solve those problems in the 1993 spawning season.

In the meantime the fall (adult) population of the smelt is rebounding according to DFG's Delta smelt abundance index, which is used to compare relative abundance on a year-by-year basis (the index does not represent the number of individual fish in the system).

Currently, the Department is summarizing all available information on the Delta smelt for a report to be published in late 1992. The results will be used in analyzing the effects of existing and future Department projects in the Delta on the Delta smelt.

The Department also is participating in a work group convened by Douglas Wheeler, Secretary for Resources, to examine the status of and programs designed to protect the Delta smelt and native fish. One goal of the work group is to develop actions to protect Delta smelt and other fish using the Sacramento-San Joaquin estuary. Other participants include USFWS, DFG, National Marine Fisheries Service (NMFS), and USBR.

Winter-Run Salmon

The 1992 spawning population of the winter race of the Chinook salmon (*Oncorhynchus tshawytscha*) is estimated to be 1,180 adults. That 1992 spawning population represents a significant increase from the 191 spawners estimated for 1991, although DFG has reported that in the 1960s and early 1970s populations were in the tens of thousands.

The winter-run salmon is listed as *threatened* according to the Federal Endangered Species Act and as *endangered* according to the California Endangered Species Act. (The National Marine Fisheries Service has been petitioned to change the listing from *threatened* to *endangered*.) Consequently, operation of SWP and the Central Valley Project (CVP) must be reviewed as part of the consultation process necessary to obtain a permit to allow incidental take of winter-run salmon during normal operations.

Effects of Water Operations

As part of the consultation process required by the endangered species acts, the Department prepared a biological assessment in which it examined the effects of SWP's and CVP's operations in the Delta on winter-run salmon. The U.S. Bureau of Reclamation assessed the project's effects upstream, primarily the effects of releases from Lake Shasta on water temperature.

On February 14, 1992, NMFS issued a biological opinion based on those assessments. In its opinion NMFS concluded that the proposed operation of SWP and CVP in late winter-early spring 1992 was likely to jeopardize the continued existence of the Sacramento River winter-run Chinook salmon. As required by law, NMFS also identified reasonable and prudent alternatives, including various modifications to flows and operations designed to minimize losses at various life stages of the winter-run.

In its February 1992 opinion, NMFS also required the Department and USBR to fund a monitoring program to help detect when winter-run enter the Delta. That study will be conducted by USFWS beginning in September 1992.

Actions to Reduce Losses

To minimize losses of the life stages of different winter-run salmon, water operations were modified at various locations. Upstream on the Sacramento River, USBR was required to maintain water cold enough to avoid significant mortality of eggs and fry in the reach a few miles below Keswick Dam.

The Delta Cross Channel, which helps to regulate water passing into the Delta, was closed from February 2, 1992, through April 30, 1992; and the Montezuma Slough salinity control gates were left in the down position from March 1 through March 23 to reduce chances of juvenile winter-run being entrained into Suisun Marsh. At the intake to the California Aqueduct, predatory fish were captured; transposed downstream; and released beyond the influence of pumping.

In April 1992, when the incidental take of winter-run Chinook juveniles appeared to have been greater than anticipated in NMFS's biological opinion, water export rates were reduced to ensure that no more than 400 winter-run juveniles were taken during the period of April 9 through April 20, 1992. That limit was not exceeded.

Also, in 1991 USFWS successfully reared winter-run in the hatchery and in January 1992, released about 11,000 juveniles in Battle Creek near Redding. Some juveniles from that spawning were returned to be reared to adults as part of a captive breeding program to help ensure the continuation of the winter-run gene pool.

Currently, another biological assessment is being prepared to analyze the impacts of existing SWP/CVP operations on winter-run salmon. The opinion is expected to be rendered in early 1993. Once existing operations are accounted for in a biological opinion, the Department may begin to consult on proposed additions to SWP such as the Kern Fan Element and Los Banos Grandes facilities.

Reduction of Losses at Banks Pumping Plant Complex

Harvey O. Banks Delta Pumping Plant is located in the southern portion of the Sacramento-San Joaquin Delta. Water flows through Delta

channels into Clifton Court Forebay and from there to Banks in an open canal. Fish losses at Banks occur primarily in Clifton Court Forebay and in the plant's large pumps. Consequently, the Department has developed programs to minimize losses in those locations. Information about those programs follow.

Clifton Court Forebay

Predatory fish—mostly subadult striped bass—account for most losses of fish in the forebay. Fish most often lost to predators include salmon smelts, steelhead trout, and striped bass. For calculation purposes the Department and DFG estimate losses caused by subadult striped bass to be 75 percent for salmon smelts and steelhead trout and, depending on size, 0 percent to 100 percent for striped bass.

During the last two years, staff of the Interagency Ecological Studies Program has been evaluating the relative effectiveness of various techniques to catch and remove predators. For example, in March 1992, large nets and hooks and lines were used to remove about 2,000 subadult striped bass from the forebay. The fish were hauled to the Sacramento River for release.

A predator management program more comprehensive than the program now in place is planned to begin in fall 1992. The program's goal is to reduce predation rates to about 15 percent.

Banks Pumping Plant

In 1986 the Department and DFG began a program to offset the direct losses at the intake of the plant by either (1) increasing the natural survival rate of the fish; or (2) rearing and stocking hatchery fish).

The program is based on the Department's and DFG's preference for natural production and in the case of Chinook salmon, for protective measures in the San Joaquin River system. Information about those activities follows.

Losses at Intake

To increase the natural survival rate of the fish by reducing losses at the plant's intake, the Department constructed the John E. Skinner Fish Protection Facility between Clifton Court Forebay and the plant near Byron. The facility consists of a giant fish barrier designed to keep small migrating fish away from pumps that lift the water into the California Aqueduct. Through a system of louvers, fish are diverted into holding tanks; identified; counted and measured; transported downstream in the Delta; and released beyond the influence of pumping at the plant.

Since the mid-1980s, to reduce losses at the plant, the Department has spent about $10 million for design and operational improvements to the facility. Most recently, the Department installed three additional holding tanks to reduce water velocities and improve the accuracy of estimates of the number of fish collected or salvaged, thereby improving the efficiency of the salvage operation. Effective July 1, 1992, DFG was given control of the salvage operations.

Production of Hatchery Fish

As part of its agreement with DFG to offset the direct losses of fish, the Department has contracted with several growers to raise or produce fish for planting in the Delta. As of June 1992 the Department estimates that more than 4.6 million fish have been planted in the Delta and San Francisco Bay.

In 1992, however, a major setback occurred in the program. In compliance with the California Endangered Species Act, DFG completed a biological assessment to determine the impact of the striped bass planting program on winter-run Chinook salmon. In its biological opinion, DFG stat-

ed that with implementation of suggested modifications relating to the time of operation and location of fish plantings, the program would not jeopardize the continued existence of the Sacramento winter race of Chinook salmon. However, stating that even a small risk was unacceptable, DFG's director temporarily suspended planting 1993 releases of hatchery-reared striped bass in the Sacramento-San Joaquin Delta and San Francisco Bay.

Instead, those 2.7 million striped bass, which were raised under 1991 contract agreements, were planted in San Luis Reservoir, O'Neill Forebay, the California Aqueduct, and other San Joaquin Valley locations. However, because the fish were not planted in the Delta or San Francisco Bay, they cannot, by definition in the pumping plant agreement, be counted as mitigation for SWP's operations. The Department, DFG, and the Fish Advisory Committee have worked out an agreement whereby the Department and DFG will pay growers for these fish.

Additional Programs

The agreement between the Department and DFG to offset the direct losses of fish also included a provision for a $15 million lump-sum fund to implement projects to benefit fish in addition to those needed to offset annual direct losses.

In 1992, the Departments' directors approved funding six new positions in DFG for wardens. The wardens will be responsible for enforcing fish and game actions in the Delta and San Francisco Bay but will concentrate on reducing the illegal taking of all species, especially subadult striped bass.

Other projects funded through the lump-sum fund include restoring gravel beds in the upper Sacramento River; installing fish screens in Suisun Marsh; and eradicating weeds that can block the mouth of the Merced River to migrating Chinook salmon.

At this time, there are problems developing projects to offset the direct losses of striped bass and Chinook salmon at the SWP intake. Salmon losses can be offset providing runs to the San Joaquin River increase to recent historical levels (the drought has had a severe impact on those runs). Directly offsetting the loss of striped bass presents more of a problem, although screening Delta agricultural diversions may provide a solution.

Identification of Protected Species in Suisun Marsh

The State Water Resources Control Board requested that the Department and DFG complete a biological assessment of the effects of the plan to protect threatened or endangered plants and animals listed since the plan was originally adopted in 1984. Consequently, extensive field surveys of Suisun Marsh and the southern shore of Suisun Bay are being conducted to locate and identify rare, threatened, and endangered plant and animal species. To date, several plant and animal species of concern have been identified including California Delta smelt, Mason's liliopsis, winter-run Chinook salmon, and salt marsh harvest mouse.

The information obtained through that assessment, which began in 1990 and will be completed in early 1994, will be used to determine the effects on threatened species of water quality standards proposed for Suisun Marsh in the Suisun Marsh Preservation Agreement (see Chapter 12, "Preserving the Delta," for information about the Suisun Marsh Preservation Agreement).

12. Preserving the Delta

Perhaps no area in California's water history has been the subject of more investigations or generated more controversy than has the Sacramento-San Joaquin Delta, 738,000 acres of land interlaced with hundreds of miles of waterways. Natural runoff and flood flows from the Sacramento, San Joaquin, Mokelumne, and Consumnes rivers flow into the Delta, which receives runoff from 40 percent of the state's land area.

With its concentrated supply of water, the Delta supports hundreds of species of fish, wildlife, and plants. And as part of an interconnected estuary system that includes the Suisun Marsh and San Francisco Bay, the Delta serves as a passageway to and from the Pacific Ocean for migrating fish. Many crops are grown in the Delta, which is also one of California's largest recreational areas. The Delta also serves as part of a large system designed to export water from the northern part of the state to at least 20 million Californians in the western and southern parts.

The Delta's channels have been used by the Central Valley Project since 1951 and the State Water Project (SWP) since late 1967 to transport surplus winter flows as well as water from upstream reservoirs to its southern boundary, where pumps put the water into the Delta-Mendota Canal and California Aqueduct for distribution south and west.

The State Water Project also exports water from Barker Slough in the northern Delta into the North Bay Aqueduct. In 1991 SWP diverted about 1,695,000 acre-feet of water through the Delta at Harvey O. Banks Delta Pumping Plant. The Central Valley Project diverted about 1,545,000 acre-feet through the Tracy Pumping Plant and the Contra Costa Pumping Plant. See Figure 11-1, "Amount of water diverted through Sacramento-San Joaquin Delta by State Water Project and Central Valley Project in 1991, by month."

Over the past 40 years, various federal and state agencies, including the Department of Water Resources, have participated in developing and implementing various programs designed to preserve the Delta as a unique environmental resource. Many of those programs involve:

- Defining water rights
- Determining the levels of salinity acceptable for fish and wildlife habitation
- Devising various methods to control flooding, protect fish and wildlife, and provide for recreational activities

In addition to the Department, agencies particularly active in managing Delta resources are the U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, the State Water Resources Control Board, and the California Department of Fish and Game.

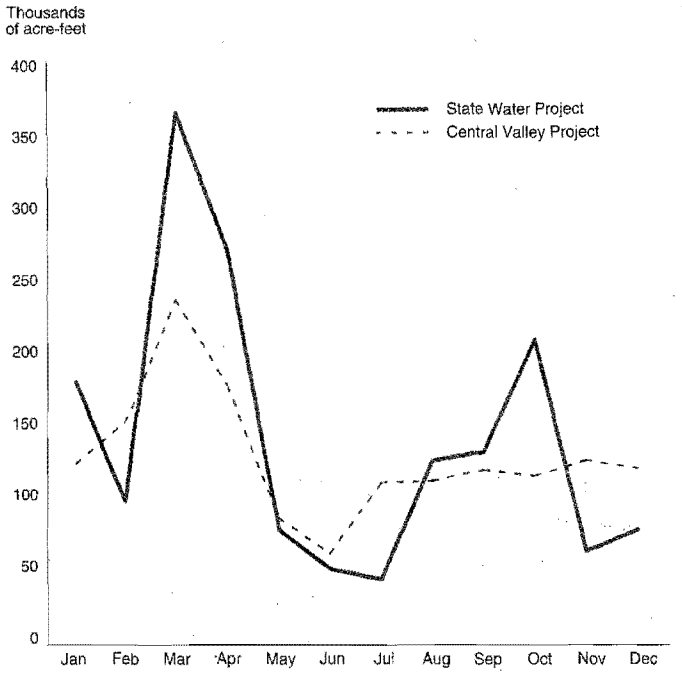


Fig. 12-1. Amount of water diverted through Sacramento-San Joaquin Delta by State Water Project and Central Valley Project in 1991, by month

Information about their activities is included in this chapter, arranged according to the headings "Federal Agencies" and "State Agencies." Information about the Department's activities may be found in Chapter 12, "Managing Delta Resources."

Federal Agencies

Information about the activities of the U.S. Army Corps of Engineers and the U.S. Bureau of Reclamation may be found in the following paragraphs.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) has been actively involved in Delta flood control and navigation projects since 1877, completing four major flood control projects and eight navigation improvement projects. In addition, USACE works closely with the Department in planning conservation and protection activities in the Delta.

Flood Control and Navigation Projects

Most of the Delta exists below the surrounding water level, and many islands are below sea level. Consequently, high levees are needed to hold back Delta waters. Also, silt settling in Delta channels reduces the channels' capacity to carry water, thus increasing the danger of flooding when rivers rise.

The U.S. Army Corps of Engineers is responsible for some flood control projects in the Delta, including building levees along the Sacramento River and adjoining sloughs, Mormon Slough, Calaveras River, and the Lower San Joaquin River and its tributaries.

In addition to its historic leadership role in Delta flood control, USACE regulates structures or work affecting navigable waters of the United States according to Section 10 of the Rivers and Harbors Act (Title 33, *United States Code*, Section 403 [1899]).

The U.S. Army Corps of Engineers regulates discharges of dredged or fill material in waters of the United States, which includes wetlands, according to Section 404 of the Federal Water Pollution Control Act or Clean Water Act.

Departmental Coordination

The U.S. Army Corps of Engineers also has been active in Delta planning activities since 1962, when it initiated an investigation of the Sacramento-San Joaquin Delta.

Intermittent work on this study, done in close cooperation with the Department, eventually led to the release in October 1982 of a draft feasibility report and draft environmental impact statement (EIS) for the Sacramento-San Joaquin Delta.

1982 Study

In the 1982 study were listed project alternatives for providing additional flood protection, controlling tidal salinity intrusion, enhancing recreational opportunities, and preserving scenic values.

Since 1982, the Department has been closely coordinating its Delta planning programs with USACE's efforts to update and finalize this report. In August 1991 USACE, the Reclamation Board, and the Department signed a feasibility cost-sharing agreement (FCSA) for a special study of the Sacramento-San Joaquin Delta.

1991 Study

As with the 1982 study, alternatives for improving Delta flood protection plans and reducing the risk of salinity intrusion will be investigated. However, in accordance with the 1986 Water Resources Development Act and the federal policy of incurring no net loss to wetlands, the current study will provide for investigating subsidence control alternatives such as converting agricultural land to untilled wildlife habitat and wetlands and for restoring and enhancing the environment.

In the revised plan, the study is divided into two phases. Phase one began in September 1991 and will be completed in March 1993. In the study's final report, a long-term management strategy for protecting Delta resources will be examined, including problems and potential solutions. In the report, cost-effective features will be identified for detailed study during phase two.

Phase two, expected to take about four years to complete, will include an analysis of alternatives and methods for developing a recommended plan. The results of the study will be reported in a feasibility report and EIS.

An executive committee is providing overall management and policy direction, while a study management team is overseeing and coordinating the execution of the study. The study could lead to authorization of a federal flood control project in the Delta, which would incorporate as many as possible of the Department's Delta planning programs.

U.S. Bureau of Reclamation

The U.S. Bureau of Reclamation (USBR) manages the operation of the Central Valley Project (CVP) and shares with the Department responsibilities for meeting water quality and flow objectives in the Delta.

Central Valley Project

The Central Valley Project, originally recommended as a state component in California's water plan and constructed by the federal government during the Great Depression, delivers about eight million acre-feet of water a year to contractors in the Sacramento and San Joaquin valleys and Contra Costa and Santa Clara counties.

Operations Agreement

Because the Department and USBR share responsibilities in the Delta, the Department closely coordinates SWP's operation with USBR according to a coordinated operations agreement signed in 1986. That agreement replaced a system of year-to-year agreements regarding the responsibilities of the Department and USBR in the Delta.

In the agreement USBR agreed to share responsibility for sustaining flows in the Delta during dry periods. The agreement is significant in that the federal government agreed to accept most of the state's water quality requirements for the Delta with certain restrictions as to authority for determination. Acceptance by the federal government meant that SWP would not have to supply all water necessary to meet water quality and flow requirements in the Delta.

State Agencies

This section includes information on the State Water Resources Control Board and the California Department of Fish and Game.

State Water Resources Control Board

The State Water Resources Control Board (SWRCB), established by the California Legislature in 1945, is charged with overseeing water rights and water quality for California.

Composition and Duties

The Board consists of five members appointed by the governor for four-year terms. Appointments must be approved by the senate. The governor also appoints the Board's chairperson.

Among its many responsibilities, the Board:

- Issues permits for the use of all water except groundwater and riparian water
- Distributes state and federal loans and grants for constructing sewage facilities
- Adopts water quality plans, regulations, and policies
- Sets water quality standards for the Delta

In implementing its mandate to set Delta water quality standards, the Board issued *Water Right Decision 1485: Sacramento-San Joaquin Delta and Suisun Marsh* in 1978. In that decision the Board focused on SWP's and CVP's water right permits and operations.

Basically, the Board required the two water projects to maintain water quality in the Delta at levels that would exist if the two projects did not exist. However, after Decision 1485 was adopted, various water users as well as the federal government challenged it in court.

In 1986 Judge John Racanelli, writing for the state court of appeal, cited *National Audubon Society* v. *Superior Court of Alpine County* (public trust doctrine) in ordering the Board to rethink protections for the San Francisco Bay and Delta. In its decision the court broadly interpreted the authority of the Board to establish and enforce water quality objectives that ensure reasonable protection of beneficial uses of Delta water as well as protection for San Francisco Bay. The court also ordered the Board to consider the effects of all upstream water uses not just those of the two water projects.

To ensure implementation of the court's ruling, which was allowed to stand by the California Supreme Court, the Board convened the Bay-Delta hearings in July 1987. Information about those hearings follows.

Bay-Delta Hearings

The Bay-Delta proceedings, an extensive multiphase hearing process conducted by SWRCB, are designed to result in new water quality and flow objectives for the Bay-Delta estuary. The proceedings are significant in California's water history because the Board's decisions will profoundly affect all water users, including fish and wildlife.

The proceedings are organized into four phases: the evidentiary phase, the water quality phase, the scoping phase, and the water rights phase. Information about each phase follows.

Evidentiary Phase

During the first six months of the hearings, which began in 1987, the Board completed the evidentiary phase. The Board received and reviewed more than 40,000 pages of exhibits from more than 600 speakers representing over 60 separate organizations.

Water Quality Phase

In November 1988 the Board began the water quality phase of the proceedings. During this phase in 1991, the Board adopted two reports, *Water Quality Control Plan for Salinity* and *Pollutant Policy Document*.

Scoping Phase

To receive testimony on planning activities, development of facilities, negotiated settlements, flow objectives, and legislative action, the Board conducted the first scoping phase workshops in March and April 1991.

Many workshops were held with Board staff members through winter 1991 to develop a range of six alternative measures for protecting the uses of Bay-Delta waters.

Those alternatives included curtailments of SWP's exports from the Delta, operational restrictions of the Delta cross-channel gates, and modifications of flow and objectives.

In succeeding months during the scoping phase, Board staff members held additional workshops to analyze the impact of the six alternatives on the water supply and environment. The Department provided the water supply impact analysis by conducting over 30 system-wide operational studies.

The Department has been extensively involved in the scoping phase workshops and has continued to participate in work groups organized during earlier phases of the proceedings to investigate:

- Water-year classification for the Sacramento and San Joaquin River basins
- Agricultural economics
- Delta agriculture
- Agricultural and urban water conservation
- Waste water reclamation

Several work groups have completed their studies and have submitted findings to the Board. Concurrent with the workshops previously described, Board staff initiated a water availability and use study to determine the effects of water use upstream of the estuary on Bay-Delta flows and salinity.

The focus of the study is those water right holders with direct diversion rights greater than 100 cfs or total claimed storage rights exceeding 100,000 acre-feet. A technical advisory committee was formed to allow public participation in the study.

Water Rights Phase

In April 1992, in conjunction with his new water policy, Governor Pete Wilson directed the Board to develop interim Delta standards for protection of fish and wildlife. To be developed by the end of 1992, those interim standards are to be applied to the construction and operation of the Department's South Delta facilities, which are designed to improve the environment and water supply capability in the Delta through:

1. Constructing flow control barriers
2. Enlarging channels
3. Modifying export pumping through use of the four new pumps at Harvey O. Banks Delta Pumping Plant

The Board immediately reacted to the governor's directive by suspending the scoping phase of the hearings and issuing a water rights hearing notice in which a California Environmental Quality Act-exempt process was specified.

The Board began 15 days of formal water rights hearing in June and is expected to make a water rights decision, thereby setting water quality flow and export standards, around December 1992. That decision will replace Water Right Decision 1485, which was adopted in 1978.

Department of Fish and Game

In addition to advising SWRCB on all matters affecting fish and wildlife, the Department of Fish and Game manages the California Endangered Species Act (*Fish and Game Code* sections 2050-2068 [1984]).

Additions to Endangered Species Act

The Department's biologists review the status of each listed species at least every five years

and recommend steps to be taken to increase its population. A species or subspecies is listed as *endangered* by vote of the California Fish and Game Commission after petition by citizens or state officials.

Actions for Protection

Once a species is listed, the Department (1) monitors its habitat and population trends; (2) recommends to other agencies, including the Department of Water Resources, actions for protecting the species; and (3) develops management plans for protected habitats

The Department also maintains a statewide inventory of California's rare species and natural communities.

13. Managing Delta Resources

To effectively manage water in the Sacramento-San Joaquin Delta, the Department of Water Resources has developed water management programs for three distinct areas of the Delta, the North Delta, South Delta, and West Delta. See Figure 13-1, "Boundaries of North, West, and South Delta water management programs," at the end of this chapter.

This year, work on the Department's Delta water management programs is being accomplished according to guidelines contained in Governor Pete Wilson's new water policy, which he announced in April 1992. As part of his policy, the governor directed that to "restore" the Delta near-term solutions be implemented and long-term solutions be investigated and recommended.

In keeping with the governor's policy, the Department is reviewing its Delta water management programs, which are designed to provide interim solutions for improving conditions in the Delta. A long-term solution will be reviewed by the 22- member Bay-Delta Oversight Committee appointed by Governor Wilson as part of his new water policy. (The introductory chapter, "Changing Ways of Managing Water," includes information about the water policy proposed by Governor Wilson.)

North Delta Program

The objectives of the North Delta Interim Program, which includes the region north of the San Joaquin River from Threemile Slough eastward, are to:

1. Alleviate flooding in the north Delta, including the towns of Thornton and Walnut Grove.
2. Reduce reverse flow in the lower San Joaquin River.
3. Improve water quality.
4. Reduce impacts on fisheries, including a fish screen demonstration project.
5. Increase SWP's flexibility for water transfers and improve reliability of its water supply.

The program is also designed to improve navigation and enhance wildlife habitat and recreational opportunities.

Implementation

The North Delta Interim Program will be implemented in phases. The first phase, which includes preparing the environmental analysis and documentation, is in progress. Other actions considered for the first phase include implementing a fish screen demonstration project.

Other interim phases include:

- Increasing the hydraulic capacity of the Mokelumne River channels by dredging, improving levees, and creating levee setbacks
- Enlarging the Delta Cross Channel Gate structure

After interim actions are completed, the Department will monitor the project to determine its effectiveness.

Alternatives for future phases will be included in evaluations considered by the Bay-Delta Oversight Committee. Those alternatives include constructing:

1. Partial tide gate structures in the Sacramento River, Steamboat Slough, and Threemile Slough
2. A new channel to connect the Sacramento River with the central Delta

Water Policy Review

The North Delta Interim Program is being reviewed in the context of the governor's water policy. The Department is examining the program in terms of both a long-term and interim solution to restoring the Delta. In addition, the Department is continuing to coordinate activities with appropriate federal, state, and local agencies and conduct technical studies.[1]

South Delta Program

The South Delta Program is designed to:

1. Resolve local problems with water levels and circulation.
2. Provide a means to increase diversions for winter banking and storage south of the Delta.
3. Improve conditions in the Delta for fisheries.

In addition, this program was included as part of Governor Wilson's water policy as an interim step in restoring the Delta and improving its water supply.

[1]The U.S. Army Corps of Engineers is the lead federal agency for the North Delta Program according to its regulatory permit authority (Rivers and Harbors Act and Section 404 of the Federal Water Pollution Control Act and the Clean Water Act).

Proposals

The environmental review process, currently in progress, includes proposals by the Department and the U.S. Bureau of Reclamation (USBR) for:

- Constructing up to four barrier facilities in south Delta channels to improve local water levels and circulation
- Enlarging some existing south Delta channels to improve conveyance and circulation
- Enlarging Clifton Court Forebay from 2,180 surface acres to about 5,000 acres with new intakes located further north
- Obtaining a permit from the U.S. Army Corps of Engineers to increase diversions into Clifton Court Forebay, thereby allowing Harvey O. Banks Delta Pumping Plant to pump up to the maximum design capacity of 10,300 cfs.

The proposal for increasing diversions into Clifton Court Forebay was chosen because it provides the Department with:

1. Operational flexibility necessary to reduce fish losses
2. Capacity to bank water south of the Delta in winter
3. Improved reliability of the water supply

In addition, the alternative allows the Department to meet the obligations of an agreement with the South Delta Water Agency for improved conditions for local agricultural diversions. Also, improved flow patterns will help salmon migrations in the San Joaquin River.

Losses of wildlife habitat due to the enlargement of Clifton Court Forebay will be mitigated by adopting a wildlife management plan on Sherman Island or Twitchell Island, or both, and on other locations as appropriate. The Department and USBR have signed an agreement with the Department of Fish and Game to define the area of negotiations concerning fishery mitigations.

Environmental Review Process

The draft environmental impact report/environmental impact statement (EIR/EIS) for the program was released in June 1990. Two public hearings were held, one on September 19, 1990, in Sacramento, and the other on September 20, 1990, in Tracy, California. The public review period was extended and ended September 30, 1991.

The review period was extended to allow for concurrent review of environmental documents for the South Delta Program with the draft environmental documents on the North Delta and Los Banos Grandes programs. Those documents were released in late 1990. The Department received comments from 15 public agencies and 60 individuals.

The final EIR/EIS is scheduled to be completed in summer 1993. After the notice of determination is signed and filed, state and federal regulatory agencies may then act on permits required to construct and operate the proposed facilities.

The key permit required will be that issued by the U.S. Army Corps of Engineers according to Section 404 of the Federal Water Pollution Control Act (Clean Water Act) for dredging operations and Section 10 of the River and Harbors Act for navigation. The permit must be coordinated with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the Environmental Protection Agency.

West Delta Program

The objective of the West Delta Program is to implement a land-use management program for effectively controlling subsidence and soil erosion on Sherman Island and Twitchell Island while also providing habitat for wildlife and waterfowl.

The Department of Water Resources and the Department of Fish and Game have jointly developed the wildlife management plan for the two islands. That plan is also designed to benefit species of wildlife that occupy wetland, upland, and riparian habitats and provide recreational opportunities for hunting and viewing. In addition, property acquired and habitat developed through the Department's efforts will be available for use as mitigation for impacts associated with the Department's ongoing Delta water management programs.

As a result of implementing the wildlife management plan, subsidence would be significantly reduced through minimizing oxidation and erosion of the peat soils on the islands. Minimizing oxidation and erosion would be accomplished by replacing present agricultural cultivation practices with land-use management practices designed to stabilize the soil. Those practices range from minimizing tillage to establishing wetland habitats.

Altering land-use practices could result in the following benefits:

- Up to 13,600 acres of managed wildlife and waterfowl habitat
- Increased flood control
- Additional protection of water quality in the Delta
- Increased reliability of SWP's water supply
- Additional recreational opportunities in the Delta

Also, establishing wetland and wildlife habitats on the two islands is consistent with national and state policies designed to enhance and expand wetlands.

Special Flood Control Program

As a result of the Delta Flood Protection Act passed by the California Legislature in March 1988, $12 million is to be appropriated each year until January 1, 1999, for developing two pro-

grams designed to prevent flooding in the Delta, the Delta Levee Maintenance Subventions Program and the Special Flood Control Program.

Information about the Department's participation in the Special Flood Control Program follows.

Protection of Towns and Western Delta

The Special Flood Control Program includes a mandate for protecting the towns of Walnut Grove and Thornton and the eight islands of the western Delta—Bethel, Bradford, Holland, Hotchkiss, Jersey, Sherman, Twitchell, and Webb.

Those eight islands require protection because they (1) support urban areas, including public facilities; and (2) are critical to the protection of water quality in the Delta. Because fresh and salt waters mix nearby, flooding any of those islands would allow saline water to intrude further into the Delta.

In July 1989 the legislature approved the flood control plan for Thornton and Walnut Grove. In the plan immediate improvements for levees were recommended as well as several long-term improvements to levees, channels, and facilities. Implementation of the plan began in 1990.

Since 1990, a financial study of local cost-sharing possibilities has been completed; and a cost-sharing agreement has been signed between the Department and Reclamation District 348, where Thornton is located.

The final design of the interim facilities identified in the flood control plan will be completed in September 1992. The design will be specifically crafted to protect as much of the existing on-levee habitat as possible. Unavoidable loss of habitat will be mitigated by developing replacement habitat on a newly purchased conservation easement on the nearby Consumnes River Reserve.

Construction on the Thornton project is scheduled to begin in spring 1993. However, funding reductions imposed as a result of the state's current financial situation will delay the project until the following fiscal year at the earliest.

Implementation

A long-term plan, *Actions and Priorities, Delta Flood Protection Act, Eight Western Delta Islands*, was approved in May 1990 by the California Water Commission as the second step in implementing the flood control program.

That long-term plan will be used by the Department to determine how to best use appropriations to protect the eight western Delta islands. Those protections include:

1. Rehabilitating threatened levees
2. Documenting levee encroachments on Bethel Island and Hotchkiss Tract
3. Investigating subsidence
4. Coordinating efforts for rehabilitating levees through the use of imported dredged material
5. Verifying elevations in the Delta through the use of Global Position System equipment, which is used in conjunction with U.S. Navy navigational satellites
6. Upgrading levees to the standards included in Bulletin 192-82, *Delta Levees Investigation*, published by the Department in December 1982

Information about each protection follows.

Levee Rehabilitation

Rehabilitating the threatened levee sites is important because it results in time necessary to perform long-term improvements to the levees.

To date, more than $3 million has been spent at locations on Webb Tract and Sherman, Twitchell, and Bethel islands. The costs of rehabilitation are divided between the state and the local agencies; those agencies may pay up to 25 percent of the costs. The actual amounts to be paid were

determined in an ability-to-pay study completed in May 1992 for each island.

Encroachment Documentation

Structures encroaching on levees conceal seepage, boils, rodents' burrows, cracks, and other causes of levee failures. In addition, those structures restrict access to sections of the levees needing improvements or repairs. In August 1989 the Department documented 130 encroachments on Bethel Island and Hotchkiss Tract.

The first phase of an encroachment study was completed in March 1990. The second phase, in which waterside structures, bulkheads, and retaining walls will be identified, should be completed by December 1992.

Subsidence Investigations

Subsidence of peat soils is an important concern throughout the Delta. As the ground surface on an island subsides, the geometry of the levee changes; and the levee is less likely to withstand the pressure of the water. Flooding is likely to occur if the levees are not widened to resist it.

The legislature recognized that problem with flooding and in the Delta Flood Protection Act, requested the Department to monitor subsidence and study its causes. Accordingly, the Department has contributed $190,000 to the U.S. Geological Survey (USGS) to help fund an investigation of subsidence in the Delta.

After reviewing preliminary data provided by USGS, the Department concluded that:

- Land management practices substantially influence subsidence rates.
- Cultivation practices, which help to raise soil temperature and lower the water table, dramatically increase oxidation of the peat soils.
- Conversion of highly organic peat soils to a carbon dioxide gas and the subsequent discharge from the peat appears to be the primary cause of subsidence.

Studies designed to quantify rates of subsidence, with a focus on the underlying physical and chemical processes that lead to surface subsidence, are continuing along with identification of land management practices to help minimize subsidence.

Upland Relocation of Dredged Material

As local sources of fill material are depleted, new economical sources must be located. The Department, in coordination with the U.S. Army Corps of Engineers, Reclamation District 341, and the Central Valley Regional Water Quality Control Board, has implemented a pilot project to determine the viability of relocating material from the San Francisco Bay Area.

The program is based on the idea that through upland relocation, dredged material can be used as a resource to create new wetlands, strengthen levees, and protect existing habitats. Currently, approximately 2,000 cubic yards of material dredged from Suisun Slough has been placed on Sherman Island to stabilize the levees. Additionally, 50,000 cubic yards of dredged material from Suisun Bay has been placed on Twitchell Island levees.

The Department realizes that dredged material can be used only if it does not degrade Delta water quality. Monitoring and reporting programs developed by the Regional Water Quality Control Board have been implemented, and no unusually high concentrations of metal or minerals and no biotoxic effects have been detected.

Elevation Verification

In 1987 the Department obtained Global Position System equipment, which is used in conjunction with U.S. Navy navigational satellites to

establish precise horizontal and vertical positions; field surveys of the Delta were taken by satellite in 1989. The data are being used to verify elevations in the Delta and to ensure that improved levees will be high enough so overtopping will not occur during high-water conditions.

The National Geodetic Survey will eventually publish data obtained from those surveys. In the meantime the Department published an interim report on the surveys, including elevations verified through data from the surveys.

Levee Upgrades

The Department also is upgrading the levees according to standards contained in Bulletin 192-82, *Delta Levees Investigation*. According to those standards, the agricultural levees must be raised to provide 1.5 feet of freeboard for a 300-year flood and widened to increase both land and waterside stability.

To encourage upgrading of levees to the standards contained in Bulletin 192-82, the Department is using available special project funds when other sources of funds are not available.

To augment its flood control actions, the Department is developing long-term plans to provide higher levels of protection for all eight islands than currently exists. The preparation of those plans was approved by the California Water Commission in May 1990. The programs resulting from those plans will be funded by yearly appropriations as provided for in the Delta Flood Protection Act. The long-term levee improvement program for Twitchell Island will be completed in 1993.

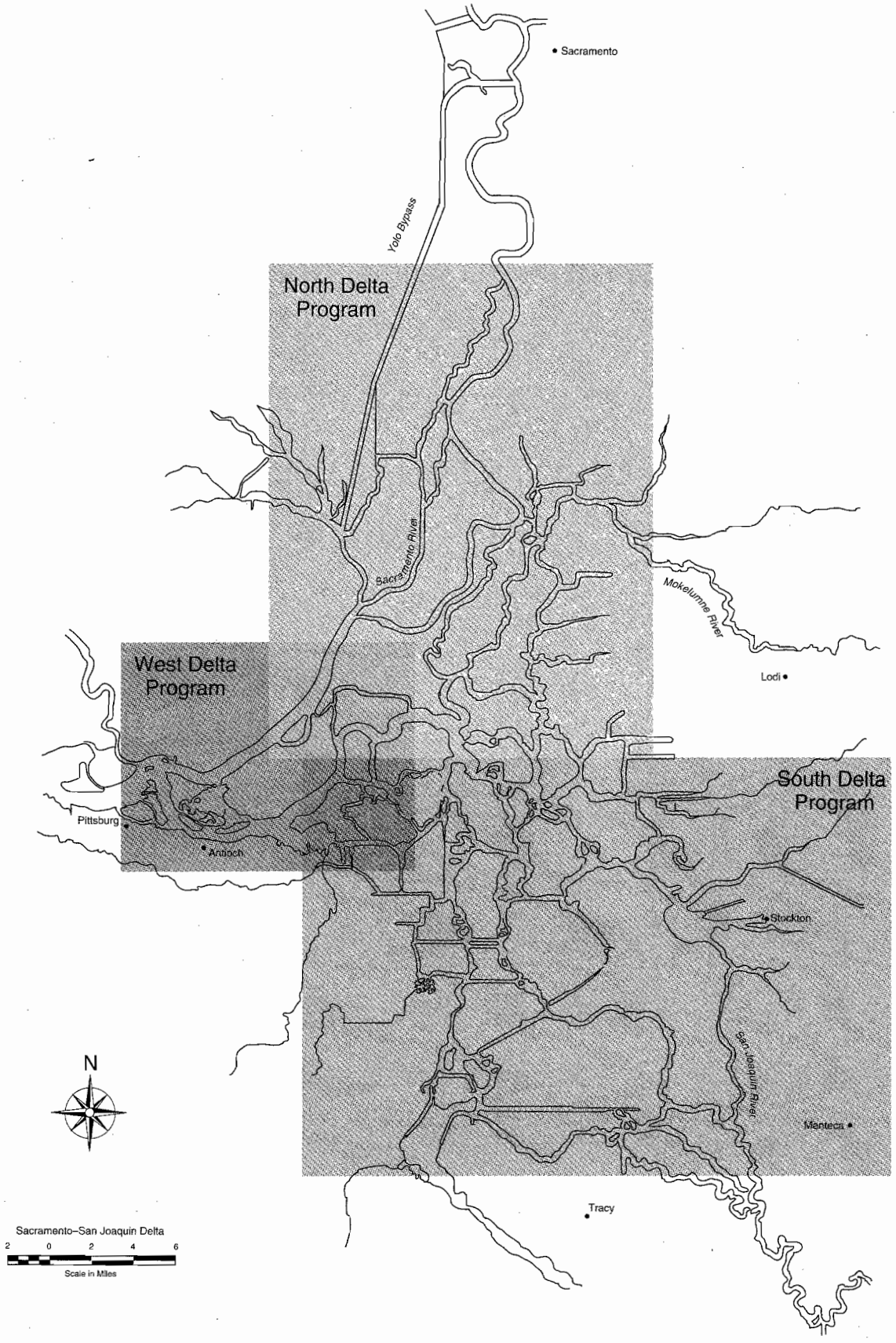


Fig. 13-1. Boundaries of North, West, and South Delta water management programs

14. Monitoring Water Quality

Approximately 20 million Californians depend on the State Water Project (SWP) for all or part of the water they use every day. In addition SWP supplies water for agriculture, industry, power generation, recreation, and fish and wildlife. The quality of water supplied by SWP for those beneficial uses is safeguarded through an extensive water quality monitoring program.

Water quality objectives for existing or potential sources of drinking water are set by the State Water Resources Control Board (SWRCB) and Department of Health Services (DHS). Additional contractual water quality objectives at points of delivery are set by SWP water contractors. Water quality in the Delta and Suisun Marsh is protected according to SWRCB's Water Right Decision 1485 (1978).

The Department of Water Resources monitors water quality through an automated network of continually operating recorders and laboratory analyses of field samples collected at weekly, quarterly, monthly, or annual intervals. The Department conducts special studies to investigate water quality at potential problem sites or as a result of unique events.

Information about the Department's monitoring activities, arranged according to "Delta Activities" and "Activities Outside the Delta," follows.

Delta Activities

Monitoring activities in the Delta are conducted according to SWRCB's Decision 1485, which was designed to protect beneficial uses of water in the Sacramento-San Joaquin Delta and Suisun Marsh. As written by SWRCB, the decision, which also applies to the U.S. Bureau of Reclamation's (USBR) Central Valley Project (CVP), includes water quality standards and operational constraints concerning water flow volumes, salinity levels, and export quantities. Locations of monitoring sites may be found in Figure 14-1, "Water quality monitoring sites in Sacramento-San Joaquin Delta," at the end of this chapter.

Constraints on SWP's operations in the Delta are determined according to water year classifications, which are determined by criteria included in Decision 1485. Water year classifications are based on the Department's May 1 forecast of unimpaired runoff to streams in the Sacramento River Basin. Values set for Decision 1485 standards differ for each type of water year classification. (See Chapter 4, "Collecting and Storing Water," for additional information about runoff and water year classifications.)

The Department's May 1, 1991, forecast resulted in a water year classification of *critical* for fish and wildlife and for agricultural, municipal, and industrial uses. Since the last *wet* water year (1986), all water years have been classified as *critical* except water year 1989; which was *dry*.

Throughout this extended drought, the Department attempted to meet standards applicable to the *critical* or *dry* classifications through operational decisions concerning (1) releases from reservoirs; (2) Delta cross-channel gate operations; and (3) Delta exports. Those operational decisions were based on real-time monitoring data and long-range modeling activities.

Information about specific monitoring activities conducted in the Delta follows. The information is organized according to "Decision 1485 Standards," "Special Delta Surveys," and "Fish and Agricultural Protections."

Decision 1485 Standards

Decision 1485 includes standards for the:

1. Amount of outflow and water exported from the Delta
2. Water quality
3. Requirements for monitoring hydrodynamic and biotic conditions

Information about activities related to those standards follows.

Outflow and Export Standards

Water quality in the Delta is influenced by the volume of seaward, freshwater flow from the Sacramento River and San Joaquin River as well as by the amount of water consumed or used in the Delta and the amount of water exported from the Delta.

The Delta Outflow Index (DOI) is a calculated approximation of that seaward freshwater outflow as it passes Chipps Island near Pittsburg, beyond the confluence of the Sacramento River and San Joaquin River.

The Delta outflow and export standards are important because they help to ensure:

1. Water quality in the Delta
2. Preservation of Suisun Marsh
3. Survival of striped bass, salmon, and other important aquatic estuarine species

During May, June, and July , withdrawals of water from the Delta through Harvey O. Banks Delta Pumping Plant are limited according to export and outflow standards included in Decision 1485. All Decision 1485 export and Delta outflow standards were met during 1991 in spite of the fifth consecutive year of drought conditions.

The average daily DOI for 1991 averaged only 5,900 cfs (cubic feet per second), a DOI only slightly greater than the 1990 value of 5,300 cfs. By contrast, in the *critical* and *dry* years of 1988 and 1989, the daily outflows averaged 8,621 cfs in 1988 and 11,507 cfs in 1989. In wet years such as 1984 and 1986, the DOI averaged over 20,000 cfs daily.

A dry fall and winter statewide were ameliorated by a series of winter storms in late February through March, 1991. The March storms yielded more than 25 percent of the total yearly Delta outflow volume and resulted in 22 of the year's 25 days of Delta average outflow over 10,000 cfs. During the same time, precipitation in northern California increased to 256 percent of normal. The highest mean monthly DOI during 1991—17,300 cfs—also occurred in March.

The months following March were again dry; a mean monthly DOI under 5,000 cfs occurred in six of the months. The lowest monthly mean DOI of the year—3,100 cfs—occurred in August 1991. The Sacramento River Index for 1991 was 8.7 million acre-feet, resulting in a *critical* 1991 water year.

Water Quality Standards

Water quality in the Delta depends primarily on a balance between freshwater, downstream

flows and saltwater tidal incursions. During periods of lower-than-normal river flow, water is released from SWP's and CVP's reservoirs (Shasta, Oroville, and Folsom) to meet all Delta standards through balancing Delta outflow and pumping needs. The dual operational objectives of both SWP and CVP systems are to:

1. Fully comply with all Delta standards and agreements.
2. Conserve surplus water for uses other than those needed to comply with standards.

Releases from SWP's and CVP's reservoirs are coordinated to accomplish both of those objectives.

Data Evaluated

In scheduling SWP operations each day, Department personnel review data about tidal and weather conditions in the Delta as well as readings from samples collected each hour to determine water quality.

Occasionally, because of unexpected and sudden changes in local climatological conditions, Delta tides may be larger than those forecasted; and Delta water quality conditions may rapidly deteriorate due to the large tidal influxes. To improve water quality in those conditions, SWP and CVP may:

- Increase the amount of water released from reservoirs.
- Reduce the amount exported from the Delta.
- Both increase releases and reduce exports.
- Close the cross-channel gate.

Releases from reservoirs require a carriage time of between one to four days to reach the Delta.

Standards Exceeded in 1991

During calendar year 1991, one Delta water quality standard, the municipal standard for mean daily chloride at the Contra Costa Intake, was exceeded. The standard, which is 250 mg/L (milligrams per liter), was exceeded for 12 days between February 20, 1991, and March 12, 1991, because of a combination of adverse factors, including (1) exceptionally high tides at Antioch during late February and early March ; (2) strong westerly winds; (3) high consumptive use in the Delta; (4) physical failures at the Suisun Marsh salinity control gates; and (5) limited water supplies due to the continuing drought.

Mean daily Delta outflow was increased by curtailing SWP and CVP Delta exports during both tidal events. However, even by curtailing exports, the Department and USBR were unable to immediately bring the chloride concentrations into compliance with the standard. High salinity levels in water from local drainage may have contributed to the slow recovery time.

Phytoplankton Distribution and Productivity

Suspended, single-celled microscopic plants, *phytoplankton,* form the base of the food chain for much of the Delta's fish and wildlife. Measurements of chlorophyll *a* indicate the amount of phytoplankton or standing crop and reflects the Delta's potential for primary productivity.

Community composition of phytoplankton is also studied to determine the biological effects of SWP and CVP operations in the Delta. Data on phytoplankton also are used to track long-term changes in the estuarine food web and to forecast potential problems with taste and odor in municipal water supplies.

Throughout most of the Delta, Suisun Bay, and San Pablo Bay, concentrations of chlorophyll were low during 1991. Chlorophyll concentrations remained below 15 µg/L (micrograms per liter) for the northern and central Delta and below 6 µg/L for Suisun Bay and San Pablo Bay.

In contrast, concentrations of chlorophyll were high during summer and fall in the southern Delta where concentrations reached 130 µg/L in

June and September. Those chlorophyll maxima were associated with the presence of a mixed phytoplankton community comprised of diatoms, greens, and flagellates including *Thalassiosira* spp., *Cyclotella* spp., and *Skeletonema potamos*.

Special Delta Surveys

Special surveys of communities of aquatic plant and benthic (bottom-dwelling) organisms were conducted in the Delta during 1991. Information about the surveys follows.

Aquatic Plant Communities

Surveys of vegetation are used to document long-term and seasonal changes in the Delta's aquatic vegetation. Results of biannual surveys have consistently indicated a seasonally stable littoral zone plant assemblage composed of submersed aquatic species. Much of the biomass, however, consists of emergent species, primarily the common tule (*Scirpus acutus*) and occasionally the water hyacinth (*Eichhornia crassipes*).

Surveys of vegetation were conducted in the central and south Delta during November 1991 to augment the Department of Food and Agriculture's (DFA) annual search for the aquatic weed hydrilla (*Hydrilla verticillata*), a rapidly spreading water weed that reduces flow capacity in canal systems and clogs municipal water works. No hydrilla were detected in the Delta.

Benthic Community Survey

The Department works with other agencies to survey and document biological and hydrological conditions in the Delta. The information gained through those surveys is used by the Department to identify the many factors influencing community dynamics, including potential impacts from SWP operations.

Through compliance monitoring activities in 1991, the Department documented that the overall dominance of introduced benthic species persisted throughout 1991. In fact, since 1987 at least one introduced benthic organism has been among the top four numerically dominant organisms at each of the five benthic monitoring sites, which are located in Suisun Bay and the western, central, and southern Delta.

The newly introduced species *Hemileucon hinumensis, Potamocorbula amurensis,* and *Gammarus diaberi* along with the established exotic *Corbicula fluminea* appear to have established dominance in portions of the estuary. The benthic communities of the Delta and Suisun Bay continue to be altered by the multiyear drought and the introduction of exotic species.

Fish and Agricultural Protections

Rock barriers were installed on Old River to increase the survival of migrating salmon and on Middle River to enhance water quality and quantity during the agricultural irrigation season. Information about the installations follows.

Old River Barrier

As part of a February 1969, joint agreement between the Department, U.S. Fish and Wildlife Service (USFWS), USBR, and DFG, the Department installs a temporary rock barrier at the head of Old River during years when flows are forecast to be low in the fall.

The barrier helps migrating salmon and steelhead trout survive by increasing net downstream flows in the lower San Joaquin River and alleviating the dissolved oxygen depression (less than 5 mg/L) that can occur in the Stockton Ship Channel when flows are low and water temperatures are high. In 1991 flows in the San Joaquin River in 1991 were lowest since the drought of 1976-77 and contributed to the lowest measurement of dissolved oxygen levels in the Stockton Ship Channel since the beginning of the current (1987-1991) drought.

To increase net downstream flows and force more water down the San Joaquin River, through the channel, a temporary closure was completed at the head of Old River on September 13, 1991. In spite of the closure, exceptionally low dissolved oxygen levels (3.0 mg/L or less) were recorded in the Rough and Ready Island area in late September and early October. Recovery to levels greater than 5.0 mg/L finally occurred in the channel in early November. The barrier was removed on November 27, 1991.

Middle River Barrier

A rock barrier was placed in Middle River on April 4, 1991, for the agricultural irrigation season and removed on September 13, 1991, as specified in an October 1986 agreement with the Department, South Delta Water Agency, and USBR. The barrier helped to:

- Increase and stabilize water levels for more consistent diversions of agricultural water.
- Improve circulation and flush the shallow sloughs and river reaches in the South Delta.

Activities Outside the Delta

Activities conducted outside the Delta include monitoring water quality standards; conducting temperature studies at Oroville Reservoir; protecting water quality in the Suisun Marsh; and developing and implementing a program for improving drainage in the San Joaquin Valley. Information on those activities follows.

Water Quality Monitoring

The Department monitors water quality at approximately 30 SWP stations located outside the Delta. Approximately 20 stations are located south of the Delta at reservoirs, power plants, and check structures of the North Bay, South Bay, Coastal branch, and main canal of the California Aqueduct. Other monitoring activities are conducted at state reservoirs north of the Delta, Lake Oroville, Antelope Lake, and Frenchman Lake.

Delta exports are normally the sole source of water for SWP facilities and reservoirs south of the Delta. Most Delta water is exported south during the winter months when the greatest freshwater outflow occurs; San Luis Reservoir, the only SWP conservation storage facility between the Delta and southern California, is usually filled by May 1. As a result, reservoirs south of the Delta are usually supplied with the highest quality water. Other sources of water to SWP in 1991 included infrequent localized storm inflow and groundwater pumped in as part of a drought relief program.

Water samples are analyzed to determine total levels of dissolved solids and concentrations of chlorides, sulfates, sodium, boron, and other constituents. Those levels are compared with monthly average water quality objectives included in Article 19, "Water Quality," of the water supply contracts.[1]

Temperature Studies

During summer 1990, Lake Oroville storage fell to the lowest level since the 1977 drought. Overall, Lake Oroville storage was slightly higher during 1991 except during June and July when the lake's elevation was almost identical with the elevation recorded in 1990. Elevations in 1991 remained between 20-feet and 30-feet higher than 1990 levels throughout

[1]For information about SWP water quality, see Bulletin 132, Appendix E, *Water Operations in the Sacramento-San Joaquin Delta* and the monthly publication, *State Water Project Operations Data*. Contact Publications, Department of Water Resources, P.O. Box 942836, Sacramento, California 94236-0001 for copies of the publications.

the remainder of the year—close to 40 percent of operational capacity.

As a result of lower lake elevations during 1990 and 1991, the colder thermal lake water layer dropped below the intake structure for the Edward Hyatt Powerplant. Consequently, in late summer water drawn from the warmer, accessible lake surface reached the downstream Feather River Fish Hatchery at temperatures above the guidelines specified in a 1983 operations agreement between the Department and Department of Fish and Game (DFG).

During 1990, the Department modified the movable control shutters of the intake structures to reach cooler reservoir water levels and cut back the rate of generation at the Edward Hyatt Powerplant. In addition, the Department conducted special studies of (1) lake temperature profiles; (2) power generation relative to river water temperature; (3) configurations of shutters at the intake structures; and investigated opening the river release valve beneath the dam for access to cooler water levels. The Department determined that effective measures for reducing temperatures were limited to manipulating the shutter and varying power operations.

During 1991, as temperatures in the downstream hatchery approached limits set in the 1983 guidelines, power plant generation was cut back, resulting in a drop in the water temperature. In spite of those operational changes, however, the temperature in the fish hatchery exceeded the specified maximum by one degree for two days in September; one degree during October; and by one to two degrees during most of November. Temperatures returned to acceptable limits at the end of November.

During the first week in November, a chiller unit was installed in the hatchery at the intake of the water supplied to salmon egg trays. The unit effectively reduced water temperature by 4 degrees to 5 degrees.

Protection of Suisun Marsh

Suisun Marsh, consisting of approximately 55,000 acres of tidal and managed brackish water wetlands and 29,000 acres of bays and sloughs, is one of the largest contiguous brackish water tidal marshes in the United States. Situated in southern Solano County, west of the Sacramento-San Joaquin Delta and north of Suisun Bay, the marsh encompasses more than 10 percent of California's remaining natural wetlands. In addition, the marsh is the resting and feeding ground for millions of waterfowl migrating on the Pacific Flyway.

Since the early 1970s, the Department as well as the legislature, SWRCB, USBR, and other agencies have acted to preserve Suisun Marsh as a unique environmental resource. As part of its responsibility for protecting Suisun Marsh, SWRCB included water quality standards for Suisun Marsh in Decision 1485, which applies to the operation of SWP. Information about those standards as well as the Department's efforts to enforce them follows.

Decision 1485 Standards

Water quality standards issued by SWRCB in Decision 1485 were designed to provide an optimum habitat for plants and waterfowl and to preserve the Suisun Marsh as a brackish water tidal marsh.

Through Decision 1485, SWRCB required the Department and USBR to develop and fully implement a plan in cooperation with other agencies to ensure that standards in Decision 1485 were met. The Board called for a fully implemented plan of protection for Suisun Marsh by October 1, 1984. In 1984, the Department published *Plan of Protection for the Suisun Marsh*, which included the environmental impact report (EIR) pre-

pared in cooperation with DFG, Suisun Resource Conservation District, and USBR. Contributions were also provided by USFWS. The plan contained a proposal for implementing methods to:

- Monitor water quality.
- Develop management plans for wetlands.
- Install, in phases, physical facilities to improve the water quality of the inner marsh.

The EIR included information about actions identified in the plan as well as about effects of each action. According to the plan, the lead agencies—the Department and USBR—while planning subsequent actions would prepare supplemental environmental documentation if new significant impacts were identified.

A six-phase plan to protect the marsh was suggested. Components of the first two phases of the plan have been completed. Those phases include (1) developing a distribution system for Morrow Island and Roaring River and creating a Goodyear Slough outfall (phase one); and (2) constructing the Suisun Marsh salinity control gates (phase two). Components still to be completed include constructing the Boynton-Cordelia ditch (phase three) and the Cordelia-Goodyear ditch and the Goodyear Slough culverts (phase four); developing the Grizzly Island distribution system (phase five); and constructing the Potrero Mills ditch (phase six).

At USBR's request, however, SWRCB reset the time and method for complying with the condition to protect Suisun Marsh from a one-time completion date of October 1, 1984, to a staged implementation plan to be completed by October 1, 1997. The revised time scheduled was specified in a letter issued on December 5, 1985, and specific revisions were made to Table II of Decision 1485.

Options for compliance times and locations were also part of the revision. The State Water Resources Control Board provided the Department and USBR with the option to select from a set of alternate times and locations for compliance; the Department and USBR were to inform SWRCB of their choice, which would depend on the effectiveness of existing salinity control facilities and operations.

As revised and selected by the Department and USBR , dates for compliance vary from 1988 for locations in Suisun Marsh and the Sacramento River to 1994 for a location in the southwestern area of the marsh.

Preservation Agreement Standards

In 1986 federal legislation (Public Law 99-546) authorized funds to USBR for protecting Suisun Marsh. In March 1987 the Department, USBR, DFG, and the Suisun Resource Conservation District signed the Suisun Marsh Preservation Agreement.

The agreement ensures that salinity levels in Suisun Marsh channel water will be maintained as prescribed to mitigate for adverse effects on the Marsh, as well as on other upstream diversions. An important feature of the agreement is the Suisun Marsh salinity control gates facility, which the Department and USBR evaluated in fall 1988 to determine if the facility could help the agencies ensure acceptable salinity levels as required by the revised Decision 1485 and the preservation agreement.

As in Decision 1485, the agreement included specific salinity compliance standards for Marsh channels. However, unlike Decision 1485, the times for compliance are linked to the date on which the Suisun Marsh salinity control gate facility was considered operational (November 22, 1989) and includes provisions to allow for higher salinity levels during periods when water supplies are low. The compliance options for the locations are consistent with the Decision 1485 as revised.

Article 8 of the preservation agreement contains more explicit requirements than does Decision 1485 for linking the times and locations of future compliance standards to the construction of specific salinity control facilities. The implementation of the next preservation agreement compliance standard is scheduled to begin on October 1, 1994, five full construction seasons after the Suisun Marsh salinity control gate facility became operational.

Standards Exceeded in 1991

From January 1, 1991, through March 8, 1991, two Suisun Marsh standards were exceeded: (1) the monthly average daily mean high-tide electrical conductivity (EC) for Beldons Landing during January and February and for Collinsville and National Steel in February; and (2) the Chipps Island 28-day running average of mean daily EC.

The Chipps Island standard was exceeded for half of January, all of February, and for eight days in March. Those standards would not have been exceeded had the Department of Fish and Game approved, as was expected based on previous years' signing, a petition to replace one standard with another for testing purposes.

Salinity Control Project

Results of tests of the salinity control facilities conducted in 1988 indicated that additional control measures were needed to meet the western Suisun Marsh channel water salinity standards.

Consequently, to prevent duplication of activities and expedite planning and environmental review, the planning and environmental review activities for the third and fourth phases contained in *Plan of Protection for the Suisun Marsh* were combined in a single project, the Western Suisun Marsh Salinity Control Project.

To ensure standards were met, the Department developed both interim and long-range actions. Interim actions came about as a result of planning the third phase of the project, the Boynton-Cordelia ditch. This third phase is designed to help the Department and USBR meet Decision 1485 salinity control standards effective October 1, 1991.

Interim actions included using North Bay Aqueduct water to control salinity in the northwestern region of the marsh. Long-range actions include conducting the environmental analyses necessary to implement phases three and four.

Interim Measures

When planning for the Boynton-Cordelia ditch began in June 1990, the Department and USBR recognized that they could not meet the Decision 1485 standard scheduled to be in effect on October 1, 1991. Planners would have only 16 months to identify alternative actions; prepare and certify the necessary environmental documentation; obtain permits; and implement the project. Consequently, the Department and USBR began a test to determine whether, as an interim measure, water from the North Bay Aqueduct could be used to control salinity in the northwestern region of the Marsh.

Determining whether North Bay Aqueduct water may be used as an interim measure is critical because if the water can be used, the Department will be able to:

- Determine information needed for the Western Suisun Marsh Salinity Control Project environmental review documents
- Meet northwestern Marsh standards regardless of the operation of the Suisun Marsh salinity control gates and within the times set in Decision 1485.

If water year 1993-94 is critically dry, an estimated 50 cubic feet per second of North Bay Aqueduct water will be needed during the months of January, February, and March to maintain northwestern marsh channel water within Decision 1485 standards.

Long-Term Measures

For implementing the third and fourth phases contained in *Plan of Protection for the Suisun Marsh*, The Department, USBR, and staff members of the Suisun Marsh Technical Advisory Committee used the alternative actions contained in the plan as a starting point for identifying actions for analysis in the environmental review.

A public scoping meeting was held December 13, 1990, to get public comments about alternative actions to meet future salinity standards. Monthly meetings of the Suisun Marsh Technical Advisory Committee and Western Salinity Control Project planning workshops were held to obtain comments from agency representatives. The scoping report was jointly prepared by the Department and USBR and published in August 1991.

The scoping report includes information about the plan of protection and alternative actions proposed by agencies and the public during the scoping phase. It also contains study plans for an environmental impact analysis and an engineering feasibility analysis conducted to determine the likelihood of meeting SWRCB's water salinity standards in the Suisun Marsh Channel.

In the scoping report stand-alone actions and 134 combinations of actions were identified for consideration. To be engineeringly feasible, an alternative action must meet future western Marsh SWRCB standards during the selected critically dry periods of water years 1988, 1989, and 1990.

The determination as to whether actions will meet standards will be made by examining results from a mathematical model of salinity levels in Suisun Bay, Suisun Marsh, and the Delta. If an alternative action appears to meet standards, a detailed study will be conducted and its environmental and socioeconomic impacts, analyzed.

Because of the large number of alternative actions to be studied, a two-phase approach is being followed to evaluate them. During the first phase, salinity levels in the marsh will be simulated using average tidal conditions and the hydrology for the 1990 water year. Results from those studies will help in (1) eliminating alternative actions that would not meet project objectives; and (2) determining general channel dimensions for alternative actions that appear to meet the project's objectives.

The second phase of the study is designed to simulate Marsh hydrodynamic and salinity conditions using historic boundary tides and salinities for the three water years. The results of those studies will be used in making detailed environmental impact analyses and constructing general design parameters for the facility.

The Western Salinity Control Project EIR and EIS (environmental impact statement) are being prepared according to the guidelines for the California Environmental Quality Act and the National Environmental Policy Act. The work for preparing the reports is grouped into the following tasks:

1. Evaluation of the existing system
2. Engineering design and analysis
3. Engineering feasibility/environmental impact analysis flow and water quality modeling
4. Environmental and socioeconomic impact analyses
5. Environmental documentation for the joint EIR/EIS, including permits

The draft environmental impact report/statement is scheduled for distribution in August 1993.

San Joaquin Valley Drainage Program

Agricultural drainage, especially drainage on the west side of the San Joaquin Valley, presents two basic problems for farmland irrigated with water supplied by CVP and SWP. Those problems involve:

1. Salt buildup and water logging of irrigated lands due to a high groundwater table—conditions that adversely affect crops and productivity
2. Toxic or potentially toxic trace elements in the shallow groundwater, which when drained and discharged to streams, ponds, or wetlands, can adversely affect fish and wildlife

To solve or mitigate the effects of those problems, the Department continues to work with federal and local agencies as well as environmental groups and private irrigators. For example, the Department has entered into a memorandum of understanding with state and federal agencies to implement the recommended plan of the San Joaquin Valley Drainage Program. Those agencies include USBR, USFWS, U.S. Geological Survey (USGS), DFG, U.S. Soil Conservation Service, SWRCB, and DFA.

All eight agencies are keenly interested in correcting the agricultural subsurface drainage and related problems in the west side of the San Joaquin Valley and are encouraging irrigators and local residents interested in solving the drainage problem to take the actions necessary to make the drainage management plan succeed. Consequently, the interagency group is establishing a committee of actively involved representatives, including representatives of both irrigation and environmental interests, to work closely with them to implement the plan at the local level.

The interagency group is also preparing a coordinated five-year work plan to explain the proposed individual agency drainage-oriented programs as well as the methods for financing implementation of the plan.

Meanwhile, the Department continues its drainage-related activities: collecting data; reducing drainage; treating drainage; and constructing evaporation ponds. Information about those activities follows.

Data Collection

The Department has continued its cooperative studies with USGS on the occurrence, movement, and fate of selenium in drainage problem areas. Monitoring continued on a network of 20-foot deep wells installed in the Tulare Lake Basin to study the horizontal movement of selenium as well; and (2) well clusters (well depths ranging from 20 to 200 feet) that were installed to investigate the vertical movement of selenium. Two of the well clusters were installed in fiscal year 1990-91. The Department plans to install approximately 30 clusters by 1994.

The U.S. Geological Survey will interpret data collected from the study and publish the final report when the study ends in 1994. However, a report for work conducted in 1991 will be available in 1993.

In addition, the Buena Vista Water Storage District is conducting a comprehensive study of groundwater to determine the source and cause of shallow, rising groundwater tables; and (2) investigating corrective measures.

Drainage Reduction

The Department continued its demonstration and education programs to promote the practice of improved irrigation and drainage management techniques. Specifically, those programs included efforts such as:

1. Jointly funding a position for a water conservation coordinator to help eight irrigation districts improve water management practices
2. Conducting a field study of four irrigation systems to compare water application, yield, and drainage water reduction
3. Conducting field demonstration of furrow irrigation systems to compare uniformity of distribution, efficiency of irriga-

tion, rate of water application, crop yield, and amount of drainage water reduced
4. Studying the quantity/quality relationship of drainage water production
5. Testing at the water district level the effectiveness of tiered-block water pricing
6. Using saline irrigation water to test the results of an experimental agroforestry project on the long-term maintenance of favorable salt and water balance
7. Funding six short courses (one-day and two-day duration) in the technological aspects of irrigation and drainage management for field employees, growers, and water district managers

Drainage Treatment

In 1991 the Department began operating the multiagency drainage treatment research and demonstration facility near Tranquillity. One of the main programs, a pilot project for using bacteria to remove selenium from drainage water, is cooperatively funded by the Department and USBR and conducted by California State University's Fresno Foundation.

The program is designed to (1) evaluate the effectiveness of the selenium removal process; (2) generate data to optimize reactor design; and (3) investigate sludge treatment and disposal options. So far, the foundation has conducted scale studies of the treatment process in the laboratory and started to operate and evaluate the pilot program.

Evaporation Ponds

The final report on the cumulative impacts of evaporation ponds on wildlife in the San Joaquin Valley was to be published in fall 1991. However, in its review of the report, the coordination committee expressed significant disagreements; and the final report is now scheduled for completion in July 1992.

The Department is continuing its effort to develop acceptable criteria for designing, constructing, operating, and managing evaporation ponds to minimize impacts on wildlife and groundwater. The Department has also initiated a study with University of California, Los Angeles, to examine the development of alternative habitats to minimize or offset the adverse impacts of evaporation ponds on wildlife. In addition, the Department-funded USFWS studies designed to assess the effectiveness of evaporation ponds are continuing. The Department expects the studies to be completed within two years.

Station Number and Name	
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
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 Nichols
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
D28A	Old River opposite Ranch Del Rio
D41	San Pablo Bay near Pinole Point
MD7A	Little Potato Slough at Buckley Cove
MD10	Disappointment Slough at Bishop Cut
P8	Middle River at Buckley Cove
P10A	Middle River at Union Point
P12	Old River at Tracy Road Bridge

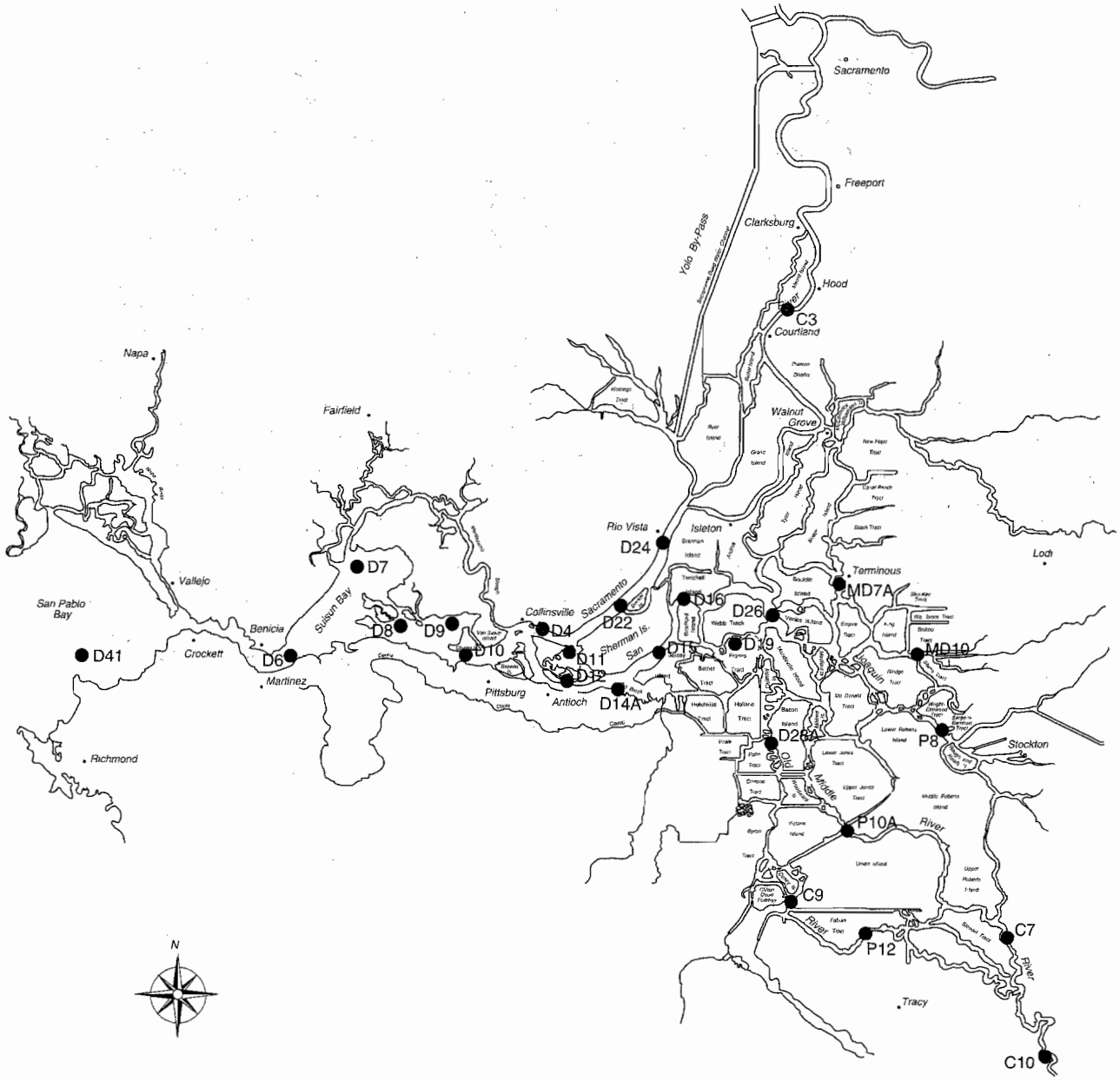


Fig. 14-1. Water quality monitoring sites in Sacramento-San Joaquin Delta

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15 Forecasting Water Delivery Capabilities

Forecasting water delivery capabilities is an integral and necessary part of the Department of Water Resources' water management plan. In some years the State Water Project (SWP) may not have the water supply necessary to deliver full amounts of entitlement water. Consequently, the Department must annually determine the amount of water that can be approved for delivery while retaining a prudent reserve for future use. Once the amount of water to be delivered is determined, the Department must review contractors' annual requests for water and determine amounts it reasonably expects can be delivered.

This chapter includes information about the methods used by the Department to (1) forecast delivery capabilities through preparing water budgets; and (2) approve amounts of entitlement water to be delivered.

Water Budgets

According to provisions contained in water supply contracts, contractors are required to request by October 1, 1991, amounts of entitlement water for delivery in 1992. The Department must approve or modify those requests by December 1, 1991. However, because the Department cannot accurately predict the amount of precipitation California will receive in winter and spring, it must estimate the amount of water available to SWP for delivery in 1992.

To determine the amount of water available to be delivered each calendar year, the Department uses a procedure developed over several years through extensive hydrologic probability analysis and discussions with SWP's water contractors. That procedure, the water budget, was used in late 1991 to approve entitlement water for delivery in 1992.[1]

Basis for Water Budget

The water budget is based on the relationship between four variables:

1. Water supplies forecast at a certain level of probability for the current water year
2. Current amount of carry-over storage
3. Targeted amount of end-of-year carry-over storage
4. State Water Project's total delivery capability for the calendar year

The Department's objective in formulating and using the water budget is to ensure that:

1. Sufficient carry-over storage will be maintained.

[1]Since 1978 SWP's operational decisions have been based on the annual analysis of the risk of delivering water instead of storing it for future use. Such an analysis provides the Department with a rational means of deciding the amount of water to deliver in a given year and the amount to leave in storage to provide for dry periods. That procedure was previously known as the Rule Curve or Delivery Risk Analysis.

TABLE 15-1

Six-Year Comparison of Total Yearly Amounts of Entitlement Water Requested for Delivery in 1991 Through 1996 with Contractual Amounts

Year of Request	*Year of Delivery*	*Amount Requested (a (Acre-feet)*	*Contractual Amount (Acre-feet)*	*Percent of Contractual Amount*
1986	1991	2,972,543	4,130,856	72.0
1987	1991	3,152,935	4,130,856	76.0
1987	1992	3,281,998	4,138,816	79.0
1988	1991	3,157,424	4,130,856	76.0
1988	1992	3,313,605	4,138,816	80.0
1988	1993	3,362,707	4,146,966	81.0
1989	1991	3,469,231	4,130,856	84.0
1989	1992	3,549,410	4,138,816	86.0
1989	1993	3,596,715	4,146,966	87.0
1989	1994	3,643,810	4,154,201	88.0
1990	1991	3,858,328	4,130,856	93.0
1990	1992	3,861,393	4,138,816	93.0
1990	1993	3,978,636	4,146,966	96.0
1990	1994	3,858,150	4,154,201	93.0
1990	1995	3,860,583	4,163,066	93.0
1991	1992	4,014,940	4,138,816	97.0
1991	1993	4,165,201	4,146,966	100.4
1991	1994	4,056,711	4,154,201	98.0
1991	1995	4,088,147	4,163,066	98.0
1991	1996	4,174,064	4,169,311	100.1

a) Includes amounts of deferred entitlement water.

2. Next year's requirements to protect water quality in the Delta will be met.
3. At least emergency water deliveries could be made in the following year without the need for extraordinary measures.

Modifications to Budget

Because of the difficulty in forecasting precipitation and the amount of precipitation received during the year, the Department may have to modify the amount of entitlement water it approved in December for delivery during the next calendar year.

Those revised estimates are based on half the amount of active storage at Oroville and San Luis reservoirs; delivery estimates for subsequent years are based on the remaining half.

Approval of Deliveries

In fall 1991 SWP contractors submitted requests for entitlement water for years 1992 through 1996. The amounts of those short-term requests may be found in Table 15-1, "Six-Year Comparison of Total Yearly Amounts of Entitlement Water Requested for Delivery in 1991 Through 1996 with Contractual Amounts."

The amounts in Table 15-1 include amounts of deferred entitlements. (The contractors' long-range projections for entitlement water are included in Table B-5B of Appendix B, *Data and Computations Used in Determining 1993 Water Charges.*)

Amounts of entitlement water initially requested by contractors in September 1991 for delivery in 1992 totaled 4,014,940 acre-feet. The amounts requested according to use include municipal and industrial, 2,511,572 acre-feet; agricultural, 1,239,046 acre-feet; and deferred entitlement, 384,322 acre-feet.

According to initial operation studies, which were based on the water budget procedure and completed in November 1991, the initial allocation in December 1991 provided for 20 percent of requests for municipal, industrial, and agricultural uses. However, because of spring storms, the Department approved increases in entitlement deliveries to 35 percent in early March and to 45 percent in late March.

16. Increasing Storage and Delivery Facilities

To meet the water delivery goals included in water service contracts, the Department of Water Resources needs to construct additional storage and delivery facilities. In planning for and developing those facilities, however, the Department often faces two significant challenges: (1) finding technically suitable sites; and (2) satisfying the many complex environmental procedures, laws, and regulations.

Nevertheless, meeting water delivery goals is a priority with the Department; consequently, the Department is planning several projects designed to increase State Water Project (SWP) storage and delivery facilities. Specifically, those projects are designed to:

- Provide an additional water supply north of the Delta in the Cottonwood Creek and Red Bank Creek basins (Red Bank Project).
- Provide off-stream storage south of the Delta (Los Banos Grandes facilities and Kern Water Bank).
- Deliver water to agricultural contractors in northwestern Kern County and municipal and industrial contractors in Santa Barbara and San Luis Obispo counties (Coastal Branch of the California Aqueduct).

Information about constructing those facilities, including information about the environmental aspects of the projects, follows.

Red Bank Project

Cottonwood Creek in Shasta County and Tehama County, the largest uncontrolled tributary of the Sacramento River, is a primary cause of flooding locally and along the upper Sacramento River. The U.S. Army Corps of Engineers (USACE) selected the Cottonwood Creek drainage basin in 1964 as the most suitable for constructing facilities to provide flood protection as well as an additional water supply.

Since then, both USACE and the Department have conducted studies to determine the most efficient and economical means of constructing those facilities. The facilities recommended by the Department for construction consist of a combination of those originally proposed by the Department and USACE. Those facilities have been identified as the Red Bank Project.

Early Studies

In its early studies, the Department determined Cottonwood Creek to be a good potential source of water but only a fair site for a reservoir. The Red Bank Creek basin, however, was found to be a good site for a reservoir but not for a potential source of water. Consequently, the Department developed a plan to incorporate the strengths and weaknesses of each location, resulting in a site that is a good source of wafer as well as a good site for a reservoir.

Project Description

As defined in a 1985 report published by the Department, the Red Bank Project would consist of:

1. A combination diversion and storage dam at the Dippingvat site on the South Fork of Cottonwood Creek
2. A storage dam and reservoir at the Schoenfield site in the adjacent Red Bank Creek basin
3. A conveyance system for connecting the two reservoirs

Based on the 1985 report, the Department conducted a two-year prefeasibility investigation to determine the (1) cost of project; (2) flood control benefits; and (3) amount of additional water available to SWP.

Benefits

In conducting the study, the Department determined that the cost of constructing the dams and reservoirs would be $90 million (1987 dollars) and that the project would provide the following benefits:

- Approximately 47,000 acre-feet per year of additional water to SWP's system
- An annual flood control benefit of about $2.4 million for the Cottonwood Creek basin
- A warm-water fishery and other recreational facilities (approximately 113,000 recreation days per year)

The Department also determined that the project could provide significant benefits to fish. The anadromous fisheries in lower Cottonwood Creek would benefit through an improved water supply; and to facilitate the upstream migration of salmon, gates at the Red Bluff Diversion Dam could be open longer than they are open now.

Project Viability

As currently envisioned by the Department, Dippingvat Dam would be about 251 feet high with a reservoir capacity of 104,000 acre-feet. The Schoenfield Dam would be about 300 feet high with 250,000 acre-feet of storage capacity.

According to preliminary findings, the project may be viable as an addition to SWP. However, final implementation of the project depends on the (1) results of technical and environmental investigations currently being conducted; and (2) achievement of a more efficient means than now exists to transport SWP water through the Delta.

In fiscal year 1991-92, the Department completed the topographical mappings; published a report of drilling investigations; prepared a fault investigation report; and investigated alternative dam types. In fiscal year 1992-93 the Department will initiate environmental studies, update the project hydrological and operational studies and prepare a summary technical report.

Los Banos Grandes

A key component of the Department's efforts to meet California's growing water needs is through water banking; that is, through moving water during periods of high flows in the winter into storage facilities located south of the Delta for release later during dry periods.

Water banking south of the Delta offers considerable benefits to the Department. Water banking will help to:

1. Improve the reliability of SWP's water supply.
2. Reduce demands for water exported through the Delta in the summer.
3. Benefit Delta fisheries by providing the Department with the option of pumping in the Delta when impacts on fisheries are least significant.

The Department has designed the Los Banos Grandes facilities (LBG) to be a primary south-of-the-Delta water bank. Once constructed, LBG will help to reduce the frequency and magnitude of projected water shortages by increasing the

dependability of the existing water supplies available to SWP contractors. That is important because if the reliability of present SWP supplies is not improved, long-term water shortages of varying magnitudes will occur more frequently as demand increases.

In addition to improving the reliability of SWP's water supply, LBG can result in benefits to Delta fisheries. The Department will gain flexibility in operating existing and planned delivery systems, thereby being able to shift pumping in the Delta to months when the effects of diversions on fisheries are least significant.

Project Design

Consisting of three saddle dams, the main dam, and two pumping-generating plants, the Los Banos Grandes facilities will be located in Merced County on Los Banos Creek, five miles upstream from the existing Los Banos Detention Dam and Reservoir and six miles west of the California Aqueduct. The reservoir will be linked to the California Aqueduct through the existing Los Banos Reservoir.

The project is designed to store exports from the Sacramento-San Joaquin Delta during intermittent periods of high flow. Those flows, pumped at Harvey O. Banks Delta Pumping Plant, will be conveyed through the California Aqueduct to Mile 79.5, where the first pumping-generating plant will lift the water into the existing Los Banos Reservoir.

That water will then be lifted into the proposed LBG Reservoir for storage by a second pumping- generating plant. When water is withdrawn from storage for use downstream, the generating ability of the two plants will allow recovery of some energy used to lift the water into storage.

Pumping will be maximized during off-peak hours when energy rates are lowest; generating will be maximized during on-peak hours when the value of energy is highest.

Investigations and Studies

In 1983 the Department initiated a comprehensive investigation of alternative off-stream storage reservoirs south of the Delta. In 1984, after examining 18 sites, the Department completed a reconnaissance study for 13 sites in the San Joaquin Valley. As a result of the study, a recommendation was made to (1) investigate and determine the most cost-effective size for constructing LBG; and (2) evaluate the engineering, economical, financial, and environmental feasibility of constructing LBG.

The recommendation had such broad support that in 1984 the California Legislature unanimously approved Assembly Bill 3792, thereby authorizing LBG as a SWP facility. The feasibility investigation for LBG began in 1984, and a notice of preparation for the environmental impact report was issued in March 1986.

The feasibility report and draft environmental impact report for the proposed project were completed in December 1990. The final environmental impact report and statement are scheduled to be completed during 1993, after which the decision of whether to proceed to the final design phase will be made. If the final design phase is implemented at that time, construction of the facilities would begin in mid-1995 and facilities would be operational by 2002.

In its 1990 feasibility report, the Department:

1. Established the engineering, geologic, economic, and environmental viability of the LBG facilities
2. Determined the cost of these facilities
3. Outlined a plan for financing the proposed facilities as a feature of SWP
4. Defined the financial impacts on SWP contractors
5. Presented a recommendation concerning the viability of this project as a SWP facility

Based on the results of that 1990 report, the proposed LBG facilities were determined to be a technically feasible, cost-effective solution to help offset projected SWP water shortages in the future. In feasibility studies conducted by the Department, three formulas were prepared for the size of the reservoir; at this time, however, the Department is proceeding with plans to construct LBG facilities with a 1.73-million acre-feet (MAF) SWP-only storage capacity.

Information about the engineering and environmental viability of the project as well as about its (1) costs and plan for financing; (2) financial impacts on SWP contractors; and (3) viability as a SWP facility follows.

Engineering Viability

To construct the main dam and three saddle dams of the 1.73 MAF facility, the Department is planning a standard earth-fill design. However, the Department is also investigating the use of roller-compacted concrete for the main dam and saddle dams. Roller-compacted concrete dams (lean concrete), built with earth-fill construction techniques, are less costly than conventionally placed concrete and earth-fill dams.

Because the project will generate electrical power, the environmental effects of such generation will be examined through the provisions of the Federal Power Act and the requirements of the Federal Energy Regulatory Commission (FERC). The first-stage consultation process, a necessary step for submitting an application for a license to FERC, has been completed; an application for a license will be filed at the end of 1992.

Environmental Viability

The Department is completing the environmental documentation and obtaining the permits necessary to proceed with the 1.73 MAF SWP-only formulation. Working with the U.S. Army Corps of Engineers (USACE) as the new lead federal agency (through Section 404 of the Federal Water Pollution Control Act [Clean Water Act]), the Department is preparing a draft environmental impact report and statement (EIR/EIS) to satisfy requirements of both the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). Comments received during the 1991 public review period for the draft EIR will be incorporated into that report.

The draft EIR/EIS and the final EIR /EIS are scheduled for release in 1993. Those documents are based on ongoing environmental studies begun in 1984. The goal of those studies is to identify significant impacts to resources in the project area and identify ways to avoid or compensate for those impacts. After the studies are complete, the Department will formulate a plan designed to avoid or compensate for significant environmental impacts of LBG.

In addition to conducting those studies, the Department is formulating several agreements designed to reduce the effects of LBG on the environment, including effects on woodlands and wetlands, endangered species, and cultural and biological resources. Mitigation measures will be developed to compensate for all cumulative impacts of the project. In addition, the Department is studying the benefits of LBG to fisheries. Information about those activities follows.

Woodlands and Wetlands

The Department is formulating an agreement to mitigate the potential loss of about 576 acres of sycamore alluvial woodland and approximately 160 acres of wetlands. Because the project would result in a fill of jurisdictional wetlands, an application for a 404 permit under the Clean Water Act has been filed with USACE.

Endangered Species

To minimize the effects on plant and animal species, including the San Joaquin kit fox, listed as threatened or endangered on both state and

federal lists, the Department is participating in various activities, including conducting wildlife inventory studies and investigating the possibility of relocating or replanting endangered wildlife and plants.

Cultural and Biological Resources

The Department is conducting a survey to identify cultural resources that would be affected by the project and will mitigate the effects of the project on those resources through complying with Section 106 of the National Historic Preservation Act.

Also, to address significant impacts on biological resources, a biological resources mitigation plan will be developed in coordination with the California Department of Fish and Game (DFG) and the U.S. Fish and Wildlife Service (USFWS). Implementation of that plan will help to reduce LBG's impacts on biological resources.

Fisheries

The Department is coordinating activities with DFG to prepare a fisheries plan for the proposed LBG facilities. The potential effects on Sacramento-San Joaquin Delta fisheries are also being examined. Mitigation measures will be developed to compensate for the cumulative impacts of the project, such as those associated with diversions from the Sacramento-San Joaquin Delta.

Costs and Financing

The total first cost for LBG, based on participation by all SWP contractors, is $890 million, including $120 million for mitigation of environmental impacts. The state will finance SWP's portion of those capital costs by selling water revenue bonds, which will be repaid out of the revenue collected from the sale of water to SWP contractors.

Before any bonds are sold, however, a mechanism for repaying them must be determined and approved by SWP contractors. Once approved, the mechanism will be incorporated as an amendment to the long-term water supply contracts.

An explanation of possible methods for repaying the bonds sold to finance the cost of constructing LBG follow.

1. All project costs will be allocated to SWP contractors because other funding for recreation and flood control benefit is not available.
2. Only water supply costs will be allotted to SWP contractors.
3. A portion of the LBG water supply will be provided for mitigation of existing impacts of SWP's operations in the Delta. For example, assuming 12 percent of LBG's yield is used for mitigation, that portion of LBG's water supply costs would be allocated to all SWP contractors. The remaining portion of LBG water supply costs would be allocated only to SWP contractors who are participating in LBG.

The Department will collect revenues for the repayment of project costs from SWP's 29 long-term water supply contractors according to provisions of two cost components—the Delta Water Charge and the Water System Revenue Bond Surcharge.

Currently, the Department and SWP contractors are working together to examine the financial, contractual, and operational issues associated with the possibility that not all SWP contractors will participate in LBG.

Viability as SWP Facility

Operational studies indicate that for the 1.73 million acre-feet SWP-only project LBG will provide significant water supply and delivery benefits to SWP. Since diversions to LBG storage occur from November to April, a significant amount of water from high flows can be stored in LBG. Water stored in Oroville Reservoir can also be transferred to LBG, thereby allowing additional

runoff from the Feather River to be captured and stored in Oroville Reservoir.

Assuming (1) existing SWP facilities; (2) a 10,300 cfs pumping capability at Harvey O. Banks Delta Pumping Plan; (3) a 1.0 MAF Kern Water Bank; (4) Delta water quality standards as currently mandated by Decision 1485; and (5) a demand level of 4.2 MAF, Los Banos Grandes will provide an average annual dry-period supply of 260,000 acre-feet of water and a 57-year average annual supply of 197,000 acre-feet.

Kern Water Bank

The Kern Water Bank, located west of Bakersfield in Kern County, is designed to store SWP water into the groundwater basin during wet years. In dry years that water would either be (1) withdrawn by pumping; or (2) left in place and counted against Kern County Water Agency's (KCWA) entitlement deliveries in the appropriate year. Some or all of the withdrawn water may be exported out of the basin.

Elements

The Kern Water Bank program currently consists of eight separate projects or elements. One element, the Kern Fan Element, is owned by the Department. Once developed, the other seven elements, referred to as local elements, will be owned by various water districts in Kern County.

Kern Fan Element

The Kern Fan Element will be built in two stages. The first stage, estimated to be completed in 1994, will have a storage capacity of about 350,000 acre-feet; an expected average annual water supply benefit of about 44,000 acre-feet per year; and an average annual dry period (AADP) supply benefit of about 50,000 acre-feet per year.

The second stage is designed to increase the storage capacity to about 1 million acre-feet with an expected AADP water supply benefit of about 140,000 acre-feet per year and a corresponding increase in the average annual SWP water supply.

Planning activities for the second stage of the Kern Fan Element will begin once the environmental impact report and habitat conservation plan for the first stage are completed. Construction of the second-stage facilities is scheduled to begin in 1996.

Local Elements

The seven proposed local elements of the Kern Water Bank could add about 2 million acre-feet of groundwater storage and increase the AADP water supply of the Kern Water Bank by about 280,000 acre-feet per year. The local elements are planned in cooperation with the Department and are in various stages of the planning process. Prefeasibility studies are or have been conducted and a master plan is being prepared. Information about those studies and plan follows.

Prefeasibility Studies

As of the end of the 1991-92 fiscal year, prefeasibility studies were completed for local elements sponsored by the Kern Delta Water District, Improvement District Number 4, Buena Vista Water Storage District/West Kern Water Storage District, and Rosedale Rio-Bravo Water Storage District. The Department is presently conducting an analysis of *Components of Feasibility Study of Semitropic Local Element of Kern Water Bank*, a prefeasibility report prepared for the Semitropic Water Storage District by Bookman-Edmonston Engineering, Inc.

A draft prefeasibility study for the Cawelo Water District local element was completed in July 1991, and a final study report was scheduled for release in September 1992. A prefeasibility study of a local element sponsored by the North Kern Water Storage District was begun in mid-1991 and should be completed by July 1993. No other local elements are being considered for construction at this time.

Master Plan

A master plan is being prepared by a Kern County working group to ensure that:

- Criteria and procedures are set to ensure local elements are implemented in an orderly manner.
- All local elements are assessed on an equitable basis.

Once a local element is judged to meet the criteria contained in the master plan, the feasibility of the element can be determined. Once the project's feasibility is agreed on, documents required by CEQA can be prepared; and negotiations for implementing the local element can begin between the project's sponsor and the Department.

Environmental Documentation

In developing the Kern Fan Element, the Department has prepared two environmental documents, a draft supplemental EIR and a habitat conservation plan. Information about the documents follow.

Environmental Impact Report

A supplemental EIR for the Kern Fan Element was prepared according to CEQA guidelines and distributed for review on December 31, 1990. An administrative draft of the final supplemental EIR is nearly complete.

Habitat Conservation Plan

The Department is required to prepare a habitat conservation plan for the Kern Fan Element because construction and operation of some facilities may result in the take of threatened and endangered species. In the habitat conservation plan, the Department will document threatened and endangered species both known to be on the property and those expected to move onto the property once the mitigation lands are established.

The plan will include a listing of mitigation requirements for the project, including those designed to minimize the disturbance of listed species as well as to compensate for disturbances by setting aside preserves for the listed species.

Threatened and endangered animal species found on or adjacent to the Kern Fan Element include the San Joaquin kit fox, Swainson's hawk, Tipton kangaroo rat, San Joaquin antelope squirrel, and blunt-nosed leopard lizard. Threatened and endangered plant species include the slough thistle, recurved larkspur, Hoover's eriastrum, and San Joaquin woolly threads.

The plan will provide to the Department a basis for applying for permits from DFG and USFWS to construct, operate, and maintain existing and planned structures and facilities necessary to operate the Kern Fan Element.

The regulatory agencies also required that significant existing and planned activities by other entities on Kern Fan Element property as well as related activities on neighboring lands be included in the permit. Those include (1) constructing additional recharge facilities by the Kern County Water Agency; and (2) constructing, operating, and maintaining oil and gas wells and related facilities by ARCO Oil and Gas Company and other utility easement holders.

In addition, recharge facilities belonging to the city of Bakersfield, Buena Vista Water Storage District, and West Kern Water Storage District are adjacent to the Kern Fan Element and used interchangeably. Consequently, those entities will be included in the permit.

Coastal Branch Delivery Facility

The Coastal Branch of the California Aqueduct, to be constructed in two phases, was designed to deliver water for agricultural use to contractors in northwestern Kern County (first phase) and for municipal and industrial use to

contractors in Santa Barbara County Flood Control and Water Conservation District and San Luis Obispo County Flood Control and Water Conservation District (second phase).

The first phase, completed in the late 1960s, includes two pumping plants and a 14.8-mile coastal stub canal extending from Avenal Gap to the vicinity of Devil's Den in northwestern Kern County. Berrenda Mesa Water District receives water through the first-phase facilities.

Once constructed, phase two will consist of 102 miles of buried pipe from the existing terminus near Devil's Den to the site of Tank 5 on Vandenberg Air Force Base (12 miles south of the Santa Maria River); at least three pumping plants; one power recovery plant; and five water-storage facilities. Those facilities will be used to transport up to a projected amount of 54,500 acre-feet per year of municipal water to San Luis Obispo and Santa Barbara counties.

In October 1986 Santa Barbara County Flood Control and Water Conservation District and San Luis Obispo County Flood Control and Water Conservation District requested that the Department conduct the advanced planning and environmental studies needed to complete the second phase of the aqueduct.

Assessments

While conducting advance planning studies, the Department examined many routes for the pipeline. Based on topographic restrictions, design limitations, cost, and environmental impacts, the Department selected the best overall route. The selected route was then studied in greater detail to determine the best alignment.

The detailed studies for the selected route included geological, archaeological, wildlife, botanical, and wetlands surveys. Also, five workshops were held with owners of property located along the route to inform them of the project and to learn about their concerns. All information gained through studies and workshops was used in selecting the best practicable alignment to minimize impacts.

That information, which included appropriate mitigation measures, was also used to prepare an EIR for the project. The final EIR was released in May 1991, and the notice of determination and summary of findings was issued in July 1992. With mitigation, the project will result in no long-term significant impacts. All significant impacts are short-term and associated with construction (traffic, noise, and air quality).

Santa Barbara Flood Control and Water Conservation District and San Luis Obispo Flood Control and Water Conservation District were notified, as required in paragraph 45(d) of the water supply contracts, that the Department would start final design on phase two in June 1992. At that time the two districts notified the Department of their requests for entitlement water. San Luis Obispo County Flood Control and Water Conservation District requested 8,028 acre-feet per year; while Santa Barbara County Flood Control and Water Conservation District requested 46,478 acre-feet per year.

The Department agreed to honor requests for adjustments in entitlement requests due to circumstances beyond the districts' control through June 1,1993.. Currently, the Department is:

- Preparing the final design
- Acquiring rights-of-way
- Obtaining permits necessary to construct the project

Construction

This section includes a description of construction activities as well as information about costs.

Description

Constructing the second phase of the Coastal Branch requires laying 102 miles of buried pipe from the existing terminus near Devil's Den to the

site of Tank 5 on Vandenberg Air Force Base (12 miles south of the Santa Maria River). Other facilities to be constructed include four pumping plants; one power recovery plant; and five water-storage facilities.

The power recovery plant is designed to dissipate excess water pressure in the pipeline and generate up to 6.1 megawatts of energy. The five storage facilities will be used as segments of the pipeline to provide flexibility in operating and maintaining the project.

A regional water treatment plant owned and operated by the local water purveyors will be constructed at the Tank I site at Polonio Pass.

Costs

The estimated cost of the project (in 1992 dollars for delivering 54,500 acre-feet per year) is about $373,000,000, which includes costs for mitigation and rights-of-way. The unit cost of the water at the turnouts is estimated to vary from about $480 to $650 per acre-foot, depending on the repayment reach and the amount of water subscribed. Costs for treating the water and constructing local facilities to transport water to areas of use are not included.

Construction, which is projected to begin in mid-1993, will be divided into about 27 construction contracts. Construction is scheduled to be completed in 1996.

17. Augmenting the Water Supply

To meet State Water Project (SWP) contractors' increasing need for water, the Department of Water Resources has investigated and implemented several water management plans. Today, the Department's plans have evolved from conserving existing supply through storage to:

- Entering into programs with various water agencies in which the Department finances facilities in exchange for water (conjunctive use)
- Developing programs to transfer water, either through statewide programs such as the Drought Water Bank or through transfers between SWP long-term contractors or other agencies, including the Central Valley Project (CVP)
- Testing weather modification programs

Information about programs the Department conducted or participated in from June 30, 1991, to June 30, 1992, is included in this chapter.

Conjunctive Use of Water

As a water management tool, conjunctive use of surface water and groundwater provides two important benefits:

1. Conjunctive use is a "win-win" situation for agencies involved. Agencies work together for their own benefit as well as to benefit each other by making the most efficient use of water supplies available to them.
2. Conjunctive use offers a relatively low-cost method for SWP or other agencies to store water in times of above-average supplies for use during dry periods. Conjunctive use is a way of stretching the water supply, both locally and statewide; for example agencies with subsurface storage space can capture flood flows at times when surface storage is limited.

The Department has actively promoted conjunctive use as a water management tool since the mid-1980s. Currently, the Department is working with two agencies in San Joaquin County on a conjunctive-use project; and in 1992 the Department expanded its conjunctive-use program to include investigating the potential for conjunctive use of surface water and groundwater in the Sacramento Valley. Information about those activities follows.

San Joaquin County

In 1986 two agencies in San Joaquin County, Stockton East Water District and Central San Joaquin Water Conservation District, presented a proposal to the Department for releasing CVP water from the New Melones Dam in exchange for financing facilities.

Specifically, according to the proposal, the agencies would release downstream in the Stanislaus River as much as 145,000 acre-feet of the agencies' contracted water from CVP in years of

critical shortages in exchange for SWP's financing of facilities in the Stanislaus and Calaveras river basins. Those facilities would be used to provide conjunctive use of water in the study area as well as benefits to fisheries, improved water quality, and increased yield to SWP's and CVP's contractors.

Participants

In 1988, in response to the proposal, the Department, U.S. Bureau of Reclamation (USBR), and local water agencies agreed to investigate the future demands for water in the study area and the most efficient means of meeting those demands.

The Department and USBR prepared a work plan for that investigation; and a memorandum of understanding was signed by the Department; Department of Fish and Game (DFG); USBR; Stockton East Water District; Central San Joaquin Water Conservation District; and Calaveras County.

Also, Calaveras County Water District; Tuolumne County; Tuolumne Regional Water District; Stanislaus County; San Joaquin County; Lathrop County Water District; South Delta Water Agency; and cities of Escalon, Ripon, Manteca, and Stockton.

Oakdale Irrigation District and South San Joaquin Irrigation District, two irrigation districts with water rights to Stanislaus River water, decided not to sign the memorandum of understanding but instead to monitor and contribute information to the study, when necessary.

Alternatives to Meet Demands

As part of the study process, alternatives to meet estimated water demands are being identified. As part of selecting an alternative to meet those needs, the Department is reviewing all alternatives to determine the one that best:

- Meets the future water needs of all involved agencies and counties
- Improves in-stream flows for the Stanislaus, Calaveras, and San Joaquin rivers
- Improves water quality in the channels of the southern Delta
- Increases CVP and SWP water supplies in the Delta
- Assists in meeting outflow requirements in the Delta

However, Stockton East Water District and Central San Joaquin Water Conservation District decided that they could not wait for completion of the joint study and began constructing a portion of the diversion and conveyance facilities necessary to import CVP water to their service areas.

In 1991 a 3.5-mile diversion tunnel and approximately 8.0 miles of canal were financed and constructed by the two districts. Construction of the diversion tunnel and canal enables the two agencies to divert the 155,000 acre-feet of contract water from the Stanislaus River into Farmington Reservoir, a U.S. Army Corps of Engineers (USACE) flood control reservoir on Littlejohns Creek.

The two agencies have obtained a Section 404 permit under the Federal Water Pollution Control Act (Clean Water Act) from USACE to construct the facilities to convey the water from Farmington Reservoir to their service areas.

Environmental Documentation

In addition to identifying alternatives, the Department is preparing a draft environmental impact report, which is scheduled for release in August 1994. Issues to be examined in the environmental documentation were identified in the scoping report, which was published in 1991. The nine issues identified in the report include:

1. Conjunctive use of Stockton East Water and Central San Joaquin Water Conservation District's 145,000 acre-feet of contract water

2. County-of-origin water needs and protection
3. Fishery flows in the Stanislaus River
4. Groundwater levels in the eastern San Joaquin County's groundwater basin
5. Improved water quality at Vernalis on the San Joaquin River for the South Delta area
6. Protection of existing water rights
7. Return of interim out-of-basin contracted water to in-basin users when needed
8. Recreational needs in the Stanislaus River
9. Source of water supply to cities in the study area

Currently, in addition to conducting environmental studies, planners are focusing on (1) estimating water demands in Calaveras County and Tuolumne County; and (2) developing surface water and groundwater models to be used in evaluating the various alternatives. Water flow requirements for fish in the Stanislaus River are also being evaluated by DFG and the U.S. Fish and Wildlife Service.

Sacramento Valley

In 1992 the Department expanded its investigation of the potential for conjunctive use of surface water and groundwater in the Sacramento Valley. The water obtained through conjunctive-use projects in the Sacramento Valley would be used to augment SWP's water supply.

The Department focused its investigation on the hydrogeological, environmental, and institutional factors necessary to develop conjunctive-use projects and adopted the following three-part approach to the investigation:

1. Completing prefeasibility investigations and establishing demonstration projects
2. Surveying water supply as well as the hydrogeological and institutional characteristics of areas within the Sacramento Valley to identify those that are most suitable for conjunctive-use projects
3. Working with local agencies to establish cooperative relations and help develop tools needed to resolve legal and institutional concerns

Information on each approach follows.

Demonstration Projects

The Department is working with local agencies and other entities in Butte County and eastern Yolo County to assess the potential for conjunctive use projects and identify possible demonstration projects.

Initially, those projects would be designed to collect information needed to determine actual operational impacts of small conjunctive-use projects and to provide reliable estimates of the amounts of "new" water that can be developed. As planned, the demonstration projects will be small-scale and involve pumping, recharging, and exchanging groundwater.

Developed in cooperation with local agencies, the projects could be expanded incrementally as deemed feasible.

Area Surveys

To identify areas most suitable for conjunctive-use projects, the Department will survey and study hydrogeological characteristics of areas within the Sacramento Valley. Studies will focus on available facilities; water use; and legal, institutional, and environmental factors.

As areas with significant potential for conjunctive-use projects are identified, the Department will work with local agencies in those areas to study and develop demonstration projects. An area consisting of southern Sutter County and western Placer County will be the first to be surveyed.

Local Agency Concerns

The Department is working with local agencies to effectively address the concerns arising from the prospect of additional use of groundwater and water transfers.

Those concerns include identifying groundwater management options that protect needed local water supplies and users without foreclosing the option of developing additional water supplies through conjunctive use.

Water Transfers

Until recently, most water transfers in California were negotiated by the Department on a limited basis. State Water Project facilities were used to transfer water (1) for SWP long-term contractors; and (2) to other agencies in California—most notably to CVP contractors. During the last few years, however, as the drought continued, California implemented a statewide policy of transferring water.

In 1991 California began its first large-scale water transfer program when Governor Pete Wilson established the 1991 Drought Water Bank. Based on the successful 1991 bank, he established a 1992 water bank in March 1992. Both the 1991 and 1992 banks are administered by the Department; and SWP facilities are used, when necessary, to transfer the water.

Information about the 1991 and 1992 water banks as well as transfers conducted as part of SWP's general operating procedures follows.

Drought Water Bank

On February 1, 1991, and again on March 10, 1992, Governor Pete Wilson directed the Department to form a Drought Water Bank. The banks were designed to help Californians cope with the fifth and sixth consecutive years of drought. This section includes information about the 1991 and 1992 water banks.

1991 Water Bank

The water for the 1991 bank was obtained from the following three sources:

1. Temporary surplus water in reservoirs
2. Additional pumping of groundwater
3. Fallowed agricultural lands

The water obtained by the bank was made available to agencies for use in meeting critical needs for agricultural, municipal, and industrial uses as well as for the benefit of fish and wildlife. Water also was stored in reservoirs as a hedge against the possibility of the drought continuing in 1992.

Water Purchased

Through the water bank program, the Department paid farmers and agencies $125 for each acre-foot of water sold except for water purchased for the Department of Fish and Game (DFG) for approximately $48 per acre foot. The price of $125 per acre-foot, established after discussions with potential buyers and sellers, agricultural economists, and other individuals knowledgeable about water use, was based on the economic impact to farmers of fallowing crop land.

Credits to the water bank of the number of acre-feet purchased were verified through procedures established by the Department and USBR. Basically, procedures required that:

- Acreage fallowed in 1991 would have otherwise been planted and irrigated.
- The bank would get credit from the consumptive use of water for specific crops and fallowed acreages, as defined in the 1991 crop plan.
- Any wells used for pumping groundwater would be approved by the Department's and USBR's technical staff before pumping began.

A total of 348 contracts were signed, resulting in 862,040 acre-feet of water committed to the bank, including the 41,375 acre-feet purchased for DFG.

The Department determined the amount of water to be purchased for the water bank according to a number of factors, including the actual amount of groundwater pumped in several large purchase contracts and number of revisions to contracts for fallowing agricultural land.

Water Sold

Except for the 41,375 acre-feet of water purchased at and sold to DFG for approximately $48 per acre-foot, the Department sold the water for $125 per acre-foot plus all costs incurred to acquire the water, including legal, administrative, and financial costs as well as costs incurred to transport the water through the Sacramento-San Joaquin Delta (carriage water). Currently, the Department estimates that when accounting is completed, the average cost of water will be approximately $175 per acre-foot.

As of June 30, 1992, a total of 429,470 acre-feet of water had been allocated for delivery to bank purchasers, including 319,433 acre-feet to SWP long-term contractors, including Alameda County, Zone 7; Alameda County Water District; Dudley Ridge Water District; and Kern County Water Agency. Also, Metropolitan Water District of Southern California; Oak Flat Water District; and Santa Clara Valley Water District. Information about those purchases may be found in Table 17-1, "Total Amount of Water Allocated for Delivery from 1991 Drought Water Bank, June 30, 1992, by Agency."

That 429,470 acre-feet allocated for delivery does not include carriage water requirements and technical corrections; and as of June 30, 1992, those factors have been estimated to be about 167,012 acre-feet, which includes 1,875 acre-feet of carriage water from the water purchased for DFG. As a result of carriage water requirements and technical corrections, approximately 695,028 acre-feet of water was available for sale from the 1991 bank.

See Table 17-2, "1991 Drought Water Bank Balances, June 30, 1992." As indicated in Table 17-2, the net allocation to SWP is expected to be 265,558 acre-feet.

TABLE 17-1
Total Amount of Water Allocated for Delivery from 1991 Drought Water Bank, June 30, 1992, by Agency
(Acre-feet)

Agency	*Acre-feet Allocated*
Alameda County, Zone 7	500
Alameda County Water District	14,800
Contra Costa Water District	6,717
Crestline-Lake Arrowhead Water Agency	236
Dudley Ridge Water District	13,805
Kern County Water Agency	53,997
Metropolitan Water District of Southern California	215,000
Napa County Flood Control and Water Conservation District (for American Canyon Water District)	370
Oak Flat Water District	975
City of San Francisco	50,000
Santa Clara Valley Water District	19,750
Westlands Water District	13,820
Subtotal	389,970
Department of Fish and Game (water bank-related purchase)	39,500
Total	**429,470**

1992 Water Bank

To help California again manage its water resources during the sixth consecutive year of drought, the 1992 Drought Water Bank was created by Governor Wilson on March 10, 1992.

The 1992 bank is operated much the same as the 1991 bank except for four important differences:

1. Land is not fallowed and farmers are not required to take acreage out of production.
2. Water is purchased from districts or agencies with temporary surplus storage and from farmers or districts that can replace surface water by pumping groundwater.
3. Buyers are lined up, contracts written, and funding ensured before water is purchased. Consequently, SWP is not backstopping or purchasing water not sold through the bank.

TABLE 17-2
1991 Drought Water Bank Balances, June 30, 1992

Water Category	*Amount (Rounded acre-feet)*
Water purchased by Department (including purchase by Department of Fish and Game)	862,040
Water unavailable for sale due to Delta carriage and other technical requirements	(167,012)
Net supply available for sale	695,028
Water allocations to purchasers	(429,470)
Net supply to State Water Project	265,558

4. As of June 30, 1992, water is being purchased at $50 per acre-foot, including Delta carriage water requirements. The resale price to purchasers is expected to be less than $90 per acre-foot at the Harvey O. Banks Delta Pumping Plant.

As of June 30, 1992, a total of 135,550 acre-feet had been requested and 107,780 acre-feet allocated. Contracts for purchasing additional amounts are pending. The names of agencies requesting water and the amounts requested are listed in Table 17-3, "Agencies Requesting Water from 1992 Drought Water Bank and Amounts Requested, June 30, 1992."

State Water Project Transfers

The Department of Water Resources, through the State Water Project Analysis Office, negotiates transfers of water for SWP long-term contractors as well as for other agencies. Those transfers are usually in the form of loans or transfers between agencies of entitlement water to SWP contractors or transfers of nonproject water. Information on those transfers follows.

Loans

In 1991, SWP loaned a total of 124,097 acre-feet of water to three long-term contractors in the San Joaquin Valley—Kern County Water Agency, Oak Flat Water District, and Dudley Ridge Water District—as follows:

Dudley Ridge Water District, 1,000 acre-feet; paid back in 1991

Kern County Water Agency, 122,741 acre-feet; 101,646 acre-feet paid back as of December 31, 1991; the remainder, by June 30, 1992

Oak Flat Water District, 356 acre-feet; paid back in 1991

The water, loaned for agricultural use, was repaid by contractors through a groundwater pumping program. As part of the program, water pumped from underground basins in contractors' service areas was transported and released back into the California Aqueduct. The introduction, "Changing Ways of Managing Water," also includes information about these loans.

Entitlement Water

During 1991 a total of 4,097 acre-feet of entitlement water was transferred between the following SWP long-term contractors: Devil's Den and Castaic Lake Water agencies; Kern County and Antelope Valley-East Kern Water agencies; and Mojave and Antelope Valley-East Kern Water agencies. Information about the transfers follows.

Devil's Den Water Agency

To cover deliveries within Devil's Den service area, 706 acre-feet of water was transferred from Castaic Lake Water Agency to Devil's Den Water Agency.

Kern County Water Agency

From Antelope Valley-East Kern Water Agency, 2,000 acre-feet of water was transferred to Kern County Water Agency.

Antelope Valley-East Kern Water Agency

From Mojave Water Agency 1,391 acre-feet of water was transferred to Antelope Valley-East Kern Water Agency.

Nonproject Water

Other water conveyed by the Department through SWP facilities includes water transferred for other agencies or water districts, DFG; and CVP. Information about those transfers follows.

Water Agency Transfers

In 1991 a total of 73,438 acre-feet of water was transferred between nine water districts or agencies, including Modesto Irrigation District; city of Napa; Oroville-Wyandotte Irrigation District; and Placer County Water Agency.

Also, city of San Francisco; Santa Clara Valley Water District; Solano County Water Agency; Westlands Water District; and Yuba County Water Agency. Information about those transfers follows.

- Modesto Irrigation District to city of San Francisco, 4,808 acre-feet
- Wyandotte Irrigation District to Westlands Water District, 8,500 acre-feet
- Placer County Water Agency to city of San Francisco, 13,327 acre-feet
- Placer County Water Agency to Santa Clara Valley Water District, 13,714 acre-feet
- Yuba County Water Agency to city of Napa, 7,500 acre-feet; 110 acre-feet of that water conveyed to Solano County Water Agency.
- Yuba County Water Agency to Santa Clara Valley Water District, 25,589 acre-feet

See Chapter 6, "Delivering Water," for additional information about those deliveries.

TABLE 17-3
Agencies Requesting Water from 1992 Drought Water Bank and Amounts Requested and Allocated, June 30, 1992

Agency	*Amount Requested (Acre-feet)*	*Amount Allocated (Acre-feet)*
Broadview Water District	255	255
Contra Costa Water District	10,000	10,000
Davis Water District	150	150
Del Puerto Water District	300	300
Department of Fish and Game	20,000	16,255
Foothill Water District	900	900
Hospital Water District	200	200
Kern County Water Agency	8,170	6,570
Metropolitan Water District of Southern California	10,000	7,575
Mustang Water District	50	50
Orestimba Water District	75	75
Panoche Water and Drainage District	2,000	2,000
Quinto Water District	200	200
Solado Water District	300	300
Sunflower Water District	400	400
Tulare Lake Basin Water Storage District	31,550	31,550
Westlands Water District	51,000	31,000
Total	**135,550**	**107,780**

Department of Fish and Game

The Department of Fish and Game purchased 41,375 acre-feet of water from the 1991 Drought Water Bank. The Department of Water Resources conveyed 31,500 acre-feet of the water through SWP facilities from Harvey O. Banks Delta Pumping Plant to O'Neill Forebay.

The Central Valley Project conveyed the water from O'Neill Forebay along the Delta-Mendota Canal to wildlife habitats within Los Banos, Volta, and Mendota State Wildlife Management areas and Grassland Water District. See Chapter 6, "Delivering Water," for additional information.

Central Valley Project

In 1991 the Department transferred approximately 38,500 acre-feet of CVP water according to agreements negotiated with USBR.

The water was delivered to contractors as well as to the U.S. Fish and Wildlife Service, the U.S. Department and Veterans' Affairs, and to seven water or irrigation districts and two counties who use the Cross Valley Canal in Kern County to obtain water from the California Aqueduct. See Chapter 6 for additional information.

Weather Modification

To increase the inflow to Lake Oroville Reservoir from the Feather River Basin, the primary source of SWP's water, the Department is evaluating the effectiveness of cloud seeding.

Encouraged by the successful completion of a 1985 contract to study the feasibility of cloud seeding, the Department funded a prototype project to be carried out in a remote area of the Middle Fork Feather River near Johnsville. The project, which began in 1988, consists of ten liquid propane dispensers fitted with spray nozzles located on ten-foot towers and powered by generators. The generators and nozzles can be controlled by Department personnel in Sacramento, who can activate the nozzles to shoot propane into cold clouds to lower temperatures and thereby increase precipitation.

Historically, cloud-seeding programs have used silver iodide or dry ice dropped from airplanes to chill the air and condense moisture, which falls as snow. However, if the program using liquid propane is successful, the Department plans to design a larger cloud-seeding program to be conducted in the Feather River watershed. Information about the testing and operation of the program follows.

Field Tests

A single dispenser was installed in March 1989 to evaluate the functional capabilities of the equipment's control system and provide information on the effectiveness of propane for increasing precipitation. Testing of the equipment continued throughout the winter of 1989-1990. During that time, work began on preparing the environmental documentation required by the U.S. Forest Service to allow the installation of the nine additional dispensers. The documents were completed on September 12, 1990.

On October 29, 1990, the California Sportfishing Alliance filed an appeal of the decision by the U.S. Forest Service to issue the land use permit for the installation of dispensers. Consequently, the Forest Service issued a limited permit in which they authorized the installation but not the operation of the ten propane dispensers.

The ten liquid dispensers were installed during winter 1990-1991. Even though the dispensers could not be operated because of the appeal by the California Sportfishing Alliance, the Department gained valuable information about the practicality of the design. During summer 1991, the entire dispenser was redesigned in preparation for the 1991-1992 winter season.

Results of field tests indicated that the equipment would function as intended and could be reliably controlled from headquarters. Consequently, the Department decided in spring 1991 that the program could be fully implemented.

Implementation

Randomized seeding of winter storms began in November 1991 after the U. S. Forest Service approved the Department's supplement to the environmental documentation. A total of 177 hours of seeding was conducted through March 1992.

At least four additional winter seasons of randomized seeding will be needed to properly evaluate the program. Evaluation will be based on the analysis of information received from 11 remotely operated rain-snow gauges installed in the target area.

Environmental monitoring of the watershed will be conducted during the implementation phase to evaluate the effects of cloud seeding.

18. Assisting Local Water Supply Projects

The Department of Water Resources participates in two programs to provide financial assistance to local agencies for constructing water supply projects.

Through the first program, the Davis-Grunsky Act, public agencies are awarded loans or grants at a fixed rate of interest and repayment period. Through the second program, the State Water Project (SWP) finances local water supply projects designed to augment SWP's water supply, either directly or indirectly. Information about the two programs follows.

Davis-Grunsky Act

Public agencies have been awarded loans and grants through the Davis-Grunsky Act since 1959. The act, jointly administered by the Department and the California Water Commission, was designed as complementary legislation to the Burns-Porter Act, which was enacted to help finance construction of SWP.

Of the original $1.75 billion made available through the Burns-Porter Act, $130 million was reserved specifically for distribution through provisions of the Davis-Grunsky Act. Monies are paid from the California Water Resources Development Fund and the California Water Fund. Loans are repaid to the California Water Resources Development Fund.

Basic Provisions

The broad objective of the Davis-Grunsky Act is to advance the development, control, and conservation of water resources in California. To meet that objective, the act is designed to:

- Provide loans to public agencies for preparing feasibility reports and constructing local water projects if those agencies are unable to obtain financing on reasonable terms from other sources.
- Through grants, encourage development of the recreational aspects of local water projects as well as habitats for fish and wildlife.
- Enable California to participate as a partner in the development, construction, or operation of certain water projects when participation is necessary for optimum development of the resource.

Public agencies, including cities, counties, districts, or other political subdivisions of the state, may participate in the program. Types of assistance available include:

- Loans for constructing local water projects, acquiring sites for reservoirs for proposed water projects, and preparing feasibility reports on proposed projects for which loans have been requested

- Grants for paying part of the construction cost of dams and reservoirs properly allocated to providing for recreation or enhancing fish and wildlife and construction of initial water supply and sanitary facilities needed for public recreational use of reservoirs
- State participation as a partner in a project larger than one the local agency proposes to construct on its own

Before 1967 loans were made at the current market interest rate. In 1967 to be more equitable to low-income agencies the program was designed to assist, the legislature fixed the interest rate at 2.5 percent. The maximum loan repayment period was set at 50 years. At the Department's discretion, however, some agencies were given an initial ten-year deferment with the accumulated interest amortized over the repayment period.

Through 1991 approximately $127 million of the allocated $130 million had been disbursed or contracted for loans, grants, and administrative costs. The balance of remaining funds has been allocated for a grant to Littlerock Creek Irrigation District and Palmdale Water District to rehabilitate Littlerock Dam.

Current Activities

From July 1, 1991, through June 30, 1992, the following actions involving the Davis-Grunsky Act occurred. Actions are listed alphabetically according to the name of the agency to which the loan or grant was given.

Big Bear Municipal Water District

Big Bear Municipal Water District, San Bernardino County, received the final payment for the grant awarded to finance phase-one construction for repairing Bear Valley Dam.

Phase two of the project, involving replacement of the roadway across the dam, will be delayed until the Department of Transportation constructs a replacement bridge downstream of the dam.

Home Gardens County Water District

Home Gardens County Water District, San Bernardino County, has received its entire loan entitlement. The district has requested an extension until December 1992 to complete the final project component, which will fulfill water quality standards imposed by the county. The audit of the project should occur during first quarter 1993.

Littlerock Creek Irrigation District

Littlerock Creek Irrigation District, Los Angeles County, received a loan for and has completed construction of facilities necessary to upgrade and expand the community's water distribution system.

The Office of State Controller has completed its required audit and is expected to submit its report by October 1992. A final payment of $200,000 is expected to be made after the final audit report is submitted.

Palmdale Water District and Littlerock Creek Irrigation District

Palmdale Water District and Littlerock Creek Irrigation District, Los Angeles County, expect to complete the formal application and required environmental documentation for a $3 million grant to rehabilitate Littlerock Dam by December 1992.

Strathmore Public Utility District

Strathmore Public Utility District, Tulare County, has met all requirements for dispersal of $1,860,000 in loan funds.

The district has completed the initial construction of a $3 million facility to provide drinking water to the community of Strathmore and adjacent lands; and a payment of $263,878 has been made.

State Water Project Funds

Local water supply projects designed to augment SWP's water supply may be financed with SWP funds, if available, providing certain administrative guidelines are met. The project must be eligible to be included as part of SWP, and financing by SWP must not exceed the actual cost of construction.

Should construction costs of the local project exceed available SWP funds, local participation in financing the construction will be required. In addition, the local project will not become a unit of SWP until an agreement has been signed by all participants.

The three basic assumptions of projects financed by SWP are that:

1. Appropriate water supply contracts would be amended.
2. Yield developed by a local project as a unit of SWP would become part of SWP's yield, whether for the life of the project or for an interim period.
3. The local project would not adversely affect the costs of water deliveries to nonparticipating SWP contractors.

The Department conducts a feasibility study of local projects when information contained in conceptual and reconnaissance reports (1) support the project; and (2) SWP water contractors agree that the project is advantageous. Projects must be structurally, economically, financially, and contractually feasible as well as environmentally acceptable before they can be added as SWP units.

At this time only one project is being considered by the Department, the enlargement of the Lake Cachuma reservoir located in Santa Barbara County. Lake Cachuma and Bradbury Dam are owned by the U.S. Bureau of Reclamation (USBR).

However, because of the (1) development of the Coastal Branch of the California Aqueduct for delivery of SWP water to southern Santa Barbara County; and (2) the uncertainties about the availability of water rights for an enlarged Lake Cachuma, the Department has not finalized the environmental impact report/environmental impact statement (EIR/EIS). Instead, the Department anticipates that local entities will withdraw their request for considering this project as a unit of SWP. However, USBR is completing the EIS and proceeding only with a project designed to ensure the safety of the dam.

19. Securing Power Resources

To ensure that the State Water Project (SWP) has sufficient power to meet its contractual obligations for delivering water, the Department of Water Resources has developed a comprehensive power resources program.

The goals of the Department's program are to:

- Obtain reliable, environmentally benign, and competitively priced power supplies and transmission services sufficient for operating SWP as an independent, interconnected utility.
- Develop and manage power resources to minimize the cost of water deliveries to SWP and its contractors.
- Minimize impacts on SWP when major contractual power arrangements expire in 2004.

To achieve those goals, the Department has constructed its own power facilities and has contracted for long-term power resources from the following agencies:

Los Angeles Department of Water and Power (Castaic Power Plant)
Southern California Edison Company
Metropolitan Water District of Southern California
Kings River Conservation District (Pine Flat)
TERA Power Corporation (Bethany Wind Park)
PacifiCorp

In addition, to receive and deliver power, the Department has arranged for transmission service between SWP power resources and pumping loads and to interconnected utilities. Information about obtaining power supplies and transmission services is included in this chapter.

Facilities

Currently, SWP owns—jointly or entirely—nine power facilities, including hydroelectric, coal, and geothermal facilities; is enlarging another; and planning to construct two additional facilities. Information about those facilities as well as those that provide to SWP power resources on a contract bases follows. For locations of those facilities, see Figure 9-1, "Names, locations, and total generating capacity of primary power facilities," in Chapter 9.

Hydroelectric

Information about SWP's hydroelectric facilities is organized into two sections, "Current Facilities" and "Proposed Facilities."

Current Facilities

Economical hydroelectric generation provides the largest share of SWP's power resources. The combined 900 megawatt (MW) Edward Hyatt Pumping-Generating Plant and Thermalito Pump-

ing-Generating Plant (Hyatt-Thermalito) generate about 2,200 million kilowatt hours (kWh) in a median water year, while the 3 MW Thermalito Diversion Dam Powerplant adds another 24 million kWh a year to SWP's power resources.

Generation at existing SWP aqueduct recovery plants, William R. Gianelli, Alamo, Devil Canyon, and William E. Warne, varies with the amount of water conveyed. The 593.3 MW combined capacity at those four plants generates about one-sixth of the total energy used for SWP pumping. (William R. Gianelli Pumping-Generating Plant is a joint SWP [222 MW] and U.S. Bureau of Reclamation [202 MW] facility.)

Proposed Facilities

The Department also considers and evaluates new power resources to meet SWP's future power requirements. When considering or evaluating new power resources, the Department reviews its on-peak and off-peak power requirements and resources and costs of power, including costs for pumping energy.

A new potential power resource may be included or deferred based on the following seven factors:

1. Capability for meeting anticipated power requirements for pumping
2. Availability of transmission access
3. Anticipated water deliveries to contractors
4. Cost of the resource
5. Availability and cost of financing
6. Environmental impacts and costs of mitigation
7. Operating characteristics

Projects being considered by the Department include a second unit at Alamo Powerplant; a third unit at William E. Warne Powerplant; additional capacity at Hyatt-Thermalito; and off-stream pumped-storage power facilities associated with the proposed Los Banos Grandes Reservoir.

Currently, to increase SWP's hydroelectric recovery capability, one power plant, Devil Canyon, is being enlarged; another plant, Mojave Siphon, is being constructed; and a third plant, San Luis Obispo, is in the planning stage. Information about those projects follows.

San Luis Obispo Powerplant

San Luis Obispo Powerplant, a 5 MW power recovery facility, will be constructed during the second phase of the Coastal Branch of the California Aqueduct. The powerplant is scheduled to be operational in 1995.

Mojave Siphon Powerplant

Mojave Siphon Powerplant is under construction on the East Branch of the California Aqueduct. This hydroelectric power plant, with a nameplate rating of 32.4 MW, will be located upstream of Silverwood Lake. The power plant is scheduled to be operational in 1994.

Devil Canyon Powerplant

Devil Canyon Powerplant is being enlarged to accommodate units 3 and 4, which will increase the nameplate rating by 160 MW. Those units are scheduled to be operational in late 1992.

Construction of a second afterbay for Devil Canyon Powerplant is scheduled to start in 1992. The second afterbay is scheduled to begin operating in 1994.

Coal

Reid Gardner, a coal-fired power plant near Las Vegas, Nevada, consists of four units. The Department owns 67.8 percent of Unit 4 (169.5 MW) while Nevada Power Company (NPC) owns the remainder of Unit Number 4 as well as all of units 1, 2, and 3.

The Department has received energy from Unit 4 since July 1983. According to the participation agreement for Reid Gardner Unit 4, the

Department receives up to 226 MW from Unit 4 in exchange for NPC's limited right to inter-rupt the Department's energy deliveries during on-peak hours. Whenever NPC interrupts the Department's portion of generation, the Department receives payment based on NPC's combustion turbine costs.

The turbine at Reid Gardner was upgraded in June 1990 to make use of Unit 4's excess boiler capacity. The upgrade increased the plant's generation capacity by approximately 15 MW. The Department and NPC shared the cost of the upgrade in proportion to their ownership.

The Department will allow NPC to use its share of Unit 4's upgraded capacity and related energy through August 31, 1998. Starting September 1, 1998, NPC will allow the Department to use its share of Unit 4's upgraded capacity and related energy on a firm basis. Beginning in 1998, NPC has the option each year to buy up to 6 percent of the Department's ownership. The utility is required to give the Department a five-year notice to exercise each year's option.

Geothermal

The Department participated in the development of two geothermal power plants, Bottle Rock and South Geysers. The Department constructed and operated Bottle Rock Powerplant until 1990 and began construction of South Geysers Powerplant in the early 1980s. In addition, the Department leases from the federal government the mineral rights to the Binkley Ranch Club located north of Bottle Rock Powerplant. Information about those two power plants and the lease with the federal government follows.

Bottle Rock Powerplant

Bottle Rock Powerplant, in Lake County's Geysers area, is owned and was operated and maintained by the Department from February 1985 to December 1990. Geothermal steam for the plant was provided under a contract with MCR Corporation and others until June 30, 1988.

Beginning July 1, 1988, the Department acquired the steam supply for Bottle Rock Powerplant through the purchase of the Francisco steam field leasehold and contracted with Calpine Corporation to operate and maintain the steam field through December 31, 1989.

The Department contracted with the Northern California Power Agency (NCPA) to operate and maintain the steam field for the two years beginning January 1, 1990. The Department and NCPA also contracted to share the cost and benefits of working over three wells to determine the future viability of the steam field. The work on the three wells was completed in early April 1990; however, additional steam was not produced in sufficient amounts. At that time drilling for new steam was determined to be uneconomical for the Department because other lower-cost energy was available. Consequently, Bottle Rock Powerplant was taken out of operation in December 1990.

South Geysers Powerplant

The Department planned another geothermal facility in Sonoma County, South Geysers Powerplant. Three steam wells originally drilled on the property provided the basis for the Department's decision to construct the plant. However, subsequent drilling for steam wells resulted in an insufficient supply of steam to support a 55 MW power plant.

In 1985 the Department deferred the completion of South Geysers Powerplant due to the reduced short-term need for additional power resources and the questionable steam supply. On May 4, 1990, Bechtel Power Corporation purchased the plant's major components (steam turbine generator, condenser, and associated items) for $5.5 million. The Department is exploring the possibility of leasing the steam field and site for alternative uses.

Mineral Rights

The Department leases from the federal government the mineral rights to the Binkley Ranch Club located north of the Francisco leasehold and Bottle Rock Powerplant and has obtained the necessary permits to construct a well pad on the leasehold. The lease is considered a supplemental source of steam for Bottle Rock if the economics of operating geothermal facilities improve.

The Department has been an active participant of a committee established by the California Energy Commission (CEC) in 1989 to investigate the unexpected decline of steam in the Geysers area. In addition, consultants have been hired by CEC to study the Geysers' geothermal reservoir and recommend methods to improve the use of the steam field.

Transfers, Exchanges and Purchases

The Department obtains a significant amount of capacity and energy for SWP operations through transfers, exchanges, and purchase agreements with other utilities throughout California, the Northwest, and Southwest.

In addition, negotiations continue with various utilities in the Pacific Northwest to develop long-term arrangements for purchases, sales, and exchanges to take advantage of the Department's 300 MW of transmission capacity on the extra-high voltage (EHV) Pacific-Northwest Intertie. See Table 19-1, "Power Contracts, by Title and Date Signed," at the end of this chapter.

To reduce SWP's costs, the Department will continue to use the extra high voltage of transmission capacity and negotiate with utilities in California and the Southwest for purchases and sales of power to maximize benefits to SWP. See "Transmission Services" in this chapter for additional information.

Information about transfers, exchanges, and purchase agreements with other utilities follows.

Transfers

In 1966 the Department entered into a contract with the Los Angeles Department of Water and Power (LADWP) to jointly develop Castaic Power Plant on the West Branch of the California Aqueduct. According to the contract, LADWP constructed and operates Castaic Power Plant and the Department receives capacity and energy from LADWP.

The Department receives the capacity and energy at the Sylmar Substation based on weekly water schedules through the West Branch.

Exchanges

A significant amount of energy used by SWP is provided according to exchange agreements arranged with various utilities, including the Metropolitan Water District of Southern California, Southern California Edison, and other Pacific-based utilities. Information about those agreements follows.

Metropolitan Water District of Southern California

The Department also contracts for the energy output of five hydro plants owned by the Metropolitan Water District of Southern California (MWDSC). The total capacity of those plants is 30 MW.

According to the terms of the 1979 power contract, SCE receives energy from Lake Mathews, Foothill Feeder, San Dimas, and Yorba Linda power plants. In return the Department receives off-peak energy from SCE averaging approximately 107 percent of the total energy that is provided to SCE from those four plants.

According to a 1983 agreement with the Los Angeles Department of Water and Power (LAD-

WP), all the energy from the fifth plant (Greg Avenue) is provided to LADWP. The utility returns 98.8 percent of this energy to the Department during off-peak periods.

Southern California Edison

The major portion of the energy used by SWP is provided according to a 1979 power contract and the 1981 capacity exchange agreement (CEA) with Southern California Edison (SCE). Services began in April 1983 according to terms of the power contract and in April 1987 according to terms of the capacity exchange agreement.

According to terms of the 1979 power contract, the Department provides the following to SCE:

- Up to 350 MW of capacity and approximately 40 percent of the energy from Hyatt-Thermalito
- Up to 120 MW of capacity and all the energy generated by the Devil Canyon Powerplant (units 1 and 2)
- Up to 15 MW of capacity and all the energy generated by Alamo Powerplant

In return, the Department receives off-peak energy from SCE equal to the total amount of energy SCE receives from Hyatt-Thermalito, Devil Canyon Powerplant, and Alamo Powerplant plus an additional amount of energy as payment for the capacity.

The amount of additional energy is determined annually based on the capacity-energy exchange formula defined in the 1979 power contract. That formula is used to (1) determine the value of capacity in dollars; and (2) convert the dollar value to an equivalent amount of off-peak energy.

According to terms of the 1981 CEA, the Department each year must deliver 412.5 million kWh of energy to SCE during on-peak periods at a maximum delivery rate of 225 MW. Southern California Edison returns during mid-peak and off-peak periods approximately 110 percent of the energy provided by the Department.

In addition, SCE waives 75 percent of its charges to the Department for specified firm transmission service provided to SWP pumping and generating facilities and makes to the Department an annual payment of $900,000. In 1991 the savings to the Department for SCE waiving 75 percent of its firm transmission charges was $7,372,299.

Other Pacific-based Utilities

Through interchange agreements the Department exchanges economy energy with utilities throughout the western United States. According to those agreements, the Department can sell, buy, or exchange economy energy on an hourly or daily basis. Some agreements also provide for the Department to sell, buy, and/or exchange short-term firm capacity and/or firm energy on an hourly, daily, weekly, or monthly basis.

Those agreements permit more efficient use of the Department's generating resources and more efficient scheduling of energy deliveries. The term of those interchange agreements generally is between 20 and 30 years.

Purchases

The Department obtains a significant amount of energy through long-term and short-term purchase agreements with utilities in California and the Northwest. Information on those agreements follows.

Long-Term Purchases

The Department purchases energy from hydro generation developed by others. The output of the 165 MW Pine Flat Power Plant, owned and operated by the Kings River Conservation District, provides SWP about 400 million kWh of energy in median water years.

The Department also purchases wind-generated energy from TERA Power Corporation. The energy is delivered from the Bethany Wind Park to the South Bay Pumping Plant near Tracy. Originally, TERA had installed 168 wind machines with a capacity of 9.45 MW. However, because of mechanical failures and subsequent litigation involving the developer, investors, and manufacturers, many machines are out of service. As of June 1992, approximately 60 units generate about 3.2 MW.

The Department also signed an agreement with PacifiCorp of Portland, Oregon, for the purchase of 100 MW of firm capacity and associated energy. That agreement, effective June 1, 1991, will continue through 2004.

Short-Term Purchases

The Department has contracted with Pacific Gas & Electric Company (PG&E), SCE, and Bonneville Power Administration, a federal agency designed to market energy, to purchase power when needed. Additionally, according to terms of the coordination agreement between the Department and MWDSC, the Department may purchase surplus energy from MWDSC's Colorado River Aqueduct power resources.

The coordination agreement with MWDSC provides for coordinated operation between SWP and MWDSC's Colorado River Aqueduct system. It also provides for:

1. Sales of surplus firm energy to MWDSC on a monthly basis
2. Sales of economy energy to MWDSC
3. Purchases of surplus energy from MWDSC's Colorado River Aqueduct system
4. Exchanges of energy between the Department and MWDSC

The Department also has 25 other agreements for purchasing interruptible economy energy to satisfy unexpected, short-term energy shortages. Table 19-1 includes information about contracts for economy energy sales, purchases, transmission services, and significant long-term power agreements.

Transmission Services

The Department must arrange for adequate transmission service between SWP power resources and pumping loads and to interconnected utilities for purchases, sales, and exchanges of power. Most SWP transmission needs are currently met by contractual arrangements with California utilities (see Table 19-1).

However, the Department's long-term objectives include acquiring its own transmission facilities between resources and loads where feasible and providing additional interconnections to other potential power sources. To improve and expand its transmission services, the Department is pursuing the development of various alternatives, including acquiring:

- Additional transmission capability from the California-Oregon border to Tracy
- Alternative transmission paths between the Department's resources and loads to achieve a greater degree of operating flexibility
- Additional transmission capability to the Southwest

Currently, to improve transmission services, the Department is planning to construct and operate a new transmission line between Harvey O. Banks Delta Pumping Plant and South Bay Pumping Plant. Based on a 1991 cost estimate, the transmission line would pay for itself in about 14 years. The environmental and engineering studies have been completed, and the Department is negotiating the transfer of this service with PG&E. The final design has begun and is scheduled to be completed in 1994.

In addition, the Department has been working with various public and private utilities in California to add reinforcements and purchase

transmission capacity. Information about those activities follows.

Reinforcements

As part of a comprehensive agreement with PG&E, the Department requested that the utility add reinforcements between Los Banos and Midway substations. Those reinforcements would reduce the curtailment of firm transmission service for the Department.

Pacific Gas & Electric Company indicated that reinforcements could be delayed and possibly avoided if the Department would be willing to drop portions of SWP pump load and generation during PG&E transmission system emergencies.

In response, the Department working with PG&E, developed a remedial action plan to ensure that dropping portions of pump load and generation would not adversely affect SWP. The utility is currently seeking approval of this agreement from the Federal Energy Regulatory Commission (FERC).

Capacity

The Department has signed two agreements designed to provide transmission capacity. One agreement involves the Pacific Northwest Intertie; the other, California-based utilities. Information about those agreements follows.

Pacific Northwest Intertie

In August 1967 the Department contracted for 300 MW of transmission capacity through 2004 on the EHV Pacific Northwest Intertie from the California-Oregon border to the Table Mountain, Tesla, Los Banos, and Midway substations.

The Department retained its entire 300 MW share of EHV capacity for access to the Northwest where low-cost power is currently available and projected to be available in the future.

California-based Utilities

In December 1984 the Department signed a memorandum of understanding (MOU) with many public and private California utilities. As part of that agreement, the Department has a five-year option beginning in January 2005 to purchase 97 MW of transmission capacity on the proposed third 500-kV (kilovolt) transmission line that connects California with the Pacific Northwest.

Construction of the line began in October 1990; the line is scheduled to begin operating on January 1, 1993. The parties to the MOU are continuing to negotiate a long-term project participation agreement.

TABLE 19-1

Power Contracts, by Title and Date Signed

Contract Title and Date Signed	*Name of Contractor*	*Purpose*	*Effective Through*
1. West Branch Cooperative Development (9/2/66)	Los Angeles Department of Water and Power	Joint development of Castaic Power Project on California Aqueduct, West Branch	Dec. 31, 2014
2. Extra High Voltage (EHV) Intertie (8/1/67)	Pacific Gas & Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas and Electric Company (SDG&E)	Provides transmission of 300 MW of EHV from Oregon border to specific points in California by SWP and purchase of off-peak energy to extent of purchased transmission capacity	Dec. 31, 2004
3. Fourth Supplemental Resolution, Oroville (9/28/77)	Department of Water Resources (DWR) Resolution	Replaces power sale contract; effective 4/1/83	Repayment of last bonds or Nov. 29, 2017, whichever later
4. Metropolitan Water District (MWD) Hydro (1/9/78)	Metropolitan Water District of Southern California (MWDSC)	Provides for purchase of output from five small hydro developments totaling 29.5 MW of capacity; effective 4/1/83	At least to Mar. 31, 2008
5. San Diego Gas and Electric Company EHV settlement (5/25/78)	SDG&E	Establishes extent of SDG&E's obligation to supply off-peak energy during the remaining term of EHV contract and resolves disputes concerning Department of Water Resources' (DWR) use of its EHV transmission entitlement	Dec. 31, 2004
6. Reid Gardner Unit 4 participation (7/11/79)	Nevada Power Company	Establishes joint ownership of an additional unit at an existing coal-fired plant near Las Vegas	July 25, 2013
7. Southern California Edison-DWR 1979 (10/11/79)	SCE	Establishes rate of SCE's off-peak energy under EHV contract; effective 1/1/83	Dec. 31, 2004
8. Firm transmission service agreement (10/11/79)	SCE	Provides transmission service between El Dorado and Vincent substations for Reid Gardner	July 25, 2013
9. Power contract (10/11/79)	SCE	Beginning 4/1/83, provides: a. Transmission service in SCE's service area b. Rights to purchase up to 300 MW firm capacity and/or spinning reserves c. Rights to purchase off-peak energy d. Exchanges of off-peak energy for 485 MW of DWR's on-peak capacity	Dec. 31, 2004
10. Pine Flat (11/6/79)	Kings River Conservation District	Purchases hydroelectric output from Pine Flat Power Plant	Mar. 31, 2034
11. Emergency service agreement (7/21/80)	SCE	Establishes emergency service between parties	Dec. 31, 2004
12. Capacity exchange agreement (9/17/81)	SCE	Effective 4/2/87, exchanges 225 MW of on-peak capacity from Hyatt-Thermalito for: a. Up to 600 MW of SCE's capacity during off-peak periods b. Up to 225 MW of SCE's capacity during partial-peak periods c. A 75 percent reduction in transmission service charges for transmission under power contract and firm transmission service agreement d. An annual payment of $900,000 to DWR	Dec. 31, 2004
13. Agreement for sale of nonfirm thermal energy (3/8/82)	Pacific Power and Light Company	Agreement to sell nonfirm thermal energy to DWR	Dec. 31, 1991 or upon one month notice by either party
14. Power sale agreement (5/14/82)	TERA Power Corporation	Agreement to sell energy to Department from wind-powered generation facilities constructed by TERA	May 2, 2002
15. Generation replacement agreement (6/14/82)	SCE	Provides energy from DWR resources to replace lost generation of two SCE plants on San Bernardino Valley Municipal Water District system	May 31, 2012
16. Southern California Edison EHV settlement agreement PG&E EHV settlement agreement (12/31/82)	SCE/PG&E	Establishes extent of DWR's ability to exercise its rights to 300 MW of EVH transmission from Pacific Northwest. PG&E agreement also defines rate for EHV off-peak energy purchases	Dec. 31, 2004/ Jan. 1, 2005

TABLE 19-1

Power Contracts, by Title and Date Signed (Continued)

Contract Title and Date Signed	*Name of Contractor*	*Purpose*	*Effective Through*
17. Interchange agreement (6/29/83)	SDG&E	Exchanges energy between SDG&E and DWR	July 31, 2010
18. Greg Avenue Powerplant energy exchange agreement (8/29/83)	Los Angeles Department of Water and Power	Exchanges DWR's entitlement to Greg Avenue Powerplant energy for credit and off-peak energy	Until terminated by either party upon two-year advance written notice
19. Economy energy agreement (9/22/83)	Los Angeles Department of Water and Power	Permits sale of economy energy bilaterally	Until terminated by either party
20. Coordination agreement between SCE and DWR (10/8/83)	SCE	Sells nonfirm energy to SCE; allows short-term exchanges; allows SCE to bank energy at San Luis Reservoir; allows for seasonal capacity and energy exchange	Dec. 31, 2005
21. Energy interchange agreement (6/6/84)	Tucson Electric Power Company	Permits sale of economy energy bilaterally	Dec. 31, 2008
22. Energy interchange agreement (7/27/84)	City of Glendale	Permits sale of economy energy bilaterally	Dec. 31, 2012
23. Energy interchange agreement (7/27/84)	City of Pasadena	Permits sale of economy energy bilaterally	Dec. 31, 2011
24. Energy interchange agreement (7/27/84)	City of Riverside	Permits sale of economy energy bilaterally	Dec. 31, 2013
25. Energy interchange agreement (7/31/84)	City of Burbank	Permits sale of economy energy bilaterally	Dec. 31, 2013
26. Interconnection agreement (7/31/84)	Nevada Power Company	Permits sale of economy energy bilaterally	Dec. 31, 2006
27. Energy interchange agreement (9/17/84)	City of Anaheim	Permits sale of economy energy bilaterally	Dec. 31, 2013
28. Service agreement (11/1/84)	Montana Power Company	Permits sale of economy energy bilaterally	Until terminated by either party
29. Economy energy agreement (11/6/84)	Salt River Project	Permits sale of economy energy bilaterally	Dec. 31, 2013
30. Energy interchange agreement (12/1/84)	Northern California Power Agency (NCPA)	Permits sale of economy energy bilaterally	Dec. 31, 2009
31. Edison-DWR interruptible transmission service agreement (12/19/84)	SCE	Provides interruptible transmission service between Palo Verde Generating Station and Vincent Substation, between Eldorado and Mead substations, and so forth	Dec. 31, 2004
32. Service agreement (1/7/85)	Idaho Power Company	Sells nonfirm energy to DWR	Until terminated by either party
33. Energy interchange agreement (4/18/85)	El Paso Electric Company	Permits sale of economy energy bilaterally	Dec. 31, 2010
34. Interconnection agreement (4/18/85)	Portland General Electric Company	Permits sale of economy energy bilaterally	Dec. 31, 2010
35. Energy interchange agreement (4/30/85)	Seattle City Light	Permits sale of economy energy bilaterally	Dec. 31, 2015
36. Interconnection agreement (4/30/85)	Pacific Power and Light Company	Permits sale of economy energy bilaterally	Dec. 31, 2009
37. Power and energy interchange agreement (6/3/85)	Arizona Public Service Company	Permits sale of economy energy bilaterally	Dec. 31, 2010
38. Service agreement (8/13/85)	Washington Water Power Company	Sells nonfirm energy to DWR	Until terminated by either party
39. Energy interchange agreement (8/20/85)	City of Santa Clara	Permits sale of economy energy bilaterally	Dec. 31, 2008
40. Service agreement (9/1/85)	Western Area Power Administration (WAPA) (Sacramento Area Office)	Sells nonfirm energy to WAPA	Dec. 31, 2004
41. Bonneville Power Administration (BPA) (9/5/87)	BPA	Purchase of surplus BPA energy at Oregon-California border	Dec. 4, 2017
42. DWR-MWD coordination agreement (2/26/88)	MWDSC	Bilateral energy transactions and exchanges; SWP and MWDSC's CRA operations coordination	Sep. 30, 2017
43. Energy interchange agreement (4/7/88)	City of Vernon	Permits sale of economy energy bilaterally	Dec. 31, 2013
44. Energy interchange agreement (4/12/88)	Eugene Water and Electric Board	Permits sale of economy energy bilaterally	Dec. 31, 2013

TABLE 19-1

Power Contracts, by Title and Date Signed (Continued)

Contract Title and Date Signed	*Name of Contractor*	*Purpose*	*Effective Through*
45. Capacity/energy interchange (9/13/88)	Modesto Irrigation District (MID)	Sells capacity and associated energy to MID as available; bilateral sale of economy energy	Dec. 31, 1992
46. Power sale agreement (1/17/89)	Turlock Irrigation District	1991-1992 sale of firm capacity and associated energy; varying monthly amounts of capacity (8 MW to 44 MW)	Dec. 31, 1992
47. Agreement of cotenancy in the Castle Rock Junction-Lakeville 230-kV transmission line (5/10/89)	PG&E, NCPA, and city of Santa Clara	Establishes transmission ownership of Castle Rock Junction-Lakeville 230-kV transmission line	Dec. 31, 2014
49. Castle Rock Junction-Lakeville transmission service agreement (5/10/89)	NCPA and city of Santa Clara	Provides transmission service to NCPA and city of Santa Clara	Dec. 31, 2014
49. Interchange agreement (8/15/89)	Turlock Irrigation District	Permits sale of economy energy bilaterally	Dec. 31, 2013
50. Agreement for sale of interruptible energy (10/1/89)	British Columbia (B. C.) Power Export Corporation (Powerex)	Sells B. C. Hydro surplus interruptible energy to DWR	Dec. 31, 2010 or on one-month notice by either party
51. Power sale agreement (3/2/90)	City of Vernon	Sells firm capacity and associated energy, 1991-1993	Dec. 31, 1993
52. Power sale agreement (3/31/90)	MID	Sells firm capacity and associated energy, 1991-1992	Dec. 31, 1992
53. Capacity/energy interchange (11/13/90)	Sacramento Municipal Utility District	Permits bilateral sale of capacity and associated energy, and economy energy	Dec. 31, 2015
54. Power sale agreement (12/13/90)	Turlock Irrigation District	Allows 1993-94 sale of firm capacity and associated energy	Dec. 31, 1994
55. Power purchase agreement (4/28/91)	Pacific Power and Light Company	System purchase of firm capacity and associated energy (100 MW)	Dec. 31, 2004
56. Western systems power pool (7/27/91)	SCE	Under a cost-based pricing structure, provides: a. Economy energy transactions b. Unit commitment service c. Firm transmission capacity/energy or exchange service d. Transmission service	July 26, 2001
57. Energy purchase agreement (9/30/91)	San Bernardino Valley Municipal Water District	Provides temporary inclusion of Mill Creek numbers 2 and 3 in the list of power plants that are eligible for replacement energy purchases pursuant to the terms of the energy purchase agreement	May 1, 2012 with option to extend to June 1, 2032
58. Interim participation agreement (9/30/91)	California Oregon Transmission Project (COTP) Participants	Establishes interim agreement for construction and ownership of COTP	Conditional
59. Emergency repair services contract (10/9/91)	WAPA	Emergency repair services for the Pine Flat 230-kV transmission line	Oct. 8, 2006
60. Comprehensive agreement (10/26/91)	PG&E	Enforces remedial action scheme	Dec. 31, 2004 with option for ten-year extension
61. Power sale agreement (4/27/92)	City of Riverside	Permits sale of capacity and associated energy (20 MW, May to October)	Until terminated by either party

20. Forecasting Power Requirements and Resources

Ensuring that the State Water Project (SWP) has an adequate supply of electric power involves:

1. Obtaining power resources by constructing facilities and by transferring, exchanging, and purchasing power
2. Arranging for power transmission services
3. Forecasting power and capacity requirements

This chapter includes information about forecasting power and capacity requirements. Information about obtaining power resources; transferring, exchanging, and purchasing power; and arranging for transmission services may be found in Chapter 19, "Securing Power Resources."

Power Requirements

The Department's forecast of electric power is based primarily on SWP's pumping power requirements to deliver short-term and long-term water delivery requests from SWP's water contractors. Requirements are based on amount of energy used to deliver (1) entitlement water requested by long-term water contractors, including losses in reservoirs and aqueducts; (2) recreation water; and (3) water to replace storage in reservoirs south of the Delta

Each year after reviewing the water contractors' water delivery requests and the construction schedule for future facilities, the Department determines SWP's short-term and long-term power requirements through 2035.

Short-term power requirements based on the actual water supply and reservoir storage levels are conducted for the current and two ensuing years of operation. Long-term operational studies for the remaining years are based on median-year water supply conditions and optimal reservoir storage levels.

The State Water Project's annual electrical power requirements may vary significantly from the amounts forecast due to the amount of water available and delivered in a given year. For example, dry conditions in northern California could result in a reduction of the amount of water available for delivery. If full deliveries cannot be made, less power will be used than originally forecast. Power requirements could also decrease during a wet year because of the availability of water in the San Joaquin Valley or southern California.

Conversely, power requirements could exceed the amount originally forecast when actual water deliveries were greater than the amounts estimated; for example, if deliveries of deferred entitlement water were made or if additional pumping was needed to refill reservoirs south of the Delta after a dry year.

Although the Department forecasts power requirements until 2035, it pays particular atten-

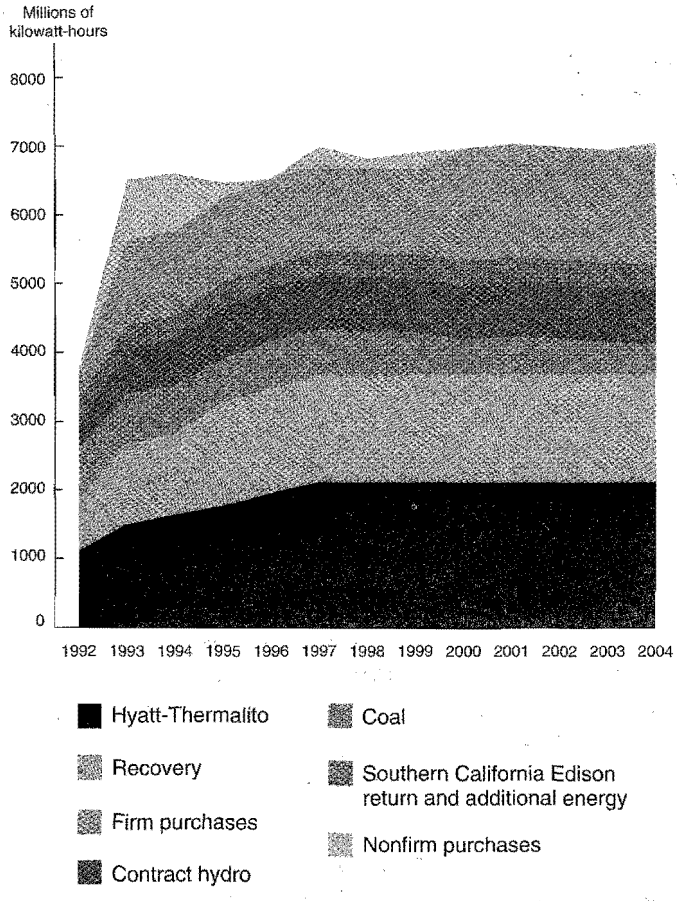


Fig. 20-1. Estimated on-peak energy requirements and resources for 1992 through 2004

tion to forecasts until 2004, the year significant power contracts expire. Therefore, information on forecasts for 1992 through 2004 is included in this publication.

Forecast for 1992

The forecast for power requirements in 1992 was based on water supply projections made by the Department early in the year. When making the forecast, the Department assumed that 1992 water supplies would be sufficient to meet entitlement deliveries of 1,891,063 acre-feet.

That amount of water represents deferred approval of 50 percent of agricultural and 50 municipal and industrial entitlement requests.

Forecast for 1993 Through 2004

For 1993 through 2004, the power requirement forecast was based on hydrology sufficient to meet the water contractors' full entitlement delivery requests of 4,217,786 acre-feet.

In 1993 SWP's total energy requirements are projected to be about 14,411 million kilowatt-hours (kWh). The requirements decrease to 14,260 million kWh in 1995; increase to about 14,912 million in 2000; and increase to about 14,996 in 2004.

Transmissions losses are forecast to be about 599 million kWh in 1993; 600 million in 1995; 626 million in 2000; and 630 in 2004. See Table 20-1, "Total Energy Requirements for 1993, 1995, 2000, and 2004," at the end of this chapter. (Table 20-1 also includes a forecast of energy to be delivered to the Southern California Edison as well as the amount of energy to be sold or firm sales to other utilities. See "Sales" in Chapter 21.)

Capacity Requirements

In addition to forecasting energy requirements, the Department also considers electrical capacity requirements, the rate of delivery or demand for energy during a given period.

Basis of Forecast

The State Water Project is operated to minimize pumping requirements during hours when power costs are highest. Thus, SWP's highest power requirements or demand for capacity occur during nights, weekends, and holidays (off-peak periods) when power costs are lowest.

Forecast for 1993 and 2000

The Department's forecast of the peak demand or the highest on-peak and off-peak capac-

ity requirements for 1993 and 2000 is included in Table 20-2, "Total Amounts of On-Peak and Off-Peak Electrical Capacity Requirements Projected for 1993 and 2000," at the end of this chapter.

Resources

The Department uses a variety of power resources to meet SWP's estimated power requirements, including power it generates at its own facilities as well as resources it purchases and exchanges. With the exception of the nonfirm purchases and a portion of the firm power purchases (post-1994), the Department either owns or has contracted for the majority of its long-term power resources.

The Department also uses a different combination of resources to meet its on-peak and off-peak energy requirements. Because the Department has the flexibility to regulate SWP's pumping requirements on an hourly basis, maximum SWP pumping is scheduled during the off-peak hours (10 p.m. to 8 a.m., Monday through Saturday and all day on Sunday and holidays).

By scheduling as much off-peak pumping as possible, the Department is able to take advantage of neighboring utilities' inexpensive surplus generation. Conversely, the Department maximizes hydroelectric generation during the on-peak hours.

In forecasting resources to meet requirements, the Department analyzed the amount of on-peak and off-peak energy the Department expects from each resource during 1992 through 2004 and for 2000. Information about the amount of energy the Department expects from each resource during those years follows.

Years 1992 Through 2004

The amounts of on-peak and off-peak energy the Department expects from each resource type during 1992 through 2004 are illustrated in Figure 20-1, "Estimated on-peak energy requirements and resources for 1992 through 2004," and

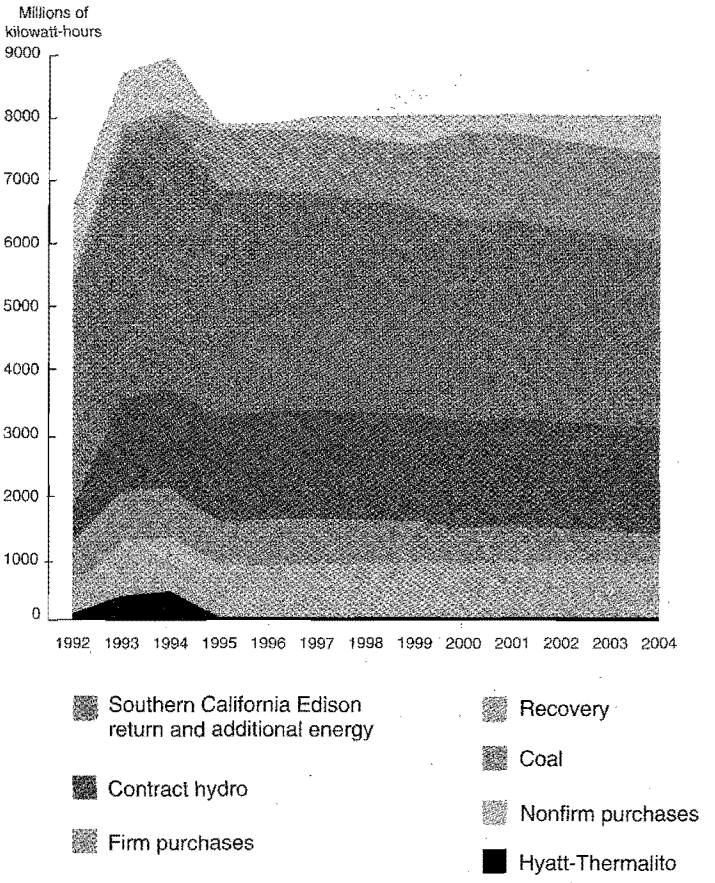


Fig. 20-2. Estimated off-peak energy requirements and resources for 1992 through 2004

Figure 20-2, "Estimated off-peak energy requirements for 1992 through 2004."

Specific information about on-peak and off-peak requirements follows.

On-Peak

The efforts of maximizing hydroelectric generation during on-peak hours is also indicated by the Hyatt-Thermalito and recovery generation components included in figures 20-1 and 20-2.

As indicated in Figure 20-1, SWP's annual on-peak energy requirement (the sum of peak components) is forecasted to increase from 6,119 million kWh in 1993 to about 7,040 million kWh in 2004.

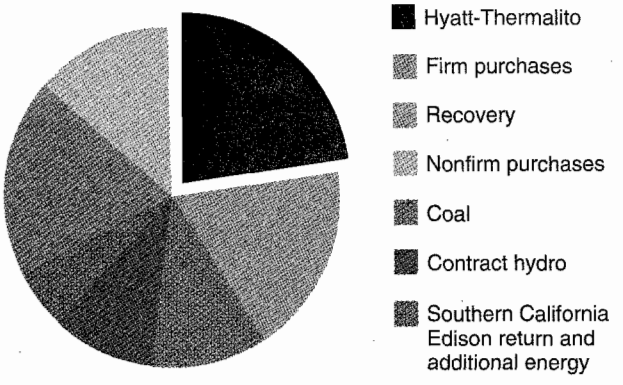


Fig. 20-3. Estimates of resources to meet on-peak energy requirements in 1993

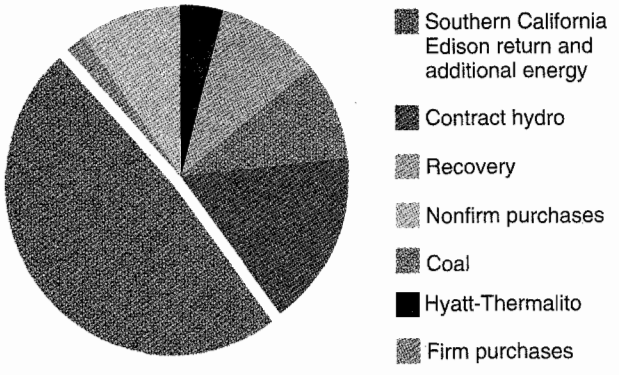


Fig. 20-4. Estimates of resources to meet off-peak energy requirements in 1993

The sharpest increase will occur during the 1993-to-1997 time frame when energy consumption is forecast to be 6,992 million kWh, an increase of almost 900 million kWh. As the escalation in water deliveries begins to level off in 1997, the annual on-peak energy requirement also levels off.

As indicated in Figure 20-3, "Estimates of resources to meet on-peak energy requirements in 1993," hydroelectric generation is the dominant resources during the on-peak period for 1993.

Hyatt-Thermalito provides about 23 percent of the energy forecast during this period and recovery generation, about 18 percent of the energy forecast. Through 2004 hydroelectric generation increases slowly as the effects of the drought diminish.

Increases in on-peak energy consumption are met with firm and nonfirm purchases. Firm system purchases (energy guaranteed by the seller except in emergency situations) are expected to supply energy during the on-peak periods in the short-term (1993 and 1994). For the long-term, firm system purchases are expected to supply equal amounts during on-peak and off-peak periods.

Off-Peak

During off-peak periods, the annual energy requirement remains fairly constant at about 7,950 million kWh with the exception of 1993 and 1994, years in which the short-term planning model is used. That constant level of energy consumption (7,950 million kWh) indicates that SWP is operating at full capacity during the off-peak period.

Diversity power exchanges with Southern California Edison (SCE) provide a large portion of the off-peak resources. In 1993 those exchanges will provide about 4,100 million kWh or 48 percent of the total off-peak energy used by SWP; that amount will decrease to 2,940 million kWh in 2004. Coal-fired generation and recovery generation along with power purchases will provide the remaining off-peak resources.

See Figure 20-4, "Estimates of resources to meet off-peak energy requirements in 1993."

Year 2000

Information about on-peak and off-peak requirements for 2000 follows.

On-Peak

In 2000 SWP's annual on-peak energy requirement is expected to be about 6,960 million kWh (see Figure 20-1). As indicated in Figure 20-5, "Estimates of resources to meet on-peak energy requirements in 2000," hydroelectric generation is expected to supply the largest amount of energy during this period.

Hyatt-Thermalito provides about 30 percent or 2,110 million kWh; and recovery generation, about 22 percent or 1.560 million kWh.

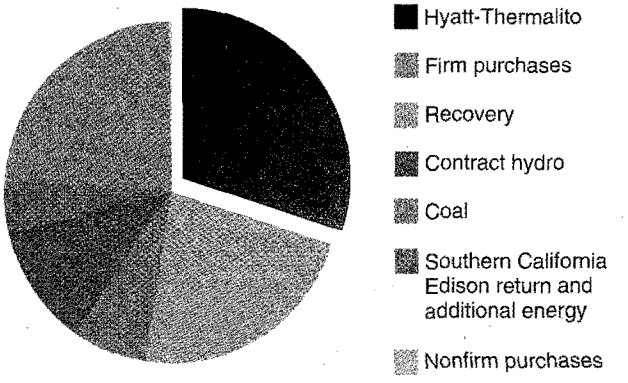


Fig. 20-5. Estimates of resources to meet on-peak energy requirements in 2000

Off-Peak

The annual off-peak energy requirement for 2000 is about 7,950 million kWh (see Figure 20-2). As indicated in Figure 20-6, "Estimates of resources to meet off-peak energy requirements in 2000," power contracts provide about 40 percent of SWP's off-peak energy. In 2000 those exchanges will provide about 3,170 million kWh.

Table 20-3, "Estimates of Total Amounts of On-Peak and Off-Peak Energy Produced in 2000, by Type of Resource," includes an itemized listing of the amount of energy each resource is expected to produce during 2000. The table may be found at the end of this chapter.

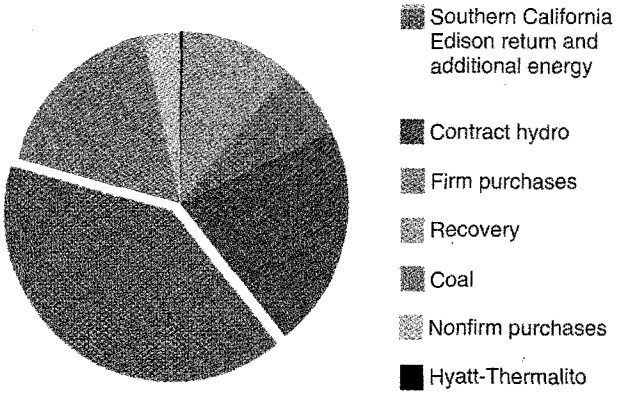


Fig. 20-6. Estimates of resources to meet off-peak energy requirements in 2000

TABLE 20-1

Total Energy Requirements for 1993, 1995, 2000, and 2004

(Millions of kilowatt-hours)

Pumping Plants	*1993*	*1995*	*2000*	*2004*
North Bay Aqueduct Plants				
Barker Slough	7.7	8.2	9.9	10.3
Cordelia	11.0	10.9	12.3	14.3
South Bay Aqueduct Plants				
Del Valle	1.3	1.4	1.6	1.6
South Bay	148.6	159.3	162.6	162.6
California Aqueduct Plants				
Harvey O. Banks	1,135.1	1,205.9	1,246.6	1,257.2
Buena Vista	609.5	623.6	646.2	650.0
Ira J. Chrisman Wind Gap	1,488.7	1,528.8	1,570.5	1,580.5
Dos Amigos	508.5	524.6	541.3	543.4
A. D. Edmonston	5,275.1	5,422.2	5,556.1	5,591.7
William R. Gianelli	254.9	217.6	273.2	281.5
Wheeler Ridge	699.1	717.0	738.8	743.4
East Branch, California Aqueduct, Plants				
Pearblossom	796.4	802.8	790.9	795.5
West Branch, California Aqueduct, Plants				
Oso	307.2	319.1	334.5	337.1
Coastal Branch, California Aqueduct, Plants				
Badger Hill	26.0	25.8	39.4	39.4
Bluestone	0.0	0.0	52.6	52.6
Devil's Den	0.0	0.0	52.6	52.6
Las Perillas	10.8	10.2	15.5	15.5
Polonio Pass	0.0	0.0	52.6	52.6
Subtotal	11,279.9	11,577.4	12,097.2	12,181.8
Transmission losses (a	599.3	599.5	625.5	629.7
Total	11,879.2	12,176.9	12,722.7	12,811.5
Energy obligations to Southern California Edison (b	2,237.0	2,083.5	2,189.0	2,184.7
Firm contracts sales	295.2	0.0	0.0	0.0
Grand Total	**14,411.4**	**14,260.4**	**14,911.7**	**14,996.2**

a) Transmission losses are determined by contractual arrangements with utilities.

b) Energy obligations are based on existing power contract and capacity exchange agreement with Southern California Edison.

TABLE 20-2

Total Amounts of On-Peak and Off-Peak Electrical Capacity Requirements Projected for 1993 and 2000

(Millions of kilowatts)

Pumping Plants	1993		2000	
	On-Peak	*Off-Peak*	*On-Peak*	*Off-Peak*
North Bay Aqueduct Plants				
Barker Slough	1	1	1	1
Cordelia	1	1	2	2
South Bay Aqueduct Plants				
Del Valle	1	a)	1	1
South Bay	21	21	19	19
California Aqueduct Plants				
Harvey O. Banks	166	164	203	250
Buena Vista	58	89	63	94
Ira J. Chrisman Wind Gap	152	221	172	223
Dos Amigos	34	79	37	78
A. D. Edmonston	552	736	585	760
William R. Gianelli	1	95	48	178
Wheeler Ridge	70	106	78	105
East Branch, California Aqueduct, Plants				
Pearblossom	134	49	76	150
West Branch, California Aqueduct, Plants				
Oso	4	75	41	41
Coastal Branch, California Aqueduct, Plants				
Badger Hill	4	5	3	3
Bluestone	—	—	8	8
Devil's Den	—	—	8	8
Las Perillas	1	2	2	2
Polonio Pass	—	—	8	8
Total Capacity Needed to Pump Entitlement Water	**1,200**	**1,644**	**1,355**	**1,931**
Firm contract sales	87	87	0	0
Transmission losses	65	88	68	96
Reserve margin (10 percent of pumping, firm sales, and losses)	235	235	128	128
Capacity to Southern California Edison	699	474	710	485
Total Capacity Requirements	**2,286**	**2,528**	**2,261**	**2,640**

a) Amount is smaller than one million kilowatts.

TABLE 20-3

Estimates of Total Amounts of On-Peak and Off-Peak Energy Produced in 2000, by Type of Resource

(Millions of kilowatt-hours)

Type of Resource	*On-Peak*	*Off-Peak*	*Annual*
Hydro			
Hyatt-Thermalito	2,104.81	43.80	2,148.61
Recovery			
Alamo	50.79	63.28	114.07
Devil Canyon	885.47	330.00	1,215.47
William R. Gianelli	179.13	7.32	186.45
Mojave Siphon	42.44	61.15	103.59
San Luis Obispo	19.87	19.87	39.73
Thermalito Diversion Dam	11.53	11.53	23.05
William E. Warne	369.80	357.57	727.38
Subtotal	1,559.03	850.71	2,409.74
Coal			
Reid Gardner	507.90	543.72	1,051.62
Contract Hydro			
Castaic	573.22	573.22	1,146.43
Metropolitan Water District of Southern California small hydro	0.00	246.38	246.38
Metropolitan Water District of Southern California Colorado River Aqueduct	0.00	662.60	662.60
Pine Flat	210.00	210.00	420.00
Subtotal	783.22	1,692.20	2,475.41
Power Contract			
Alamo additional	0.00	28.19	28.19
Alamo return	0.00	114.07	114.07
Devil Canyon additional	0.00	341.90	341.90
Devil Canyon return	0.00	803.04	803.04
Hyatt additional	0.00	926.55	926.55
Hyatt return	0.00	859.44	859.44
Subtotal	0.00	3,073.19	3,073.19
Capacity exchange agreement	360.00	93.75	453.75
Firm system purchase	1,200.00	1,200.00	2,400.00
Nonfirm purchases	5.13	275.58	280.71
PacifiCorp	438.00	175.20	613.20
TERA Power Corporation (a	3.15	3.15	6.30
Subtotal	2,006.28	1,747.68	3,753.96
Total	**6,961.23**	**7,951.30**	**14,912.53**

a) Amounts of energy received from TERA Power Corporation are too small to graphically illustrate.

21. Forecasting Power Costs and Sales

Currently, the Department of Water Resources is able to economically meet the State Water Project's (SWP) power needs through a combination of SWP's own power resources and through energy obtained through contracts. (See Table 19-1, "Power Contracts, by Title and Date Signed," in Chapter 19).

To ensure that SWP's needs will continue to be economically met, however, the Department annually compiles a listing of the:

1. Amount of energy it forecasts will be generated by its own resources
2. Amount of energy to be purchased
3. Cost in mills per kilowatt-hour of producing or purchasing energy listed in 1 and 2 above, including the costs of pumping, average unit costs, composite resource cost, and net costs

Information about items listed above is included in this chapter.

Also, when producing power through its own resources, SWP may have power in excess of its needs. Consequently, the Department may sell surplus power to other utilities. Payments to the Department may be made in cash or with energy from power exchanges.

The Department accounts for those sales when it forecasts costs of SWP's power needs. Information about forecasts of energy sales is also included in this chapter.

Costs of Energy

To ensure SWP's power needs will be met at an economical cost, SWP projected sources and cost of energy for years 1992, 1995, 2000, and 2004. For those years energy sources from SWP's own resources as well as from short-term and long-term agreements range from 8,851 million kilowatt-hours (kWh) in 1993 to 12,812 million in 2004. See Table 21-1, "Estimated Amounts of Energy Resources for 1992, 1995, 2000, and 2004," at the end of this chapter.

Included in Table 21-1 as a short-term source of energy is Southern California Edison, which is projected to provide 2,430 million kWh to SWP in 1992 according to a power contract signed in 1979 and a capacity exchange agreement signed in 1981. See Chapter 19 for additional information about the power contract and capacity exchange agreement.

When making that forecast for 1992, 1995, 2000, and 2004, the Department assumed that future energy requirements in excess of available resources will be met through unspecified purchases of firm and nonfirm energy.

Costs of Pumping

The State Water Project's energy requirements for pumping include power used for pumping and the associated transmission losses for (1)

delivering entitlement water, recreation water, water lost in reservoirs and aqueducts; and (2) replenishing reservoir storage south of the Delta. Firm and surplus energy in excess of expected SWP energy requirements are available for sale. Table 21-1 includes information about energy resources necessary to meet those requirements.

Average Unit Costs

The current projections in mills per kWh of the average unit costs of energy from the various resources may be found in Table 21-2, "Estimated Amounts of Unit Costs of Energy Resources for 1992, 1995, 2000, and 2004." Those projections include allowances for future escalation of operation and maintenance costs (generally 5.0 percent per year) and appropriate allowances for escalation of fuel costs. Table 21-2 may be found at the end of the chapter.

Most of the differences between the costs of resources listed in Table 21-2 and those listed in Table 28 of Bulletin 132-91, *Management of the California State Water Project*, are due to updated estimates for costs of construction, fuel, operations and maintenance, and interest.

Composite Resource Costs

The composite resource costs listed in Table 21-2 represent the weighted average unit cost of all SWP energy from the sources listed.

The unit values of potential sales of surplus energy were estimated by escalating the projected 1992 value of 27.4 mills per kWh for on-peak energy sales and 23 mills per kWh for off-peak energy sales at rates published in the Wharton Econometric Forecasting Associates' long-term forecast of the fourth quarter 1991.

Net Costs

The State Water Project's net cost of energy is the unit cost of the energy actually used for SWP's purposes. The amount of unit transmission costs included in Table 21-2 were determined by dividing the amount of total annual expenditures SWP made for power transmission services by the amount of SWP's annual energy requirements. That calculation reflects the 75 percent of the firm transmission service costs waived by SCE according to the provisions of the capacity exchange agreement.

The amounts of effective unit costs included in Table 21-2 represent the average costs for energy used to operate the project, exclusive of any surplus or unscheduled water service. However, because of allocation adjustments for costs of off-aqueduct power facilities and credits for generation at SWP recovery plants, the amounts of unit costs included in Table 21-2 do not represent actual energy costs reflected in the annual statements of charges distributed to contractors.

Sales

When SWP produces power, it may produce surplus power as a result of reduced water delivery demands or an abundance of SWP-generated hydro power. Consequently, the Department has entered into agreements with many utilities for selling surplus power.

Surpluses are generally marketed for periods ranging from a day to a year; yearly sales usually involve selling firm power. Information about sales of firm power and sales on a short-term basis—day-to-day or hour-to-hour, for example—follows.

Firm Sales

In 1991 the Department sold energy to six cities and nine utilities, including the cities of Anaheim, Azusa, Banning, Colton, Riverside, and Vernon and the following utilities:

Bonneville Power Administration
British Columbia Power Export Corporation
Eugene Water and Electric Board
Pacific Power and Light Company

Power Services of New Mexico
Montana Power Company
Salt River Agricultural Improvement and Power District
Washington Water Power Company
Northern California Power Agency

The Department also has contracts to sell surplus firm power to Turlock Irrigation District through 1994; Modesto Irrigation District through 1992; the city of Vernon through 1993; and the city of Riverside.

According to the terms of those contracts, the Department will provide the utilities with varying amounts of firm power. Amounts vary monthly and are lower in the winter months than the summer months, with maximum power to be provided in July. In July 1992 the Department will provide the utilities with 177 MW of capacity and up to 77 million kWh of energy.

Short-Term Sales

In addition to selling firm power, the Department may sell power on a day-to-day or hour-to-hour basis according to terms of the Western System Power Pool (WSPP) agreement. The Department signed that agreement in November 1986 along with 15 other utilities in the western states.

The agreement provided for a two-year experiment to test market-based pricing for economy energy, unit commitment, short-term capacity/energy sales or exchanges, and transmission services. The Department began receiving daily quotations for services in May 1987 and was permitted to enter into mutually beneficial transactions for any of those services during the term of the agreement.

Although participants, including the Department, filed with the Federal Energy Regulatory Commission (FERC) to extend the term of the experiment until 1992, approval was given for only one year and participants were told to either seek permanent status thereafter or disband.

On April 23, 1991, a permanent ten-year agreement proposed by WSPP was disapproved by FERC. The commission ordered several changes and stated it would no longer allow the market-based pricing method. Instead, the commission ordered a cost-based pricing method along with other revisions. On August 19, 1991, WSPP filed a conformed agreement with FERC and is now awaiting acceptance by FERC.

TABLE 21-1

Estimated Amounts of Energy Resources for 1992, 1995, 2000, and 2004

(Millions of kilowatt-hours)

Energy Sources and Costs	*1992*	*1995*	*2000*	*2004*
Energy Resources				
Hyatt-Thermalito	1,206	1,805	2,149	2,149
SWP Recovery Plants				
Alamo	17	115	114	115
Bottle Rock	0	0	0	0
Castaic	559	1,090	1,146	1,155
Devil Canyon	567	1,250	1,215	1,208
William R. Gianelli	143	160	186	186
Mojave Siphon	0	95	104	104
Reid Gardner	1,502	1,282	1,051	901
San Luis Obispo	0	0	40	40
Thermalito Diversion Dam	26	23	23	23
Wiliam E. Warne	338	698	727	732
Energy Sources from Short-Term Agreements				
Metropolitan Water District of Southern California hydroelectric plants	203	261	246	226
Southern California Edison Exchange	2,430	1,810	1,338	1,119
Energy Sources from Long-Term Agreements				
Pacific Gas & Electric power exchange	24	0	0	0
Pine Flat	120	420	420	420
TERA Power Corporation	6	6	6	0
Firm system purchases	615	613	613	613
Additional firm purchases	—	1,600	2,400	2,400
Colorado River Aqueduct energy purchase	0	663	663	663
Energy purchase	1,095	286	281	758
Total Resources	**8,851**	**12,177**	**12,722**	**12,812**
SWP energy requirements	5,885	12,177	12,722	12,812
Firm energy sales	608	0	0	0
Surplus economy energy sales	2,358	0	0	0

TABLE 21-2

Estimated Amounts of Unit Costs of Energy Resources for 1992, 1995, 2000, and 2004

(Mills per kilowatt-hour)

Energy Sources and Costs	*1992*	*1995*	*2000*	*2004*
Cost of Resources				
Hyatt-Thermalito	20.37	13.58	12.46	13.51
SWP Recovery Plants				
Alamo	40.00	40.00	40.00	40.00
Castaic	25.00	25.00	25.00	25.00
Devil Canyon	25.00	25.00	25.00	25.00
William R. Gianelli	25.00	25.00	25.00	25.00
Mojave Siphon	—	96.00	96.00	96.00
Pine Flat	77.96	28.88	29.68	29.68
San Luis Obispo	—	25.00	25.00	25.00
Thermalito Diversion Dam	31.11	37.00	37.24	37.32
William E. Warne	25.00	25.00	25.00	25.00
Energy Sources from Short-Term Agreements				
Metropolitan Water District of Southern California hydroelectric plants	43.71	47.76	55.37	62.32
Southern California Edison exchange	—	—	—	—
Energy Sources from Long-Term Agreements				
Reid Gardner	61.26	74.27	87.47	92.11
Bottle Rock	0.00	0.00	0.00	0.00
TERA Power Corporation	70.00	70.00	70.00	70.00
Additional firm purchases	—	66.98	87.01	103.57
Colorado River Aqueduct energy purchase	—	28.00	38.90	50.60
Energy purchase on-peak	27.40	33.40	46.50	60.40
Energy purchase off-peak	23.00	28.00	38.90	50.60
Capacity purchase	—	7.42	9.94	12.54
Composite cost of resources	27.70	37.00	45.05	51.67
Firm energy sales	27.22	—	—	—
Value of on-peak energy	27.40	—	—	—
Value of off-peak energy	23.00	—	—	—
Value of capacity sales	—	7.42	9.94	12.54
Net cost of SWP energy	27.70	37.00	44.88	51.31
Transmission cost	3.74	2.10	2.10	2.10
Effective Unit Cost	**31.44**	**39.10**	**46.98**	**53.41**

Part V. Financing the State Water Project

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22. Analyzing State Water Project Finances

This chapter includes information about the results of the current financial analysis of the State Water Project (SWP) for the period 1992 through 2005. The purpose of the financial analysis is to ensure that SWP's financing program will have sufficient funds to meet construction obligations; project operation, maintenance, power, and replacement (OMP&R) costs; bond debt service payments; and repayment of California Fund monies expended for construction.

The results of the current financial analysis dated June 30, 1992, may be found in Table 22-1, " Capital Requirements and Financing, June 30, 1992," and Table 22-2, "Revenues and Expenses, June 30, 1992." Those tables are located at the end of this chapter.

Specific substantiated information about each line item included in Table 22-1 is included in Chapter 23, "Analyzing Capital Requirements and Funding." Specific information about each line item contained in Table 22-2 may be found in Chapter 24, "Forecasting Revenues, Expenses, and Future Costs of Water Service."

Capital Requirements and Financing

In conducting the current analysis, the Department projected that future construction and Davis-Grunsky Act Program costs through the year 2005 will total $1,701 million. Special capital requirements for revenue bond financing of these construction costs are projected at $222 million for a total capital requirement of $1,933 million. Construction and financing costs for the following significant SWP facilities planned for completion by 2005 are included in this projection:

- Mojave Siphon power generation facilities
- Coastal Branch of the California Aqueduct, second phase
- Suisun Marsh Salinity Control facilities
- East Branch Enlargement of the California Aqueduct
- North and South Delta facilities

Most of the financing for these capital requirements will be derived from the projected sale of $1,540 million of revenue bonds. The remaining $393 would be financed from current bond proceeds, capital resources revenues, and the transfer or excess revenues not needed for operation costs, debt service of repayment of the California Water Fund.

The financial analysis as represented in Table 22-1 does not include amounts for the costs and financing of all facilities needed to develop the remaining yield necessary to meet the total 4.2 million acre-feet contractual commitment to long-term SWP water contractors.

In addition, Table 22-1 does not include amounts for costs of associated works that are essential for realizing full benefits from SWP but financed and constructed by local interests or state agencies other than the Department of Water Resources. Those facilities include on-shore recreational developments at SWP facilities and local distribution facilities.

Annual Revenues and Expenditures

In conducting the financial analysis of SWP's operations, the Department concluded that projected payments by contractors and other revenues will be adequate to pay annual operations, maintenance, power, and replacement (OMP&R) costs and to meet all repayment obligations on funds used to finance SWP construction and other authorized costs during the period of 1992 through 2005.

Future Conditions

Conditions in the future may necessitate changes in the financial analysis. For that reason, the Department reviews basic assumptions and updates the financial analysis annually. Contingencies that could result in a change in the financial analysis follow, listed in alphabetical order.

1. Alterations in schedules of currently planned construction for future facilities
2. Changes in economic conditions, including changes in interest rates and in SWP contractors' entitlements due to changes in amounts of water needed, conserved, or reclaimed
3. Completion of Delta transfer facilities
4. Development of additional sources of water not foreseen at this time
5. Deviations from the assumptions regarding actual rates of price escalations for future construction from those currently assumed for cost estimates
6. Enlargement of the San Luis Canal
7. Increases in capital costs related to the Kern Water Bank and other additional conservation facilities
8. Outcomes of certain lawsuits now pending before the courts.

TABLE 22-1

Capital Requirements and Financing, June 30, 1992

(Thousands of dollars)

Line Number	Line Item	Calendar Year 1952-1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Total 1992-2005	Total 1952-2005
	Capital Requirements																	
1.	Initial project facilities	$2,202,316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$2,202,316
2.	North Bay Aqueduct, Phase II	89,053	$206	$890	$972	$27	$6	$2	0	0	0	0	0	0	0	0	$2,103	91,156
3.	Delta and Suisun Marsh facilities	213,409	53,721	43,833	31,442	96,604	154,626	141,651	$85,771	$67,916	$1,704	0	0	0	0	0	677,268	890,677
4.	Final four units at Banks Delta Pumping Plan	46,186	7,313	2,399	6,680	831	0	0	0	0	0	0	0	0	0	0	17,223	63,409
5.	Coastal Branch Aqueduct, Phase II	10,386	8,729	46,408	122,269	138,976	59,599	1,616	1	1	0	0	0	0	0	0	377,599	387,985
6.	West Branch Aqueduct	85,812	7,436	8,450	7,525	42	33	22	7	8	0	0	0	0	0	0	23,523	109,335
7.	East Branch enlargement	239,174	72,221	66,728	69,875	1,226	0	0	0	0	0	0	0	0	0	0	210,050	449,224
8.	East Branch improvements	40,455	10,677	11,960	18,922	10,496	47	29	11	12	0	0	0	0	0	0	52,154	92,609
9.	Power generation and transmission facilities	638,115	17,549	13,002	6,138	2,423	1,508	1,506	1,504	1,504	0	0	0	0	0	0	45,134	683,249
10.	Additional conservation facilities	117,222	13,286	28,824	22,575	16,426	16,462	16,784	9,395	9,416	8,665	$7,062	$6,288	$6,288	$6,288	$6,288	174,047	291,269
11.	San Joaquin drainage facilities	41,199	2,369	2,170	2,237	2,349	2,466	2,590	2,719	2,855	2,998	0	0	0	0	0	22,753	63,952
12.	Other costs	186,816	15,693	25,943	29,649	23,660	0	0	0	0	0	0	0	0	0	0	94,945	281,761
13.	**Total Project Construction Expenditures**	**$3,910,143**	**$209,200**	**$250,607**	**$318,284**	**$293,060**	**$234,747**	**$164,200**	**$99,408**	**$81,712**	**$13,367**	**$7,062**	**$6,288**	**$6,288**	**$6,288**	**$6,288**	**$1,696,799**	**$5,606,942**
14.	Davis-Grunsky Act Program costs	125,544	4,456	0	0	0	0	0	0	0	0	0	0	0	0	0	4,456	130,000
15.	Special capital requirements under revenue bond financing	366,735	4,393	41,166	34,432	49,700	38,400	27,000	25,700	11,148	0	0	0	0	0	0	231,939	598,674
16.	**Total Capital Requirements**	**$4,402,422**	**$218,049**	**$291,773**	**$352,716**	**$342,760**	**$273,147**	**$191,200**	**$125,108**	**$92,860**	**$13,367**	**$7,062**	**$6,288**	**$6,288**	**$6,288**	**$6,288**	**$1,933,194**	**$6,335,616**
17.	Less power facilities capital requirements	1,246,997	61,517	56,886	35,485	3,649	1,508	1,506	1,504	1,504	0	0	0	0	0	0	163,559	1,410,556
18.	**Water facilities capital requirements**	**$3,155,425**	**$156,532**	**$234,887**	**$317,231**	**$339,111**	**$271,639**	**$189,694**	**$123,604**	**$91,356**	**$13,367**	**$7,062**	**$6,288**	**$6,288**	**$6,288**	**$6,288**	**$1,769,635**	**$4,925,060**
	Financing of Capital Requirements																	
	Power revenue bond proceeds																	
19.	Power bonds through Series H	$1,161,851	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$1,161,851
20.	Future power revenue bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21.	*Subtotal, power revenue bonds*	1,161,851	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,161,851
	Water Revenue Bond Proceeds																	
22.	East Branch Enlargement, current bonds	260,180	$71,406	$5,000	0	0	0	0	0	0	0	0	0	0	0	0	$76,406	336,586
23.	East Branch Enlargement, future bonds	0	0	73,495	$75,279	$1,226	0	0	0	0	0	0	0	0	0	0	150,000	150,000
24.	Water system facilities, current bonds	401,246	89,218	10,782	0	0	0	0	0	0	0	0	0	0	0	0	100,000	501,246
25.	Water system facilities, future bonds	0	45,769	141,000	222,361	339,185	$270,681	$188,610	$112,389	$70,005	0	0	0	0	0	0	1,390,000	1,390,000
26.	*Subtotal, water revenue bonds*	661,426	206,393	230,277	297,640	340,411	270,681	188,610	112,389	70,005	0	0	0	0	0	0	1,716,406	2,377,832
	Other Capital Financing																	
27.	Initial project facilities bond proceeds	1,452,413	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,452,413
28.	Davis-Grunsky Act Program bond proceeds	125,544	4,456	0	0	0	0	0	0	0	0	0	0	0	0	0	4,456	130,000
29.	Application of California Water Fund monies (tideland oil revenues)	507,976	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	507,976
30.	Application of capital resources revenues to construction	457,312	3,600	59,296	52,839	0	0	0	0	0	0	0	0	0	0	0	115,735	573,047
31.	Revenue transfers applied	35,900	3,600	2,200	2,237	2,349	2,466	2,590	12,719	22,855	$13,367	$7,062	$6,288	$6,288	$6,288	$6,288	96,597	132,497
32.	*Subtotal, other capital financing*	2,579,145	11,656	61,496	55,076	2,349	2,466	2,590	12,719	22,855	13,367	7,062	6,288	6,288	6,288	6,288	216,788	2,795,933
33.	**Total Financing of Capital Requirements**	**$4,402,422**	**$218,049**	**$291,773**	**$352,716**	**$342,760**	**$273,147**	**$191,200**	**$125,108**	**$92,860**	**$13,367**	**$7,062**	**$6,288**	**$6,288**	**$6,288**	**$6,288**	**$1,933,194**	**$6,335,616**

Line Number	Line Item	Calendar Year 1952-1991	1992	1993	1994	1995	1996	1997	1998	1999	Calendar Year 2000	2001	2002	2003	2004	2005	Total 1992-2005	Total 1952-2005
	Project Revenues																	
1.	Capital resources revenues	$744,773	$20,008	$14,395	$1,028	0	0	0	0	0	0	0	0	0	0	0	$35,431	$780,204
	Water Contractor Payments																	
2.	Transportation capital	1,785,449	101,301	98,634	103,319	$112,892	$120,608	$123,641	$123,723	$123,724	$123,724	$123,723	$123,722	$123,721	$123,719	$123,719	1,650,170	3,435,619
3.	Transportation minimum	1,811,556	238,121	231,725	242,951	241,846	245,037	247,388	240,026	237,700	227,815	226,908	221,474	213,765	211,487	201,761	3,228,004	5,039,560
4.	Transportation variable	811,080	84,735	163,961	206,525	233,067	228,547	243,799	242,763	247,038	281,033	281,768	285,472	288,583	294,336	343,404	3,425,031	4,236,111
5.	Delta water charge	718,469	83,874	85,214	90,393	101,319	112,337	113,318	114,406	115,602	116,346	117,744	118,280	118,755	119,182	119,601	1,526,371	2,244,840
6.	East Branch Enlargement payments	55,253	29,750	32,745	42,293	48,222	47,987	48,001	47,994	48,033	48,057	48,105	48,144	48,178	48,215	48,252	633,976	689,229
7.	Water revenue bond surcharge	43,872	22,211	24,550	36,079	45,714	65,340	79,862	80,002	95,726	99,488	99,474	99,501	99,522	99,229	99,225	1,045,923	1,089,795
8.	*Subtotal water contractor payments under long-term water supply contracts*	$5,225,679	$559,992	$636,829	$721,560	$783,060	$819,856	$856,009	$848,914	$867,823	$896,463	$897,722	$896,593	$892,524	$896,168	$935,962	$11,509,475	$16,735,154
9.	Revenue bond cover adjustments	0	(32,471)	(27,947)	(28,615)	(34,563)	(39,817)	(46,949)	(52,453)	(56,282)	(58,543)	(59,952)	(59,965)	(59,975)	(60,003)	(59,950)	(677,485)	(677,485)
	Other Revenues																	
10.	Federal payments for project operating costs	$86,690	$8,866	$8,704	$8,515	$8,495	$8,516	$8,547	$8,547	$8,547	$8,550	$8,550	$8,550	$8,551	$8,551	$8,556	$120,045	$206,735
11.	Appropriations for operating costs allocated to recreation	16,657	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,657
12.	Local agency payments under Davis-Grunsky Loan repayment contracts	24,354	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	28,000	52,354
13.	Revenue bond proceeds	324,108	5,508	0	0	0	0	0	0	0	0	0	0	0	0	0	5,508	329,616
14.	Interest earnings on operating revenues	425,286	7,749	8,625	5,705	5,810	5,920	6,035	6,155	6,285	6,420	6,565	6,720	6,885	7,055	7,240	93,169	518,455
15.	Payments under Oroville-Thermalito power sale contract	249,279	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	249,279
16.	Miscellaneous revenues	50,134	28,052	26,930	0	0	0	0	0	0	0	0	0	0	0	0	54,982	105,116
17.	*Subtotal other revenues*	$1,176,508	$52,175	$46,259	$16,220	$16,305	$16,436	$16,582	$16,702	$16,832	$16,970	$17,115	$17,270	$17,436	$17,606	$17,796	$301,704	$1,478,212
18.	***Total Operating Revenues***	$6,402,187	$579,696	$655,141	$709,165	$764,802	$796,475	$825,642	$813,163	$828,373	$854,890	$854,885	$853,898	$849,985	$853,771	$893,808	$11,133,694	$17,535,881
19.	**Total Operating Revenues and Capital Resources Revenues**	$7,146,960	$599,704	$669,536	$710,193	$764,802	$796,475	$825,642	$813,163	$828,373	$854,890	$854,885	$853,898	$849,985	$853,771	$893,808	$11,169,125	$18,316,085
	Project Expenses																	
20.	Project Operation, Maintenance and Power costs	$2,530,300	$359,376	$378,158	$400,200	$425,854	$432,580	$451,710	$441,293	$443,343	$468,310	$463,748	$462,452	$457,674	$461,893	$504,788	$6,151,379	$8,681,679
21.	Deposits to Replacement Reserves	157,732	7,727	15,555	15,941	15,940	8,481	8,480	8,480	8,480	8,480	8,480	8,481	8,481	8,481	8,479	139,966	297,698
22.	Deposits to special reserves under revenue bond financing	488,520	16,984	(51,135)	(27,986)	22,349	14,777	13,396	11,728	10,174	12,418	7,938	7,945	7,974	9,056	13,261	68,879	557,399
	Payments of Debt Service																	
23.	Principal repayments on bonds sold through June 30, 1992	594,051	64,089	62,296	65,559	68,564	71,850	73,785	76,005	79,415	83,180	87,090	91,221	96,300	100,800	100,505	1,120,659	1,714,710
24.	Interest on bonds sold through June 30, 1992	2,699,516	164,783	167,766	163,913	160,430	156,962	152,851	148,918	144,904	141,002	136,202	131,488	126,489	120,977	115,288	2,031,973	4,731,489
25.	Future East Branch Enlargement bond principal repayments	0	0	0	0	1,020	1,100	1,180	1,270	1,365	1,465	1,575	1,695	1,825	1,955	2,105	16,555	16,555
26.	Future East Branch Enlargement bond interest payments	0	0	0	7,500	11,201	11,125	11,042	10,954	10,859	10,756	10,646	10,528	10,401	10,264	10,118	125,394	125,394
27.	Future Water Bond principal repayments	0	0	0	1,295	2,690	5,165	7,300	9,070	10,475	11,840	12,730	13,680	14,705	15,810	16,995	121,755	121,755
28.	Future Water Bond interest payments	0	0	0	15,000	29,903	55,951	75,814	89,516	97,086	101,450	100,562	99,608	98,582	97,479	96,293	957,244	957,244
29.	**Total Principal**	$594,051	$64,089	$62,296	$66,854	$72,274	$78,115	$82,265	$86,345	$91,255	$96,485	$101,395	$106,596	$112,830	$118,565	$119,605	$1,258,969	$1,853,020
30.	**Total Interest**	$2,699,516	$164,783	$167,766	$186,413	$201,534	$224,038	$239,707	$249,388	$252,849	$253,208	$247,410	$241,624	$235,472	$228,720	$221,699	$3,114,611	$5,814,127
31.	*Subtotal Debt Service*	$3,293,567	$228,872	$230,062	$253,267	$273,808	$302,153	$321,972	$335,733	$344,104	$349,693	$348,805	$348,220	$348,302	$347,285	$341,304	$4,373,580	$7,667,147
32.	California Water Fund repayment	141,674	14,400	38,500	25,000	24,000	24,000	23,400	0	0	0	0	0	0	0	0	149,300	290,974
33.	**Total Operating Expenses and Debt Service**	$6,611,793	$627,359	$611,140	$666,422	$761,951	$781,991	$818,958	$797,234	$806,101	$838,901	$828,971	$827,098	$822,431	$826,715	$867,832	$10,833,104	$17,494,897
34.	Current operating funds	41,955	(31,255)	(900)	(9,068)	2,851	14,484	6,684	3,210	(583)	2,622	0	0	0	0	0	(11,955)	30,000
35.	Revenues required for current construction	35,900	0	0	0	0	0	0	12,719	22,855	13,367	7,062	6,288	6,288	6,288	6,288	81,155	117,055
36.	Revenues available for future construction	0	0	0	0	0	0	0	0	0	0	18,852	20,512	21,266	20,768	19,688	101,086	101,086
37.	Capital resources revenues used for construction	457,312	3,600	59,296	52,839	0	0	0	0	0	0	0	0	0	0	0	115,735	573,047
38.	**Total Project Expenses**	$7,146,960	$599,704	$669,536	$710,193	$764,802	$796,475	$825,642	$813,163	$828,373	$854,890	$854,885	$853,898	$849,985	$853,771	$893,808	$11,169,125	$18,316,085

23. Analyzing Capital Requirements and Funding

This chapter includes information about the State Water Project's (SWP) capital requirements and funding. The information is arranged according to line numbers contained in Table 22-1, " Capital Requirements and Financing, June 30, 1992," which may be found in Chapter 22.

This chapter also includes documentary data for information contained in Table 22-1. That data have been organized into the following two tables:

1. Allocation of capital expenditures, including actual and projected SWP construction expenditures along with a preliminary allocation of such expenditures among various SWP purposes. See Table 23-1, "Allocation of Capital Expenditures."
2. Application of proceeds from revenue bonds; see Table 23-2, "Application of Revenue Bond Proceeds."

Those tables may be found at the end of this chapter.

Capital Requirements

Lines 1 through 18 in Table 22-1 include amounts of actual and projected SWP capital requirements through the year 2005. Estimates of future capital expenditures include allowances for escalation of costs at 4 percent per year from 1992 through 1993 and 5 percent per year from 1994 through 2005. Capital expenditures for SWP also include requirements other than those for construction, such as disbursements made as part of the Davis-Grunsky Act Program (Line 14) and special capital requirements under revenue bond financing (Line 15).

The following sections, organized according to line numbers in Table 22-1, contain information about the Department's current assumptions concerning the costs of each facility to be constructed through 2005.

Decisions to begin constructing facilities will be made only after alternatives are examined and final environmental documentation as well as other review processes are completed.

Initial Project Facilities

Initial Project Facilities, Line 1. Facilities included in the initial construction program are those completed before 1974 (see Bulletin 132-74, *Management of the California State Water Project*, Chapter 2). Additional costs after 1973 and estimated costs of remaining work on the initial SWP facilities are not included.

North Bay Aqueduct Phase Two

North Bay Aqueduct, Phase II, Line 2. Phase two of the North Bay Aqueduct, which connects with existing facilities, consists of pipelines, pump-

TABLE 23-3
Estimated Costs for East Branch Enlargement

Facility	*Dollar Amounts (in millions)*
Aqueduct and siphons	$133.0
Pearblossom Pumping Plant	65.7
Alamo Powerplant	5.0
Mojave Siphon Powerplant	45.5
Devil Canyon Powerplant and Second Afterbay	200.0
Total	**$449.2**

ing plants, and a small reservoir necessary to divert water from the western Delta to Napa and Solano counties for urban use. Phase two became operational in May 1988.

Delta and Suisun Marsh Facilities

Delta and Suisun Marsh Facilities, Line 3. The historical amount in Column 1 includes planning costs for general Delta facilities and historical costs associated with the previously planned Peripheral Canal and overland water delivery facilities for the western Delta.

Also included are historical planning costs for Suisun Marsh as well as construction costs for the Suisun Marsh Salinity Control Gates and an access road.

The projected amounts include projected planning costs plus projected costs for constructing the North and South Delta facilities described in Chapter 7, "Designing and Constructing Facilities." The 1992 amount includes approximately $33 million for purchase of lands and rights-of-way in the Delta area.

The projected amounts also include projected costs for constructing the following Suisun Marsh facilities: Boynton-Cordelia Ditch, Cordelia-Goodyear Ditch, and Goodyear Slough culverts.

Banks Delta Pumping Plant

Final Four Units at Banks Delta Pumping Plant, Line 4. This line includes amounts of the costs of the final four 1,067-cfs units, which became operational in spring 1992.

Coastal Branch of California Aqueduct

Coastal Branch Aqueduct, Phase II, Line 5. This line includes the planning costs for phase two of the Coastal Branch of the California Aqueduct. Future expenditures also include a projection of construction costs for this project.

West Branch Aqueduct

West Branch Aqueduct, Line 6. The amounts in Line 6 represent costs for all facilities on the West Branch except William E. Warne Powerplant. William E. Warne Powerplant costs are included in Line 9. Line 6 includes projected costs for the Vista Del Lago Visitors' Center and Gorman Creek channel modifications.

East Branch Enlargement

East Branch Enlargement, Line 7. Line 7 includes amounts of expenditures for first-stage construction of the East Branch Enlargement, including the enlargement share of power plant costs at Mojave Siphon and Devil Canyon. (The remaining power plant costs are included in Line 9.) Estimated East Branch Enlargement costs by facility may be found in Table 23-3, "Estimated Costs for East Branch Enlargement." Costs for Alamo Powerplant consist of expenditures for Unit 1 facilities allocated to enlargement. Construction of Unit 2 has been deferred.

All costs in Line 7 are allocated to and repaid by the seven southern California contractors participating in the East Branch Enlargement.

East Branch Improvements

East Branch Improvements, Line 8. The amounts in Line 8 represent all aqueduct costs on the East Branch not allocated to the enlargement

project. Those costs include improvements constructed concurrently with the enlargement work. Costs for power plant construction at either Mojave Siphon or Devil Canyon are not included in this line.

Power Generation and Transmission Facilities

Power Generation and Transmission Facilities, Line 9. Estimated capital costs for facilities included in Line 9 may be found in Table 23-4, "Estimated Capital Costs for Power Generation and Transmission Facilities."

For Devil Canyon and Mojave Siphon, amounts do not include East Branch Enlargement share of costs in Line 7 of Table 22-1.

TABLE 23-4
Estimated Capital Costs for Power Generation and Transmission Facilities

Power Plants and Transmission Lines	*Dollar Amounts (in millions)*
Power Plants	
Reid Gardner, Unit 4	$276.2
Bottle Rock	120.9
South Geysers	49.9
Devil Canyon	36.7
William E. Warne	84.5
Alamo	44.3
Mojave Siphon	37.1
Thermalito Diversion Dam	16.1
Subtotal	$665.7
Transmission Lines	
Midway-Wheeler Ridge	$10.7
Geysers-Lakeville	6.9
Total	**$683.3**

Additional Conservation Facilities

Additional Conservation Facilities, Line 10. The projected amounts in Line 10 represent costs for planning additional conservation facilities. Costs for constructing additional conservation facilities are not included in the financial analysis.

San Joaquin Drainage Facilities

San Joaquin Drainage Facilities, Line 11. Included in Line 11 are amounts of the projected costs of the San Joaquin Valley Drainage Monitoring Program. The four activities in this program are:

1. Monitoring and evaluating drainage
2. Reducing drainage
3. Treating drainage
4. Investigating evaporation ponds

See Chapter 14, "Monitoring Water Quality," for additional information about the drainage program.

The Department assumes that the costs of the drainage program will continue to be financed by appropriations from the California Water Fund. No costs included in Line 11 are charged to SWP water contractors.

Other Costs

Other Costs, Line 12. Amounts for other costs include items such as general design and construction costs, costs of completing operation and maintenance facilities, and costs of other completion activities for the initial facilities of the California Aqueduct. Portions of those costs ultimately will be allocated to aqueduct units described in the preceding paragraphs.

Other items included in the projected costs in Line 12 are costs for (1) constructing the Water Operation Center; (2) completing monitoring and control systems; and (3) implementing flood protection at Arroyo Pasajero in the San Luis reach of the California Aqueduct.

Total Project Construction Expenditures

Total Project Construction Expenditures, Line 13. The amount in this line is the total of lines 1 through 12.

Davis-Grunsky Act Program Costs

Davis-Grunsky Act Program Costs, Line 14. The Davis-Grunsky Act Program is a financial assistance program designed to provide grants and loans to public agencies for constructing local water projects. Additional information about the program may be found in Chapter 18, "Assisting Local Water Supply Projects."

As of December 31, 1991, the Department had disbursed $125 million (including $9 million for administration) in grants and loans for 114 local agencies throughout the state. Funds for Department projects currently authorized will be disbursed prior to 1993.

Special Capital Requirements

Special Capital Requirements Under Revenue Bond Financing, Line 15. This line includes the amount of special capital requirements at the time revenue bonds are sold. The financial analysis is based on the assumption that proceeds from any future revenue bonds will be used to pay for bond discounts, bond issuance costs, and debt service reserve requirements.

Information about the application of proceeds to these special requirements for actual and assumed revenue bond sales is included in Table 23-2, "Application of Revenue Bond Proceeds."

Total Capital Requirements

Total Capital Requirements, Line 16. The amount included in this line is the total of lines 13, 14, and 15.

Power Facilities

Power Facilities Capital Requirements, Line 17. The amount in this line represents the total of capital requirements for power facilities contained in lines 1 through 12 and that part of Line 15 associated with revenue bonds sold for power facilities.

Water Facilities

Water Facilities Capital Requirements, Line 18. The amount in this line is the total of capital requirements for water facilities contained in lines 1 through 12 and that part of Line 15 associated with revenue bonds sold for water facilities.

Capital Financing

The State Water Project has been constructed with three general types of financing, Burns-Porter, revenue bonds, and capital resources. A general description of those funding sources may be found in this section along with specific information about those sources, arranged according to lines 19 through 33 of Table 22-1.

Burns-Porter Act

Burns-Porter financing is derived from the sale of California Water Resources Development Bonds (general obligation bonds) and the state's Tideland Oil Revenues deposited in the California Water Fund as authorized by the Burns-Porter Act (*Water Code* sections 12930-12944), which was approved by the voters in November 1960.

The Burns-Porter Act authorized an issue of $1.75 billion of general obligation bonds of the state, which are repaid by revenues received according to the water supply contracts. Of that authorization, $130 million has been reserved specifically for the Davis-Grunsky Act Program.

Proceeds from the sale of general obligation 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. Approximately 40 percent of the expenditures through 1991 for construction and the Davis-Grunsky Act Program were financed with general obligation bonds.

Monies deposited in the California Water Fund are appropriated for purposes outlined in the

Burns-Porter Act. Such deposits are derived from a portion of the state's Tideland Oil Revenues according to a continuing authorization. In 1989 legislation was enacted to provide for a schedule to repay the California Water Fund as required by the Burns-Porter Act.

Revenue Bonds

Revenue bond financing is 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 California Supreme Court in 1963 (*Warne* v. *Harkness*, 60 Cal. 2d 579).

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 each bond sale. Those purposes, in addition to paying construction, planning, and right-of-way costs, may include:

1. Funding the Debt Service Reserve Account
2. Paying interest on bonds
3. Paying water system operating expenses during a specified period

As of June 30, 1992, the Department had sold $3.2 billion of revenue bonds. That amount includes $650 million of Water System Revenue Bonds, Series J, sold January 16, 1992, and $100 million of Series K Bonds, sold May 12, 1992. Additional issues of revenue bonds are planned to fund future SWP construction.

Capital Resources

Capital resources financing is derived from payments and appropriations (including a portion of Tideland Oil Revenues) authorized by a variety of special contracts, cost-sharing agreements, and legislative actions concerning the SWP, plus accrued interest on these funds.

Capital resources revenues are deposited in the Central Valley Water Project Construction Fund and may be expended for paying:

1. Interest on general obligation bonds
2. Costs of constructing SWP facilities

According to the Department's financial management policy, the capital resources revenues are used first to cover any general obligation bond debt service that exceeds available revenues.

Capital Financing Sources

Capital financing sources include power bonds, power revenue bonds, East Branch Enlargement bonds, water system facilities bonds, water revenue bonds, initial project facilities bonds, proceeds from Davis-Grunsky Act, California Water Fund monies, and Capital resources revenues. Specific information about those sources follow.

Power Bonds Through Series H

Power Bonds Through Series H, Line 19. This line includes the amounts of proceeds applied from power revenue bonds for the Oroville, Devil Canyon, Castaic, Pyramid, Reid Gardner, Bottle Rock, Alamo, South Geysers, and small hydro projects.

Future Power Revenue Bonds

Future Power Revenue Bonds, Line 20. No future power revenue bond sales are projected in the financial analysis.

Power Revenue Bonds

Subtotal, Power Revenue Bonds, Line 21. The amount in this line reflects the total of lines 19 and 20.

East Branch Enlargement Current Bonds

East Branch Enlargement, Current Bonds, Line 22. As of June 30, 1992, the Department had sold $1,640 million of Water System Revenue Bonds, Series A through Series K. The amount of proceeds allocated to the East Branch Enlargement was $287 million for construction expenditures and $49 million for bond discounts, interest costs, and debt service reserves.

East Branch Enlargement Future Bonds

East Branch Enlargement, Future, Line 23. The Department estimates that approximately $150 million in additional bonds will be required to complete construction of the East Branch Enlargement, first stage, and to pay for bond discounts, capitalized interest, and debt service reserve requirements.

Water System Facilities Current Bonds

Water System Facilities, Current Bonds, Line 24. The amount of proceeds from Water System Revenue Bonds, Series A through Series K allocated to SWP projects other than the East Branch Enlargement was $1,304 million. Of that amount approximately $803 million was used to refund portions of previously issued Power Facilities Revenue Bonds and Water System Revenue Bonds. Of the remaining $501 million, $441 million was used to pay for construction expenditures and $60 million, to pay for bond discounts, capitalized interest, and debt service reserve requirements.

Water System Facilities Future Bonds

Water System Facilities, Future, Line 25. Future water revenue bonds are needed to provide $1,192 million for construction of SWP water system facilities and $198 million for bond discounts, interest costs, and debt service reserve requirements.

Water Revenue Bonds

Subtotal, Water Revenue Bonds, Line 26. The amount in this line is the total of lines 20 through 25.

Initial Project Facilities Bond Proceeds

Initial Project Facilities Bond Proceeds, Line 27. This line includes amounts of initial financing costs for SWP facilities and for costs of planning certain additional conservation facilities.

Financing of initial facilities from general obligation bonds was completed in mid-1972 and totaled $1.444 billion—$1.75 billion Burns-Porter Act authorization less $130 million reserved for the Davis-Grunsky Act Program and $176 million "offset" for additional conservation facilities. (The Burns-Porter Act provides that to the extent California Water Fund monies are expended, an equal amount of general obligation bonds are reserved [offset] for financing the construction of additional conservation facilities in certain watersheds.)

In mid-1972 the reservation of offset bonds was effectively limited to $176 million—the total amount of California Water Fund monies expended up to that time. By mid-1972 all general obligation bonds authorized by the Burns-Porter Act had been offset, reserved for the Davis-Grunsky Act Program, or used for SWP construction.

Approximately $8.5 million of the offset bonds have been used to finance planning studies of the Middle Fork Eel River Development (see Line 10 of Table 22-1). This analysis is not based on the use of any offset bond proceeds to meet capital requirements. If at some time the state con-

structs an additional conservation facility as specified in *Water Code* Section 12938, the re-maining offset bonds could be sold.

Davis-Grunsky Act Proceeds

Davis-Grunsky Act Program Bond Proceeds, Line 28. For simplification the entire $130 million of capital expenditures authorized for the Davis-Grunsky Act Program according to the Burns-Porter Act are indicated as being funded solely by proceeds from the sale of general obligation bonds. In fact, $28 million from the California Water Fund was used for the program in lieu of bond proceeds prior to 1969.

In making the financial analysis, the Department assumes that all authorized Davis-Grunsky bonds will be sold prior to 1993.

California Water Fund Monies

Application of California Water Fund Monies (Tideland Oil Revenues), Line 29. The Burns-Porter Act provides that any available money in the California Water Fund must be used for construction in lieu of proceeds from the sale of general obligation bonds.

When the Burns-Porter Act became effective in late 1960, approximately $97 million had been accumulated in the fund. That balance plus subsequent appropriations, interest earnings, and other miscellaneous income to the fund through December 31, 1991, was used to finance a total of $508 million of SWP's costs.

Capital Resources Revenues

Application of Capital Resources Revenues to Construction, Line 30. This line includes the amount of the application of Capital Resources Revenues for capital expenditures (see description for Line 1, "Capital Resource Revenues," on the first page of the next chapter).

Revenue Transfers

Revenue Transfers Applied, Line 31. This line includes amounts of monies that are assumed to be transferred to the California Water Fund according to provisions of the Burns-Porter Act and subsequently reappropriated to construction (see lines 35 and 36 in Table 22-2). Projected amounts for 1992 through 2005 include funds to finance expenditures for San Joaquin drainage facilities as indicated in Line 11 of Table 22-1.

Other Capital Financing

Subtotal, Other Capital Financing, Line 32. The amount in this line is the total of lines 27 through 31.

Total Financing

Total Financing of Capital Requirements, Line 33. The amount in this line is the total of lines 21, 26, and 32.

TABLE 23-1

Allocation of Capital Expenditures

(Thousands of dollars)

Facilities and Construction Divisions	Expenditures Incurred Through 1991	Future Expenditures	Total	Preliminary Allocation Among Project Purposes: Water Supply and Power Generation	Flood Control (a	Recreation and Fish and Wildlife Enhancement	Other (b
Project Construction Expenditures							
Upper Feather River Division	$17,611	0	$17,611	$1,183	0	$16,428	0
Oroville Division	555,455	$4,247	559,702	470,172	$70,661	18,869	0
North Bay Aqueduct	93,019	2,103	95,122	95,122	0	0	0
Delta Facilities	291,373	702,354	993,727	856,005	0	137,722	0
South Bay Aqueduct	76,098	5,759	81,857	59,906	7,632	14,319	0
California Aqueduct							
North San Joaquin Division	235,897	38,807	274,704	265,070	0	9,634	0
San Luis Division	229,528	9,679	239,207	227,348	0	11,859	0
South San Joaquin Division	289,670	29,188	318,858	302,003	0	16,855	0
Tehachapi Division	315,696	4,033	319,729	301,540	0	18,189	0
Mojave Division	239,691	23,542	263,233	248,229	0	15,004	0
Santa Ana Division	171,501	28,613	200,114	188,708	0	11,406	0
West Branch	516,480	23,523	540,003	506,359	0	33,644	0
Coastal Branch	24,750	377,599	402,349	402,349	0	0	0
Subtotal, California Aqueduct	$2,023,213	$534,984	$2,558,197	$2,441,606	0	$116,591	0
Small hydroelectric power generating facilities	$66,852	$30,634	$97,486	$97,486	0	0	0
Off-Aqueduct Power Generating Facilities	439,321	14,500	453,821	453,821	0	0	0
East Branch Enlargement	239,174	210,050	449,224	449,224	0	0	
San Joaquin Drainage Facilities	41,199	22,753	63,952	0	0	0	$63,952
Planning and preoperations (c	66,523	139,380	205,903	205,903	0	0	0
Unassigned	305	30,035	30,340	30,340	0	0	0
Subtotal, Project Construction Expenditures	$3,910,143	$1,696,799	$5,606,942	$5,160,768	$78,293	$303,929	$63,952
Other Capital Requirements							
Davis-Grunsky Act Program	125,544	4,456	130,000	0	0	0	130,000
Total	**$4,035,687**	**$1,701,255**	**$5,736,942**	**$5,160,768**	**$78,293**	**$303,929**	**$193,952**

a) Reflects the Department's allocation to flood control, regardless of federal payments.

b) Includes costs currently unassigned to other purposes; for example, planning costs of deleted features of project facilities; initial costs of inventoried ite joint costs assigned to federal government; and costs assigned to Davis-Grunsky Act Program.

c) Future expenditures include cost estimates for planning, designing, acquiring land, and constructing North Delta and South Delta facilities.

TABLE 23-2

Application of Revenue Bond Proceeds

	Application of Revenue Bond Proceeds						
		Other Capital Requirements					
Bond Series (a	*Construction Expenditures*	*Reimbursement of General Fund*	*Capitalized Interest*	*Capitalized Operating Costs*	*Bond Discount and Financing Costs (b*	*Subtotal*	*Total Principal Amount of Bonds*
Oroville	218.0	2.6	19.9	1.5	3.0	27.0	245.0
Devil Canyon-Castaic	126.4	0.0	10.0	0.7	2.1	12.8	139.2
Pyramid Series A	74.0	0.0	19.2	1.0	1.6	21.8	95.8
Reid Gardner Series B	146.1	0.0	41.9	0.0	12.0	53.9	200.0
Reid Gardner Series C	91.1	0.0	17.9	7.9	8.1	33.9	125.0
Small Hydro-South Geysers Series D	49.6	0.0	19.9	0.0	5.5	25.4	75.0
Bottle Rock Series E	96.9	0.0	22.0	3.7	2.4	28.1	125.0
Alamo-South Geysers Series F	59.1	0.0	14.2	0.0	1.7	15.9	75.0
Reid Gardner Series G	1.6	0.0	0.0	0.0	237.9 (c	237.9	239.5
Power facilities Series H	22.2	0.0	0.0	0.0	184.5 (d	184.5	206.7
East Branch Enlargement Series A	108.3	0.0	12.6	0.0	11.1	23.7	132.0
Water system facilities Series B	97.4	0.0	0.0	0.0	2.6	2.6	100.0
Water system facilities Series C	0.6	0.0	0.0	0.0	8.4 (e	8.4	9.0
Water system facilities Series D	95.0	0.0	3.8	0.0	1.2	5.0	100.0
Water system facilities Series E	0.4	0.0	0.0	0.0	8.6 (f	8.6	9.0
Water system facilities Series F	0.0	0.0	0.0	0.0	160.0 (g	160.0	160.0
Water system facilities Series G	86.6	0.0	4.6	0.0	8.8	13.4	100.0
Water system facilities Series H	85.0	0.0	6.2	0.0	8.8	15.0	100.0
Water system facilities Series I	158.9	0.0	0.0	0.0	21.1	21.1	180.0
Water system facilities Series J	0.0	0.0	0.0	0.0	649.8 (h	649.8	649.8
Water system facilities Series K	88.6	0.0	3.1	0.0	8.3	11.4	100.0
Subtotal	1,605.8	2.6	195.3	14.8	1,347.5	1,560.2	3,166.0
Future water system facilities bonds	1,192.0	0.0	47.6	0.0	150.4	198.0	1,390.0
Future East Branch Enlargement bon	130.0	0.0	6.1	0.0	13.9	20.0	150.0
Total	**2,927.8**	**2.6**	**249.0**	**14.8**	**1,511.8**	**1,778.2**	**4,706.0**

a) Reflects actual bond issues for all except future water system facilities and future East Branch Enlargement bonds.

b) Bond discount and financing costs include debt service reserves for East Branch Enlargement and water system facilities bonds.

c) Total discount was $2.8 million; remaining amount was used to refund Reid Gardner Series B bonds.

d) Total discount was $2.7 million; remaining amount was used to refund portions of Reid Gardner Series C and Small Hydro-South Geysers Series D bonds.

e) Includes funds applied to water system facilities Series B and C debt service reserves.

f) Includes funds applied to water system facilities Series D and E debt service reserves.

g) Includes $11.0 million for debt service reserves and $9.0 million for discounts; remaining amount was used to refund a portion of Reid Gardner Series G bonds.

h) Includes $26.3 million for debt service reserves and $20.5 million for discounts; remaining amount was used to refund portions of prior issues of power facilities revenue bonds and Water System Revenue bonds.

24. Forecasting Revenues, Expenses, and Future Costs of Water Service

Information pertaining to State Water Project (SWP) revenues and expenses and future costs of water service is included in this chapter. The information is arranged according to line numbers of Table 22-2, "Revenues and Expenses, June 30, 1992," which may be found in Chapter 22, "Analyzing State Water Project Financing."

Project Revenues

State Water Project revenues consist primarily of SWP contractor payments. Those revenues are deposited in two funds, the Central Valley Water Project Revenue Fund, in which all revenues pledged to revenue bonds are placed, and the California Water Resources Development Bond Fund-Systems Revenue Account, in which all other SWP operating revenues are placed. Use of those funds is limited to paying operating costs and debt service, except that revenues in excess of those costs may be transferred to the California Water Fund.

Specific information about SWP revenues, arranged to correspond with lines 1 through 19 of Table 22-2, follows.

Capital Resource Revenues

Capital Resources Revenues, Line 1. Seven sources of those revenues include:

1. Federal payments for SWP capital expenditures
2. Appropriations for capital cost allocated to recreation
3. Appropriations for SWP capital expenditures prior to passage of the Burns-Porter Act and according to Senate Bill (SB) 261 (1968)
4. Payments from Los Angeles Department of Water and Power for Castaic power development
5. Advances to water contractors for construction of requested works
6. Investment earnings on the Capital Resources Account
7. Investment earnings on unexpended revenue bond proceeds

Historically, appropriations for capital costs allocated to recreation and fish and wildlife enhancement have amounted to $5 million per year, which has been appropriated by the California Legislature from Tideland Oil Revenues. According to legislation enacted in 1989, the amount owed to SWP by the state for costs allocated to recreation is offset against the amount SWP owes to the California Water Fund.

Water Contractors' Payments

Water Contractors' Payments, Lines 2 Through 7. Amounts in those lines reflect amounts

of the separate elements of water contractors' payments.

Figures in Line 4 also include revenues sufficient to cover costs associated with sales of excess power. A detailed explanation of payments identified in lines 2 through 7 may be found in Appendix B. A brief description of the payments follows.

Operations, maintenance, power, and replacement (OMP&R) costs are repaid as they are incurred as part of the Transportation Charge; therefore, no interest charges are included. Construction costs included in the Transportation Charge and all construction and annual OMP&R costs included in the Delta Water Charge are to be repaid with interest at the Project Interest Rate.

The Project Interest Rate, as defined in Article 1(r) of the standard provisions for water supply contracts, is the weighted average of the rates paid on securities issued and loans obtained to finance SWP facilities, excluding Oroville Revenue Bonds.

According to the original contract provisions, the basis for determining the Project Interest Rate was the weighted average of rates paid on general obligation bond sales only. In 1969 after Oroville Revenue Bonds were issued, the contract was amended to expand the basis to include rates on all other securities sold and loans obtained thereafter for financing SWP facilities, including revenue bonds (see Bulletin 132-70, *Management of the California State Water Project*, page 28).

However, not all proceeds from the sale of revenue bonds are melded into 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 by the bond discount (a component of the total interest cost of a revenue bond issue) are included in the calculation (see Table 24-1, "Effect of Revenue Bond Proceeds on Project Interest Rate," at the end of this chapter).

Calculations for determining the Project Interest Rate do not include proceeds from the sale of Power Revenue Bonds for off-aqueduct power facilities, revenue bonds for the East Branch enlargement, or Water Revenue Bonds included as part of the Water Revenue Bond Amendment. Table 24-2, "Bond Sales and Project Interest Rates, by Date of Sale," includes basic information about the calculation of the Project Interest Rate. The table may be found at the end of this chapter.

Information about contractors' water charges in Appendix B is based on known conditions and substantiates the Department's determination of 1993 water charges to be billed July 1, 1992. However, information about significant differences between the sum of future charges included in lines 2 through 7 and the substantiation of 1992 charges included in Appendix B follows.

1. Descriptions of future capital costs are based on the prevailing prices as of December 31, 1991. Those costs presented in the financial analysis include allowances for price escalation.
2. Descriptions of pre-1991 charges represent charges as they should have been according to currently known conditions. Pre-1991 charges included in Table 22-2 are those actually paid as part of previously determined bills.
3. Descriptions of charges are unadjusted for past overpayments or underpayments. Charges included in Table 22-2 for 1991 and thereafter have been adjusted for any apparent overpayments or underpayments of pre-1991 charges.
4. Charges for East Branch Enlargement costs include the amounts for debt service and 25 percent cover for the East Branch Enlargement share of the Series A through Series K bonds. Charges in Table 22-2 also include amounts of the debt service and cover for assumed future bonds.
5. The water bond revenue surcharge applies only to the Series B through Series K bonds. Surcharge values included in

Table 22-2 apply to Series B through Series K bonds and to assumed future issues required to finance any SWP construction.

Total Water Contractors' Payments

Subtotal, Water Contractors' Payments, Line 8. The amount in this line is the total of lines 2 through 7.

Revenue Bond Cover Adjustments

Revenue Bond Cover Adjustments, Line 9. The amount in this line represents the credit to contractors resulting from the cover of 25 percent of one year's debt service for Off-Aqueduct Power Facility Bonds and Water System Revenue Bonds. Cover is collected as required by the bond resolutions to provide security to the bondholders.

For off-aqueduct facilities, that amount is charged annually to contractors and collected through the minimum OMP&R component of the Transportation Charge. For the East Branch Enlargement facilities, the cover is collected through the capital component of the East Branch Enlargement Transportation Charge. For water system facilities, that amount is collected through the water bond surcharge.

If not needed to meet annual bond service, the cover is credited to the contractors in the following year. The amount credited varies in proportion to the debt service for those facilities.

Federal Payments

Federal Payments for Project Operating Costs, Line 10. According to the December 31, 1961, agreement between California and the United States, the Department operates and maintains the San Luis Joint-Use Facilities.

According to the January 12, 1972, supplement to the agreement, the U.S. Bureau of Reclamation (USBR) paid 45 percent of OM&R costs for those activities. (The percentage does not apply to power costs; USBR and the Department provide their own power to pump their water through the joint facilities.)

The percentage paid by USBR is reviewed every five years by USBR and the Department. For calendar years 1981 through 1986, the federal share of operations and maintenance costs was 44.47 percent. The most recent review of the percentage paid by USBR was completed in 1987 and resulted in a federal share of 44.09 percent for calendar years 1987 through 1991. The amounts in Line 10 are based on the assumption that the federal share will continue at 44.09 percent for calendar years 1992 through 2005.

Appropriations for Operating Costs to Recreation

Appropriations for Operating Costs Allocated to Recreation, Line 11. In passing the Davis-Dolwig Act, the California Legislature declared its intent that except for funds provided according to Assembly Bill (AB) 12 (1966) the Department's budget will include appropriations of monies from the General Fund necessary for enhancement of fish and wildlife and recreation in connection with state water projects.

Annual OMP&R costs allocated to recreation and fish and wildlife enhancement are paid by annual appropriations from the General Fund. For fiscal years 1983-84 through 1990-91, no funds were appropriated for enhancement of fish and wildlife and recreational purposes. No appropriations are indicated for 1992 through 2005.

According to legislation enacted in 1989, the amount owed to SWP by the state for costs allocated to fish and wildlife and recreational enhancement is offset against the amount SWP owes to the California Water Fund.

Local Agency Payments

Local Agency Payments According to Davis-Grunsky Loan Repayment Contracts, Line 12. More than $48 million has been disbursed as of December 31, 1991. Loan repayments received through December 31, 1991, are indicated in the 1952-1991 entry.

The amounts for future years listed on Line 12 are based on loans currently outstanding. Repayment on any future loans was assumed to be beyond the period covered by the financial analysis.

Revenue Bond Proceeds

Revenue Bond Proceeds, Line 13. The amount in this line includes bond proceeds classified as special reserves according to the description of revenue bond financing in Line 15 of Table 22-1.

Those proceeds, used for capitalized OMP&R costs, revenue bond service, and debt service reserves, are not classified as revenues but are included in this line to simplify the financial presentation.

Interest Earnings

Interest Earnings, Line 14. The amount in this line includes interest earnings on unexpended proceeds from the sale of general obligation bonds, interest on operating reserves, and other short-term investment earnings on SWP revenues.

Oroville-Thermalito Power Sale Contract

Payments According to Oroville-Thermalito Power Sale Contract, Line 15. Before April 1, 1983, all power generation from Edward Hyatt Powerplant and Thermalito Powerplant was sold to three electric utilities, Pacific Gas & Electric Company, Southern California Edison Company, and San Diego Gas and Electric Company, according to a power sale contract dated November 29, 1967. The 1952-1991 entry includes amounts of final settlement of payments made according to the contract.

Miscellaneous Revenues

Miscellaneous Revenues, Line 16. The amount in this line represents all other operating revenues not included in lines 2 through 15.

Other Revenues

Subtotal, Other Revenues, Line 17. The amount in this line is the total of lines 10 through 16.

Total Operating Revenues

Total Operating Revenues, Line 18. The amount in this line is the total of lines 8, 9, and 17.

Total Operating Revenues and Capital Resources Revenues

Total Operating Revenues and Capital Resources Revenues, Line 19. The amount in this line is the total of lines 1 and 18.

Project Expenses

Project expenses include the following:

1. Operations, maintenance, and power (OM&P) costs
2. Deposits to replacement reserves
3. Deposits to special reserves (see description of Line 22)
4. Debt service
5. Deposits to operating reserves
6. Repayment of the California Water Fund
7. Application of Capital Resources Revenues to construction (see Line 30 in Table 22-1)

Revenue bond proceeds earmarked for debt service during construction and the first year's

operating expenses are deposited in the Central Valley Water Project Construction Fund and disbursed according to resolutions authorizing the issuance of such bonds.

Water contractor revenues associated with power facility operating costs and debt service are deposited in the Central Valley Water Project Revenue Fund for appropriate disbursement. All other operating revenues, deposited in the California Water Revenue Fund-Systems Revenue Account, are disbursed according to the following four priorities of use as specified in the Burns-Porter Act:

1. State Water Project operations, maintenance, power, and replacement costs
2. General obligation bond debt service
3. Repayment of expenditures from the California Water Fund
4. Deposits to a reserve for future SWP construction

Specific information about project expenses, arranged according to lines 20 through 37 in Table 22-2, follows.

Operations, Maintenance, and Power Costs

Project Operations, Maintenance, and Power Costs, Line 20. Historical and projected OM&P costs are included in Table 24-3, "Operations, Maintenance, Power, and Replacement Costs, by Facility, Composition, and Purpose." This table may be found at the end of the chapter. Line 20 represents the OM&P portion of the costs included in Table 24-3.

Table 24-3 and Line 20 of Table 22-2 also include amounts of the operations and maintenance costs for the federal share of joint facilities and those OM&P costs allocated to recreation, which are intended to be offset by revenues indicated in lines 10 and 11.

Allowances for cost escalations are included in OM&P costs through 1994. Allowances for additional long-term price escalations in the future are not included in these estimates because changes in OM&P costs do not substantially affect the overall results of the financial analysis. (For the most part, changes in OM&P costs cause direct offsetting changes in operating revenues.)

Power costs make up the major item of annual operating expense for SWP. Descriptions of assumptions regarding future power sources and costs may be found in Chapter 20, "Forecasting Power Requirements and Resources," and Chapter 21, "Forecasting Power Costs and Sales." Line 20 also includes amounts of costs associated with power transactions that result in the sale of power not required for the delivery of water.

Deposits to Replacement Reserves

Deposits to Replacement Reserves, Line 21. This line includes amounts of funds set aside as required by contract for replacing existing SWP facilities. As of December 31, 1991, $48.4 million had been spent for replacement costs; the balance of the replacement reserve as of that date was $109.3 million. Replacement reserve amounts are also included in Table 24-3.

Deposits to Special Reserves

Deposits to Special Reserves Under Revenue Bond Financing, Line 22. Line 22 includes amounts for two significant components: special reserves deposits and capital resources revenue carry-over from prior years used for construction in the current year. Special reserves deposits are the net of several income and expenditure items. Income items are deposits related to revenue bonds as follows:

- Proceeds set aside to pay bond interest during construction (capitalized interest)
- Proceeds set aside for first year operating costs (capitalized operations and maintenance)

TABLE 24-5

Retirement Schedule of Oroville Revenue Bonds 1978 Through 1991

Year	*Bonds Retired*	*Cost*
1978	$4,045,000	$3,845,099
1979	9,730,000	8,933,093
1980	1,350,000	1,227,600
1981	2,865,000	1,805,862
1982	15,890,000	9,623,312
1983	18,865,000	16,776,000
1984	7,640,000	6,807,020
1985	10,215,000	9,044,000
1986	7,175,000	6,598,000
1987	8,980,000	8,808,104
1988	3,815,000	3,676,482
1989	30,690,000	30,390,215
1990	7,210,000	7,164,817
1991	8,720,000	8,708,098

- Water contractors' payments or bond proceeds set aside for debt service reserves
- Water contractors' payments for revenue bond cover requirements

The 1952-1991 entry for Line 22 of Table 22-2 includes amounts of deposits to special reserves for all past bond sales indicated in tables 22-1 and 22-2. For future revenue bonds, deposits to special reserves are included in the year of assumed sale.

The amount in the 1952-1991 column also includes amounts of advances to the Department's revolving fund for working funds to purchase mobile equipment and to meet day-to-day operating expenses.

The expenditure items are:

- Debt service cover payments returned to water contractors
- Debt service reserve payments returned to water contractors
- Surplus account funds returned to water contractors or applied to meet expenses
- Total capitalized interest paid out
- Total capitalized operations and maintenance paid out

Special reserves, reduced over time as reserved amounts, are used for their respective purposes. The amount indicated each year in Line 22 indicates the change from the previous year. A negative number indicates a withdrawal of special reserves to meet expenses, while a positive number indicates a deposit.

Payments of Debt Service

Payment of Debt Service on Bonds Sold Through June 30, 1992, Lines 23 and 24. The amounts in these two lines represent the total amount of principal and interest payments on bonds sold to date. Table 24-4, "Annual Debt Service on Bonds Sold Through June 30, 1992," represents a summary of payments on general obligation bonds (Series A through V water bonds), power revenue bonds by project, and water system revenue bonds. This table may be found at the end of the chapter.

The last bonds, sold on May 12, 1992, were the Series K Water System Revenue Bonds. Proceeds from the Series K bonds were used to provide funds for construction, fund the debt service reserve account, and to pay bond discount and interest costs.

Since 1978, the bond trustee has been retiring Oroville Revenue Bonds prior to the fixed maturity date as indicated in Table 24-5, "Retirement Schedule of Oroville Revenue Bonds, 1978 Through 1991." The schedule for service of Oroville Revenue Bonds indicated in Table 24-4 is based on a revised bond maturity schedule that reflects those early bond retirements.

Line 24 also includes over $0.3 million in interest payments to the General Fund for the temporary loan of $46.8 million in 1970. That loan was repaid by proceeds from the sale of Series N Water Bond Anticipation Notes.

Payments on Projected East Branch Enlargement Bonds

Payments on Projected East Branch Enlargement Bonds, Lines 25 and 26. These lines include amounts of the projected annual service

amounts for future water revenue bonds included on Line 23 of Table 22-1 for the East Branch Enlargement. Assumptions concerning the service on these future bonds are as follows:

- Interest costs for the water revenue bonds are estimated to average 7.5 percent.
- Bonds are to be repaid within 35 years of sale with maturities commencing in the year following the date of sale and with equal annual bond service for the principal repayment period.

Payments on Projected Revenue Bonds

Payments on Projected Future Water System Revenue Bonds, Lines 27 and 28. These lines include the amounts of the projected annual service for future water revenue bonds included on Line 25 of Table 22-1 for water system facilities. Assumptions concerning the service on these future bonds are the same as those indicated for lines 25 and 26.

Total Payments

Total Payments of Bond Service, Lines 29 and 30. The amounts included in these lines represent the total of interest payments indicated on lines 24, 26, and 28 and the total of principal payments indicated on lines 23, 25, and 27.

Debt Service

Subtotal, Debt Service, Line 31. The amount on this line is the total of lines 29 and 30.

Water Fund Repayment

California Water Fund Repayment, Line 32. The Burns-Porter Act requires that, after operation, maintenance, replacement, and bond service requirements have been satisfied, SWP revenues be transferred to the California Water Fund to reimburse the fund for monies expended for construction of the State Water Resources Development System.

In 1982 and 1983, the Department transferred a total of $70 million toward the repayment of the California Water Fund. The legislature subsequently appropriated all these funds to the state's General Fund. Legislation enacted in 1989 provided for the orderly, scheduled reimbursement of the remaining balance owed to the California Water Fund over a period of ten years. A portion of this reimbursement is to be offset by the amounts owed to SWP by the state for costs allocated to recreation and fish and wildlife enhancement.

As of December 31, 1991, reimbursements to the California Water Fund totaled $324 million. Of this total approximately $142 million was direct repayments and $182 million was offsets for recreation and fish and wildlife enhancement expenditures to date. Future offsets are projected to total $30 million.

The remaining $149 million balance will be repaid by SWP according to the repayment schedule included in the legislation. Repayments are subject to the availability of monies for such purpose. The projected repayment schedule is indicated in Line 32.

Total Operating Expenses and Debt Service

Total Operating Expenses and Debt Service, Line 33. The amount in this line is the total of lines 20, 21, 22, 31, and 32.

Current Operating Funds

Current Operating Funds, Line 34. The amounts indicated in this line represent the funds available for future payment of operation and maintenance costs and debt service and funds provided for drought contingencies.

The amount in Column 1 represents the December 31, 1991, cash balance for these funds

in the Systems Revenue Account of the California Water Resources Development Bond Fund.

Amounts in excess of those needed for operating costs and debt service are used for repaying the California Water Fund as indicated in Line 32 or for financing SWP construction expenditures as indicated in lines 35 and 36.

Revenues Required for Current Construction

Revenues Required for Current Construction, Line 35. Revenues not needed for operating costs, debt service, or repayment of the California Water Fund are available for financing SWP capital expenditures.

Line 35 includes the amounts required annually for financing scheduled capital expenditures.

Revenues Available for Future Construction

Revenues Available for Future Construction, Line 36. As indicated in Line 36, some revenues in excess of expenses and repayment of the California Water Fund are available beyond present construction requirements.

Those funds would be available to fund a portion of future SWP facilities. The amount indicated could be transferred to Line 35 if additional facilities scheduled for construction need to be funded.

Capital Resource Revenues Used for Construction

Capital Resources Revenues Used for Construction, Line 37. The amount in this line is the same as the amount in Line 30 of Table 22-1.

Total Expenses

Total Project Expenses. The amount in this line is equal to the sum of lines 33 through 37.

Future Costs of Water Service

Estimates of future water costs are useful to SWP contractors in short-range and long-range planning of water needs, operations, and budgets.

Unit water charges included in Table 24-6, "Estimated Unit Water Charges for 1993 and 2000, by Service Area," represent both unescalated and escalated costs of water according to service areas for years 1993 and 2000. The unit rates in Table 24-6 include costs of existing and future SWP facilities accounted for in Tables 22-1 and Table 22-2.

The unit charges are based on the assumption that in 1993 and 2000, SWP will be able to deliver entire amounts of water requested by contractors. The unit water charges included in Table 24-6 are listed both as unescalated 1991 dollars and as escalated rates reflecting assumed future inflation.

The Department's estimates of future capital expenditures include allowances for escalation of construction costs at 4 percent per year for 1992 and 1993 and at 5 percent per year for 1994 through 2005. The escalation rates for future power sources vary, depending on the source of energy.

TABLE 24-1

Effect of Revenue Bond Proceeds on Project Interest Rate

(Millions of dollars)

Project	Revenue Bond Proceeds: *Applied to Construction Costs*	*Less Portion of Proceeds Derived from Interest Earnings Prior to Delivery of Bonds*	*Plus Bond Discount and Financing Costs*	*Subtotal, Proceeds Included in Calculating Project Interest Rate*	*Principal Amount of Bonds*	*Percent Total Amount Included in Calculating Project Interest Rate*
Devil Canyon-Castaic Project Revenue Bonds	$125.3	$1.5	$1.4	$125.2	$139.2	90.0
Pyramid Project Revenue Bonds (Series A)	71.2	0.5	1.1	71.8	95.8	75.0
Alamo Project Bond Anticipation Note	16.8	0.1	0.3	17.0	24.4	70.0
Small Hydro Project I Revenue Bonds (Series D	25.4	0.2	1.5	26.7	37.5	71.0
Alamo Project Revenue Bonds (Series F)	38.9	0.3	0.7	39.3	50.0	79.0
Power Facilities						
Revenue Bonds (Series H)						
Facility						
Pyramid Project	5.0	0.0	0.1	5.1	5.1	100.0
Alamo Project	1.7	0.0	0.0	1.7	1.7	100.0
Small Hydro Project I	25.2 (a	0.2	0.4	25.4	35.6	71.0
Water System Revenue Bonds (Series J)						
Facility						
Pyramid Project	—	—	75.9	75.9	94.5 (b	76.0
Alamo Project	—	—	45.6	45.6	57.1	80.0
Small Hydro Project	—	—	27.5	27.5	38.8	71.0

a) Amount consists of 71 percent of proceeds deposited in escrow account to refund portion of Series D bonds ($35.1 million) plus deposits to construction account ($0.3 million).

b) Represents amount of principal used to refund portions of prior bond issue for Pyramid project, Alamo project, and small hydro project.

TABLE 24-2

Bond Sales and Project Interest Rates, by Date of Sale

Bond Sales	*Date of Sale*	*Dollar-Years (a (Thousands)*	*Interest Cost (Thousands)*	*Interest Cost (b (Percent)*	*Project Interest Rate (c (Percent)*
$ 50,000,000 Bond Anticipation Notes	11/21/63	$26,944	$531	1.971	1.971
$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	5/05/64	1,726,000	60,986	3.533	3.516
$100,000,000 Series C Water Bonds	10/07/64	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	6/08/66	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	4/03/68	5,228,700	270,289	5.169	
$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	4/01/69	3,423,460	195,902	5.722	
$ 46,761,000 Cumulative 1970 General Fund Borrowing, repaid 7/10/	—	4,938	346	7.007	
$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	2/02/71	3,447,900	190,292	5.519	4.148
$100,000,000 Series Q Bond Anticipation Notes	3/10/71	100,000	2,349	2.349	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	11/09/71	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 (d	8/08/72	4,776,204	258,839	5.419	4.457
$ 10,000,000 Series T Water Bonds	3/20/73	185,265	9,491	5.123	4.459
$ 10,000,000 Series U Water Bonds	1/13/76	158,750	8,731	5.500	4.462
$ 10,000,000 Series V Water Bonds	11/15/77	158,750	7,573	4.770	4.462
$ 95,800,000 Pyramid Hydroelectric Revenue Bonds	10/23/79	2,260,072	172,495	7.632	4.584
$150,000,000 Reid Gardner Project, Series A Bond Anticipation Note	7/1/81	347,906	29,572	8.500	
$ 75,600,000 Bottle Rock Project, Bond Anticipation Notes	12/1/81	264,600	25,137	9.500	
$ 24,400,000 Alamo Project, Bond Anticipation Notes	12/1/81	24,266	2,305	9.500	4.589
$200,000,000 Reid Gardner Project, Series B Revenue Bonds	7/07/82	4,623,137	553,793	11.979	
$125,000,000 Reid Gardner Project, Series C Revenue Bonds	11/16/82	2,720,045	255,744	9.402	
$ 37,500,000 Small Hydro Project I, Series D Revenue Bonds	11/16/82	837,769	84,587	10.097	4.666
$ 37,500,000 South Geysers Project, Series D Revenue Bonds	11/16/82	930,325	90,021	9.676	
$125,000,000 Bottle Rock Project, Series E Revenue Bonds	4/27/83	2,624,805	225,102	8.576	
$ 50,000,000 Alamo Project, Series F Revenue Bonds	4/27/83	1,190,763	100,836	8.468	4.727
$ 25,000,000 South Geysers Project, Series F Revenue Bonds	4/27/83	608,550	52,578	8.640	
$239,505,000 Reid Gardner Project, Series G Revenue Bonds	3/15/85	4,524,136	425,840	9.413	
$206,690,000 Power Facilities, Series H Revenue Bonds	6/20/86	4,430,520	347,745	7.849	4.713
$132,000,000 East Branch Enlargement, Series A Water System Revenue Bonds	7/15/86	3,427,165	254,915	7.438	
$100,000,000 Series B Water System Revenue Bonds	5/05/87	2,564,012	194,817	7.598	
$ 9,000,000 Series C Water System Revenue Bonds	12/01/87	324,000	31,995	9.875	
$100,000,000 Series D Water System Revenue Bonds	6/14/88	2,640,510	201,253	7.622	
$ 9,000,000 Series E Water System Revenue Bonds	11/29/88	324,000	31,995	9.875	
$160,030,000 Series F Water System Revenue Bonds	3/15/89	2,779,838	189,261	6.808	
$100,000,000 Series G Water System Revenue Bonds	3/06/90	2,434,175	172,277	7.077	
$100,000,000 Series H Water System Revenue Bonds	1/10/91	2,459,172	168,857	6.866	
$180,000,000 Series I Water System Revenue Bonds	5/14/91	4,366,680	294,090	6.735	
$649,835,000 Series J Water System Revenue Bonds	1/16/92	12,422,222	745,198	5.999	
$100,000,000 Series K Water System Revenue Bonds	5/12/92	2,366,783	147,064	6.214	
Total		**$129,236,372**	**$7,900,433**		
Portion Allocated to Project Interest Rate		**$63,788,941**	**$2,947,644**		**4.621**

a) Amount represents a unit equivalent to one dollar of principal amount outstanding for one year.

b) Amount represents the total interest cost (without regard to premiums received) divided by the total dollar-years, expressed as a percent.

c) Amount is determined by dividing cumulative interest costs by cumulative dollar-years and expressed as a percentage. Oroville Field Division Power Revenue Bonds for Off-Aqueduct Facilities and Water System Revenue Bonds, which do not affect the Project Interest Rate, are excluded.

d) These revenue bonds and revenue bond anticipation notes were sold at the following net interests costs. The following amounts (representing the sum of proceeds used for construction and the bond discount) were used in the calculations of the Project Interest Rate:

Devil Canyon-Castaic Revenue Bonds:	5.446 percent	$126,893,000
Pyramid Hydroelectric Revenue Bonds:	7.680 percent	$ 75,586,000
Alamo Bond Anticipation Notes:	10.036 percent	$ 18,034,000
Small Hydro Project I, Series D Revenue Bonds:	10.275 percent	$ 28,012,000
Alamo Project, Series F Revenue Bonds:	8.525 percent	$ 40,114,000
Power Facilities, Series H Revenue Bonds:	7.926 percent	$ 42,340,000

TABLE 24-3

Operations, Maintenance, Power, and Replacement Costs by Facility, Composition, and Purpose

Feature	Calendar Year 1962-1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006-2035	Total
Project Facility																	
Feather River facilities	$239,121	$(4,327)	$(3,938)	$(4,124)	$(4,371)	$(5,286)	$(4,990)	$(5,199)	$(5,208)	$(5,182)	$(5,189)	$(5,189)	$(5,189)	$(5,186)	$(5,151)	$(162,305)	$8,287
North Bay Aqueduct	8,418	1,681	1,974	2,010	2,053	2,052	2,127	2,137	2,137	2,219	2,235	2,254	2,274	2,301	2,433	82,864	121,169
Delta facilities	0	102	614	79	13	11	505	66	11	11	11	11	11	11	11	333	1,800
Suisun Marsh	3,175	750	784	1,233	1,379	1,304	797	1,164	1,304	1,304	1,867	1,867	1,867	1,867	1,867	56,023	78,552
South Bay Aqueduct	78,795	10,436	9,283	9,448	9,971	9,737	10,029	9,999	10,006	10,457	10,465	10,517	10,562	10,645	11,238	356,282	577,870
California Aqueduct:																	
Delta to Edmonston	1,040,192	164,567	171,734	181,406	195,975	193,726	202,094	200,444	200,243	214,583	215,023	216,822	217,900	220,694	241,266	7,924,256	11,800,925
Edmonston to Perris	746,076	109,349	152,567	164,793	180,219	170,007	179,292	177,728	181,404	200,267	201,199	202,643	202,840	208,580	235,367	7,901,396	11,213,727
West Branch	(8,375)	2,352	(20,115)	(20,263)	(21,109)	(23,441)	(20,133)	(23,478)	(21,999)	(22,108)	(21,069)	(21,496)	(21,317)	(20,701)	(19,864)	(543,135)	(826,251)
Coastal Branch	33,313	5,427	4,831	4,620	4,566	15,423	13,639	16,031	17,213	17,737	17,748	17,815	17,873	17,981	18,690	585,244	808,151
Off-aqueduct power generating facilities	440,301	58,356	63,834	66,853	63,867	67,867	66,867	61,926	57,668	48,192	45,887	41,499	35,005	29,714	21,131	4,014	1,172,981
Water quality monitoring	93,198	21,765	15,361	13,156	12,155	12,486	12,488	11,542	11,492	11,619	6,221	6,221	6,221	6,221	6,221	186,629	432,996
Davis-Grunsky Act program	2,151	275	275	282	289	249	210	210	210	210	210	210	210	210	210	6,300	11,711
Subtotal	$2,676,365	$370,733	$397,204	$419,493	$445,007	$444,135	$462,925	$452,570	$454,481	$479,309	$474,608	$473,174	$468,257	$472,337	$513,419	$16,397,901	$25,401,918
Payments to/credits from PG&E under comprehensive agreement	11,667	(3,630)	(3,491)	(3,352)	(3,213)	(3,074)	(2,935)	(2,797)	(2,658)	(2,519)	(2,380)	(2,241)	(2,102)	(1,963)	(152)	0	(24,840)
Total OMP&R Costs	**$2,688,032**	**$367,103**	**$393,713**	**$416,141**	**$441,794**	**$441,061**	**$459,990**	**$449,773**	**$451,823**	**$476,790**	**$472,228**	**$470,933**	**$466,155**	**$470,374**	**$513,267**	**$16,397,901**	**$25,377,078**
Composition																	
Salaries and expenses of headquarters personnel	$450,739	$68,685	$54,676	$55,974	$54,349	$54,593	$54,202	$54,445	$54,506	$54,506	$49,108	$49,108	$49,108	$49,108	$49,108	$1,473,238	$2,675,453
Salaries and expenses of field personnel	969,228	119,024	93,537	88,326	85,654	89,497	89,491	88,841	88,917	89,045	89,608	89,607	89,608	89,608	89,608	2,688,248	4,937,847
Pumping power																	
Used by pumping plants	1,113,338	181,080	271,095	297,507	347,116	339,431	363,043	357,118	363,825	398,484	401,282	403,830	405,326	415,038	466,589	15,644,398	21,768,500
Produced by generation plants	(350,065)	(64,419)	(100,084)	(100,688)	(116,572)	(116,567)	(119,991)	(119,073)	(119,478)	(120,231)	(120,590)	(120,184)	(120,104)	(120,445)	(122,329)	(3,690,488)	(5,621,578)
Payments to or credits from PG&E under comprehensive agreement	11,667	(3,630)	(3,491)	(3,352)	(3,213)	(3,074)	(2,935)	(2,797)	(2,658)	(2,519)	(2,380)	(2,241)	(2,102)	(1,963)	(152)	0	(24,840)
Off-aqueduct power generating facilities	440,301	58,356	63,834	66,853	63,867	67,867	66,867	61,926	57,668	48,192	45,887	41,499	35,005	29,714	21,131	4,014	1,172,981
Oroville-Thermalito insurance premiums	7,750	783	803	823	833	833	833	833	833	833	833	833	833	833	833	24,090	43,412
Less portion of costs incurred during construction	(112,658)	(503)	(2,212)	(5,243)	(6,180)	0	0	0	0	0	0	0	0	0	0	0	(126,796)
Subtotal	$2,530,300	$359,376	$378,158	$400,200	$425,854	$432,580	$451,510	$441,293	$443,343	$468,310	$463,748	$462,452	$457,674	$461,893	$504,788	$16,143,500	$24,824,979
Deposits to replacement reserves	157,732	7,727	15,555	15,941	15,940	8,481	8,480	8,480	8,480	8,480	8,480	8,481	8,481	8,481	8,479	254,401	552,099
Total OMP&R Costs	**$2,688,032**	**$367,103**	**$393,713**	**$416,141**	**$441,794**	**$441,061**	**$459,990**	**$449,773**	**$451,823**	**$476,790**	**$472,228**	**$470,933**	**$466,155**	**$470,374**	**$513,267**	**$16,397,901**	**$25,377,078**
Project Purpose																	
Water supply and power generation	$2,548,822	$348,159	$380,808	$403,522	$428,854	$428,255	$446,777	$436,743	$438,606	$463,324	$459,244	$457,823	$452,944	$456,896	$497,844	$15,924,859	$24,573,482
Payments to or credits from PG&E under comprehensive agreement	11,667	(3,630)	(3,491)	(3,352)	(3,213)	(3,074)	(2,935)	(2,797)	(2,658)	(2,519)	(2,380)	(2,241)	(2,102)	(1,963)	(152)	0	(24,840)
Recreation and Fish and Wildlife enhanceme	44,038	9,105	7,215	6,948	7,154	6,899	7,176	6,855	6,903	7,010	6,389	6,376	6,337	6,465	6,594	203,463	344,925
Flood control	1,715	265	188	212	241	237	238	238	238	241	241	241	242	242	247	7,542	12,568
Miscellaneous purposes																	
Federal share, San Luis and Delta facilities	78,608	12,591	8,516	8,303	8,254	8,279	8,309	8,309	8,309	8,309	8,309	8,309	8,309	8,309	8,309	249,269	448,601
Other (Davis-Grunsky, drainage, city of Los Angeles)	3,182	613	477	508	504	465	425	425	425	425	425	425	425	425	425	12,768	22,342
Total OMP&R Costs	**$2,688,032**	**$367,103**	**$393,713**	**$416,141**	**$441,794**	**$441,061**	**$459,990**	**$449,773**	**$451,823**	**$476,790**	**$472,228**	**$470,933**	**$466,155**	**$470,374**	**$513,267**	**$16,397,901**	**$25,377,078**

TABLE 24-4

Annual Debt Service on Bonds Sold Through June 30, 1992

(Thousands of dollars)

Calendar	Series A Through V Water Bonds		Oroville Revenue Bonds (a		Devil Canyon-Castaic Project Revenue Bonds		Pyramid Project Power Facilities Revenue Bonds, Series A and H Water System Revenue Bonds, Series J		Reid Gardner Project Power Facilities Revenue Bonds, Series B, C, G, and H; Water System Revenue Bonds, Series F and J		Calendar	South Geysers Project Power Facilities Revenue Bonds, Series D, F, and H Water System Revenue Bonds, Series D, E, and J		Small Hydro Project Power Facilities Revenue Bonds, Series D and H Water System Revenue Bonds, Series J		Bottle Rock Project Power Facilities Revenue Bonds, Series E Water System Revenue Bonds, Series D, E, and J		Alamo Project Power Facilities Revenue Bonds, Series F and H Water System Revenue Bonds, Series J		Subtotal		Calendar	East Branch Enlargement Water System Revenue Bonds Series A, D, E, H, I, J and K		Water System Facilities Water System Revenue Bonds Series B,C, D, E, G, H, and I		Subtotal		Grand Total	
Year	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Year	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Year	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest
1964	0	$3,333	0	0	0	0	0	0	0	0	1964	0	0	0	0	0	0	0	0	0	$3,333	1964	0	0	0	0	0	0	0	$3,333
1965	0	11,114	0	0	0	0	0	0	0	0	1965	0	0	0	0	0	0	0	0	0	11,114	1965	0	0	0	0	0	0	0	11,114
1966	0	16,742	0	0	0	0	0	0	0	0	1966	0	0	0	0	0	0	0	0	0	16,742	1966	0	0	0	0	0	0	0	16,742
1967	0	26,912	0	0	0	0	0	0	0	0	1967	0	0	0	0	0	0	0	0	0	26,912	1967	0	0	0	0	0	0	0	26,912
1968	0	37,760	0	$3,876	0	0	0	0	0	0	1968	0	0	0	0	0	0	0	0	0	41,636	1968	0	0	0	0	0	0	0	41,636
1969	0	47,461	0	10,448	0	0	0	0	0	0	1969	0	0	0	0	0	0	0	0	0	57,909	1969	0	0	0	0	0	0	0	57,909
1970	0	53,291	0	13,145	0	0	0	0	0	0	1970	0	0	0	0	0	0	0	0	0	66,436	1970	0	0	0	0	0	0	0	66,436
1971	0	63,035	0	13,145	0	0	0	0	0	0	1971	0	0	0	0	0	0	0	0	0	76,180	1971	0	0	0	0	0	0	0	76,180
1972	0	69,148	$1,260	13,112	0	0	0	0	0	0	1972	0	0	0	0	0	0	0	0	$1,260	82,260	1972	0	0	0	0	0	0	$1,260	82,260
1973	$1,200	69,348	1,330	13,042	0	$7,708	0	0	0	0	1973	0	0	0	0	0	0	0	0	2,530	90,098	1973	0	0	0	0	0	0	2,530	90,098
1974	3,000	69,533	1,400	12,969	0	7,708	0	0	0	0	1974	0	0	0	0	0	0	0	0	4,400	90,210	1974	0	0	0	0	0	0	4,400	90,210
1975	5,000	69,366	1,475	12,893	0	7,708	0	0	0	0	1975	0	0	0	0	0	0	0	0	6,475	89,967	1975	0	0	0	0	0	0	6,475	89,967
1976	7,000	69,408	1,555	12,811	0	7,708	0	0	0	0	1976	0	0	0	0	0	0	0	0	8,555	89,927	1976	0	0	0	0	0	0	8,555	89,927
1977	10,200	69,323	1,635	12,727	0	7,708	0	0	0	0	1977	0	0	0	0	0	0	0	0	11,835	89,758	1977	0	0	0	0	0	0	11,835	89,758
1978	12,700	69,312	5,775	12,537	0	7,708	0	0	0	0	1978	0	0	0	0	0	0	0	0	18,475	89,557	1978	0	0	0	0	0	0	18,475	89,557
1979	13,650	68,690	11,585	12,275	0	7,708	0	0	0	0	1979	0	0	0	0	0	0	0	0	25,235	88,673	1979	0	0	0	0	0	0	25,235	88,673
1980	16,050	67,968	3,265	11,739	0	7,708	0	$7,900	0	0	1980	0	0	0	0	0	0	0	0	19,315	95,315	1980	0	0	0	0	0	0	19,315	95,315
1981	18,050	67,109	4,885	11,444	0	7,708	0	7,292	0	0	1981	0	0	0	0	0	0	0	0	22,935	93,553	1981	0	0	0	0	0	0	22,935	93,553
1982	19,250	66,162	17,920	10,968	0	7,708	0	7,292	0	$7,972	1982	0	0	0	0	0	0	0	0	37,170	100,102	1982	0	0	0	0	0	0	37,170	100,102
1983	20,520	65,148	21,110	10,147	$900	7,708	0	7,292	0	35,719	1983	0	$4,777	0	$3,727	0	$6,017	0	$2,449	42,530	142,984	1983	0	0	0	0	0	0	42,530	142,984
1984	21,785	64,068	10,005	9,013	955	7,647	$640	7,292	0	35,719	1984	0	5,647	0	3,727	0	10,315	0	4,198	33,385	147,626	1984	0	0	0	0	0	0	33,385	147,626
1985	22,555	63,932	12,700	8,628	1,010	7,583	675	7,238	$9,425	27,209	1985	0	5,647	0	3,727	0	10,315	0	4,198	46,365	138,477	1985	0	0	0	0	0	0	46,365	138,477
1986	23,830	61,742	11,435	7,859	1,070	7,515	715	7,377	3,805	32,882	1986	0	5,516	0	3,537	$1,240	10,315	0	4,263	42,095	141,006	1986	0	$4,021	0	0	0	$4,021	42,095	145,027
1987	25,495	60,492	11,715	7,188	1,135	7,442	790	7,513	4,860	32,605	1987	0	5,386	0	3,348	1,305	10,253	$265	4,329	45,565	138,556	1987	0	9,651	0	$4,952	0	14,603	45,565	153,159
1988	26,770	59,165	6,685	6,664	1,205	7,366	830	7,447	5,065	32,295	1988	$580	5,521	$345	3,348	1,390	10,849	280	4,314	43,150	136,969	1988	$995	9,875	$710	11,037	$1,705	20,912	44,855	157,881
1989	28,145	57,825	33,705	5,513	1,275	7,284	875	7,378	7,820	27,557	1989	709	5,646	365	3,328	1,565	11,592	295	4,298	74,754	130,421	1989	1,077	10,104	1,148	14,368	2,225	24,472	76,979	154,893
1990	29,385	56,473	10,385	4,301	1,355	7,198	930	7,305	6,675	29,781	1990	761	5,596	405	3,304	1,677	11,491	320	4,279	51,893	129,728	1990	1,134	10,048	1,227	19,554	2,361	29,602	54,254	159,330
1991	30,365	55,070	12,055	3,670	1,435	7,107	980	7,227	7,170	29,302	1991	817	5,540	430	3,276	1,791	11,376	335	4,257	55,378	126,825	1991	1,197	16,856	2,129	27,568	3,326	44,424	58,704	171,249
1992	31,295	53,640	3,510	3,272	1,520	7,010	2,395	53,307	8,950	27,188	1992	1,934	4,136	960	2,553	4,575	7,942	1,260	3,086	56,399	114,134	1992	2,583	22,241	5,107	28,410	7,690	50,651	64,089	164,785
1993	32,940	52,183	3,695	3,646	1,610	6,907	1,525	5,687	8,820	26,953	1993	1,411	4,339	660	2,691	3,264	8,386	755	3,300	54,680	114,092	1993	3,039	23,034	4,577	30,640	7,616	53,674	62,296	167,766
1994	34,525	50,660	3,885	2,888	1,705	6,799	1,575	5,633	9,490	26,273	1994	1,493	4,258	650	2,647	3,374	8,270	780	3,274	57,477	110,702	1994	3,228	22,846	4,854	30,364	8,082	53,210	65,559	163,912
1995	35,660	49,073	4,085	2,681	1,810	6,684	1,630	5,569	10,175	25,575	1995	1,580	4,166	700	2,604	3,521	8,133	805	3,242	59,966	107,727	1995	3,441	22,641	5,157	30,062	8,598	52,703	68,564	160,430
1996	36,900	47,436	4,300	2,705	1,920	6,561	1,685	5,496	10,940	24,805	1996	1,683	4,065	745	2,555	3,682	7,974	845	3,207	62,700	104,804	1996	3,674	22,423	5,476	29,735	9,150	52,158	71,850	156,962
1997	36,595	45,818	4,525	2,233	2,035	6,432	1,760	5,417	11,775	23,959	1997	1,810	3,952	785	2,501	3,861	7,802	895	3,168	64,041	101,282	1997	3,925	22,185	5,819	29,382	9,744	51,567	73,785	152,849
1998	36,675	44,226	4,760	1,991	2,155	6,295	1,835	5,332	12,570	23,143	1998	1,915	3,830	840	2,444	4,030	7,613	930	3,124	65,710	97,998	1998	4,181	21,922	6,114	28,998	10,295	50,920	76,005	148,918
1999	37,600	42,655	5,005	1,732	2,285	6,160	1,915	5,238	13,455	22,263	1999	2,055	3,695	900	2,381	4,240	7,412	985	3,077	68,440	94,613	1999	4,474	21,660	6,501	28,631	10,975	50,291	79,415	144,904
2000	38,890	41,033	5,280	1,801	2,420	6,040	2,000	5,137	14,380	21,309	2000	2,095	3,547	910	2,312	4,470	7,191	1,035	3,025	71,480	91,395	2000	4,783	21,374	6,917	28,232	11,700	49,606	83,180	141,001
2001	39,980	39,351	5,565	1,160	2,565	5,912	2,100	5,027	15,385	20,279	2001	2,205	3,432	970	2,257	4,720	6,950	1,090	2,969	74,580	87,337	2001	5,129	21,066	7,381	27,799	12,510	48,865	87,090	136,202
2002	41,120	37,620	5,865	850	2,720	5,773	2,200	4,910	16,480	19,166	2002	2,325	3,307	1005	2,197	4,990	6,691	1,155	2,908	77,860	83,422	2002	5,490	20,734	7,871	27,332	13,361	48,066	91,221	131,488
2003	42,970	35,835	6,180	524	2,885	5,626	2,310	4,786	17,720	17,962	2003	2,475	3,173	980	2,134	5,285	6,411	1,220	2,843	82,025	79,294	2003	5,878	20,370	8,397	26,824	14,275	47,194	96,300	126,488
2004	45,160	33,957	5,330	211	3,055	5,470	2,430	4,652	19,205	16,443	2004	2,620	3,029	1080	2,073	5,610	6,110	1,295	2,773	85,785	74,718	2004	6,305	19,980	8,710	26,278	15,015	46,258	100,800	120,976
2005	46,450	31,995	1,130	33	3,240	5,305	2,540	4,509	19,930	14,796	2005	2,750	2,873	1135	2,005	5,950	5,784	1,375	2,697	84,500	69,997	2005	6,753	19,557	9,252	25,734	16,005	45,291	100,505	115,288
2006	47,740	29,971	0	0	3,435	5,130	2,675	4,359	21,545	13,190	2006	2,920	2,711	1,180	1,938	6,325	5,433	1,450	2,616	87,270	65,348	2006	7,243	19,100	9,863	25,150	17,106	44,250	104,376	109,598
2007	49,230	27,883	0	0	3,640	4,945	2,825	4,199	23,255	11,442	2007	3,100	2,536	1,250	1,867	6,730	5,054	1,540	2,529	91,570	60,455	2007	7,770	18,604	10,525	24,521	18,295	43,125	109,865	103,580
2008	51,220	25,727	0	0	3,860	4,749	2,980	4,029	25,100	9,549	2008	3,300	2,350	1,265	1,792	7,160	4,650	1,640	2,437	96,525	55,283	2008	8,334	18,067	11,196	23,848	19,530	41,915	116,055	97,198
2009	53,560	23,478	0	0	4,090	4,540	3,150	3,847	26,785	7,802	2009	3,490	2,147	1,280	1,714	7,635	4,212	1,745	2,336	101,735	50,076	2009	8,942	17,491	11,938	23,125	20,880	40,616	122,615	90,692
2010	55,250	21,134	0	0	4,335	4,319	3,325	3,654	28,575	5,962	2010	3,720	1,934	1,270	1,636	8,135	3,746	1,865	2,229	106,475	44,614	2010	9,593	16,874	12,732	22,354	22,325	39,228	128,800	83,842
2011	56,740	18,717	0	0	4,595	4,085	3,505	3,450	30,495	4,000	2011	3,960	1,706	1,270	1,558	8,675	3,246	1,980	2,115	111,220	38,877	2011	10,289	16,209	13,556	21,527	23,845	37,736	135,065	76,613
2012	58,530	16,216	0	0	4,875	3,837	3,720	3,205	32,615	2,068	2012	4,235	1,429	1,285	1,469	9,335	2,638	2,135	1,977	116,730	32,839	2012	11,041	15,496	14,504	20,596	25,545	36,092	142,275	68,931
2013	60,370	13,676	0	0	5,165	3,574	3,950	2,944	0	0	2013	4,550	1,132	1,850	1,379	10,040	1,985	2,295	1,827	88,220	26,517	2013	11,844	14,725	15,501	19,596	27,345	34,321	115,565	60,838
2014	57,900	11,244	0	0	5,475	3,303	4,160	2,703	0	0	2014	4,830	854	1,920	1,266	10,720	1,370	2,450	1,687	87,455	22,427	2014	12,711	13,902	16,534	18,590	29,245	32,492	116,700	54,919
2015	53,690	8,838	0	0	5,805	3,015	4,375	2,453	0	0	2015	5,075	564	1,990	1,151	740	727	2,605	1,540	74,280	18,288	2015	13,633	13,019	17,611	17,523	31,244	30,542	105,524	48,830
2016	46,130	6,626	0	0	6,150	2,710	4,600	2,190	0	0	2016	2,180	259	2,165	1,031	790	682	2,775	1,383	64,790	14,881	2016	14,625	12,073	18,765	16,389	33,390	28,462	98,180	43,343
2017	38,060	4,614	0	0	6,520	2,388	4,835	1,914	0	0	2017	170	128	2,275	902	840	635	2,955	1,217	55,655	11,798	2017	15,688	11,057	19,992	15,179	35,680	26,236	91,335	38,034
2018	25,350	2,980	0	0	6,910	2,045	5,080	1,624	0	0	2018	180	118	2,395	765	890	585	3,155	1,039	43,960	9,156	2018	16,842	9,967	21,278	13,888	38,120	23,855	82,080	33,011
2019	16,890	1,778	0	0	7,325	1,682	5,335	1,319	0	0	2019	190	107	2,505	621	950	531	3,360	850	36,555	6,888	2019	18,072	8,796	22,683	12,514	40,755	21,310	77,310	28,198
2020	17,320	934	0	0	7,765	1,298	5,610	999	0	0	2020	205	96	2,630	471	1,010	474	3,585	649	38,125	4,921	2020	19,404	7,541	24,151	11,050	43,555	18,591	81,680	23,512
2021	8,510	301	0	0	8,230	890	5,890	663	0	0	2021	215	84	2,750	313	1,070	414	3,825	433	30,490	3,098	2021	20,822	6,164	25,728	9,484	46,550	15,648	77,040	18,746
2022	1,800	48	0	0	8,725	458	6,160	339	0	0	2022	230	72	2,945	162	1,130	355	4,055	223	25,045	1,657	2022	22,349	4,688	27,361	7,865	49,710	12,553	74,755	14,210
2023	0	0	0	0	0	0	0	0	0	0	2023	240	59	0	0	1,200	293	0	0	1,440	352	2023	13,265	3,096	38,090	6,130	51,355	9,226	52,795	9,578
2024	0	0	0	0	0	0	0	0	0	0	2024	576	46	0	0	2,855	227	0	0	3,431	273	2024	14,764	2,191	30,899	3,391	45,663	5,582	49,094	5,855
2025	0	0	0	0	0	0	0	0	0	0	2025	0	0	0	0	0	0	0	0	0	0	2025	14,773	1,168	12,592	1138	27,365	2,306	27,365	2,306
2026	0	0	0	0	0	0	0	0	0	0	2026	0	0	0	0	0	0	0	0	0	0	2026	2,412	154	4,523	289	6,935	443	6,935	443
Total	**$1,570,000**	**$2,378,577**	**$244,995**	**$265,841**	**$139,165**	**$283,872**	**$106,510**	**$205,144**	**$422,465**	**$655,168**	**Total**	**$74,584**	**$119,410**	**$46,090**	**$84,711**	**$156,770**	**$232,449**	**$59,335**	**$106,365**	**$2,819,914**	**$4,331,537**	**Total**	**$341,702**	**$592,970**	**$477,369**	**$790,047**	**$819,071**	**$1,383,017**	**$3,638,985**	**$5,714,554**

a) Principal and interest schedule has been adjusted to reflect early redemption of bonds.

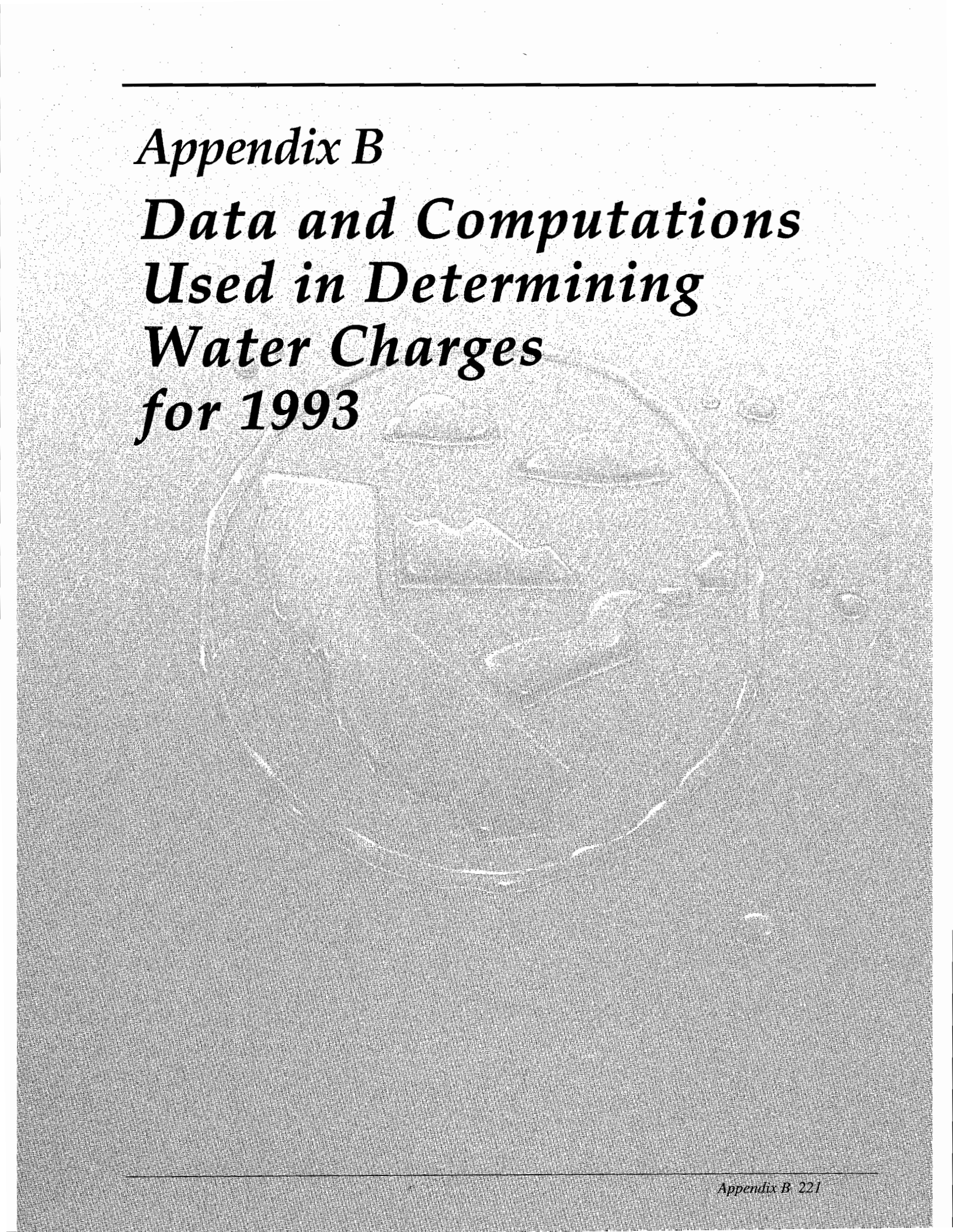
TABLE 24-6

Estimated Unit Water Charges for 1993 and 2000, by Service Area

Service Area and Charge	1993		2000	
	Unescalated	*Escalated*	*Unescalated*	*Escalated*
Feather River Area				
Capital; Operatiions, Maintenance, and Replacement (OM&R)	$64	$64	$37	$40
North Bay Area				
Capital; OM&R	209	209	147	148
Power	16	16	18	25
Total	**$225**	**$225**	**$165**	**$173**
South Bay Area				
Capital; OM&R	$71	$71	$67	$68
Power	38	38	48	67
Total	**$109**	**$109**	**$115**	**$135**
Coastal Area				
Capital; OM&R	N/A	N/A	$466	$468
Power	N/A	N/A	110	152
Total	**N/A**	**N/A**	**$576**	**$620**
San Joaquin Area				
Capital; OM&R	$42	$42	$42	$44
Power	17	17	22	31
Total	**$59**	**$59**	**$64**	**$75**
Southern California Area				
Capital; OM&R	$108	$108	$104	$106
Power	107	107	142	195
Total	**$215**	**$215**	**$246**	**$301**

Appendix B

Data and Computations Used in Determining Water Charges for 1993



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Appendix B

The Department of Water Resources annually furnishes statements of charges to the 29 long-term State Water Project (SWP) water supply contractors. The following description of those statements is contained in Article 29(e) of *Standard Provisions for Water Supply Contract*, approved August 3, 1962.

> *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.*

To comply with Article 29(e), the Department annually performs a comprehensive review and redetermination of all water supply and financial aspects of SWP for the entire project repayment period. This annual redetermination is performed in accordance with Article 22(f) and Article 28 of the water contracts. Article 22(f) concerns the Delta Water Rate per acre-foot of future entitlement; Article 28 concerns the annual transportation charges for the entire project repayment period.

Appendix B includes data used to document the redetermination of water charges to be paid by contractors during calendar year 1993. The information is based on established data about SWP, both known and projected, as of June 30, 1992.

The computational procedures and interrelationships between tabulations in this appendix are outlined in Figure 1, "Relationships of data used to substantiate statements of charges, by table numbers and titles," and Figure 2, "Relationships of data used to substantiate Each Branch Enlargement charges, by table and figure numbers and titles." Those tables may be found on the next two pages. All B tables cited in Figure 1 and Figure 2 are included in this appendix. Tables listed with a "text" designation may be found in this section of the appendix. Tables listed without the text designation may be found in the section entitled "Tables for Determining 1992 Water Charges," which follows this text.

Appendix B also includes information about payments made by contractors according to provisions contained in Article 21, amended, of the standard provisions for surplus water deliveries from SWP.

Types of Water Charges

Costs of SWP facilities necessary for either the conservation and development of water supply or the conveyance of such supply to SWP service areas are included in charges to water contractors. According to information included in Standard Provisions for Water Supply Contract, these facilities are classified as project conservation facilities and project transportation facilities. The names of the main facilities in each classification follow.

Project Conservation Facilities

Frenchman Dam and Lake
Grizzly Valley Dam and Lake Davis

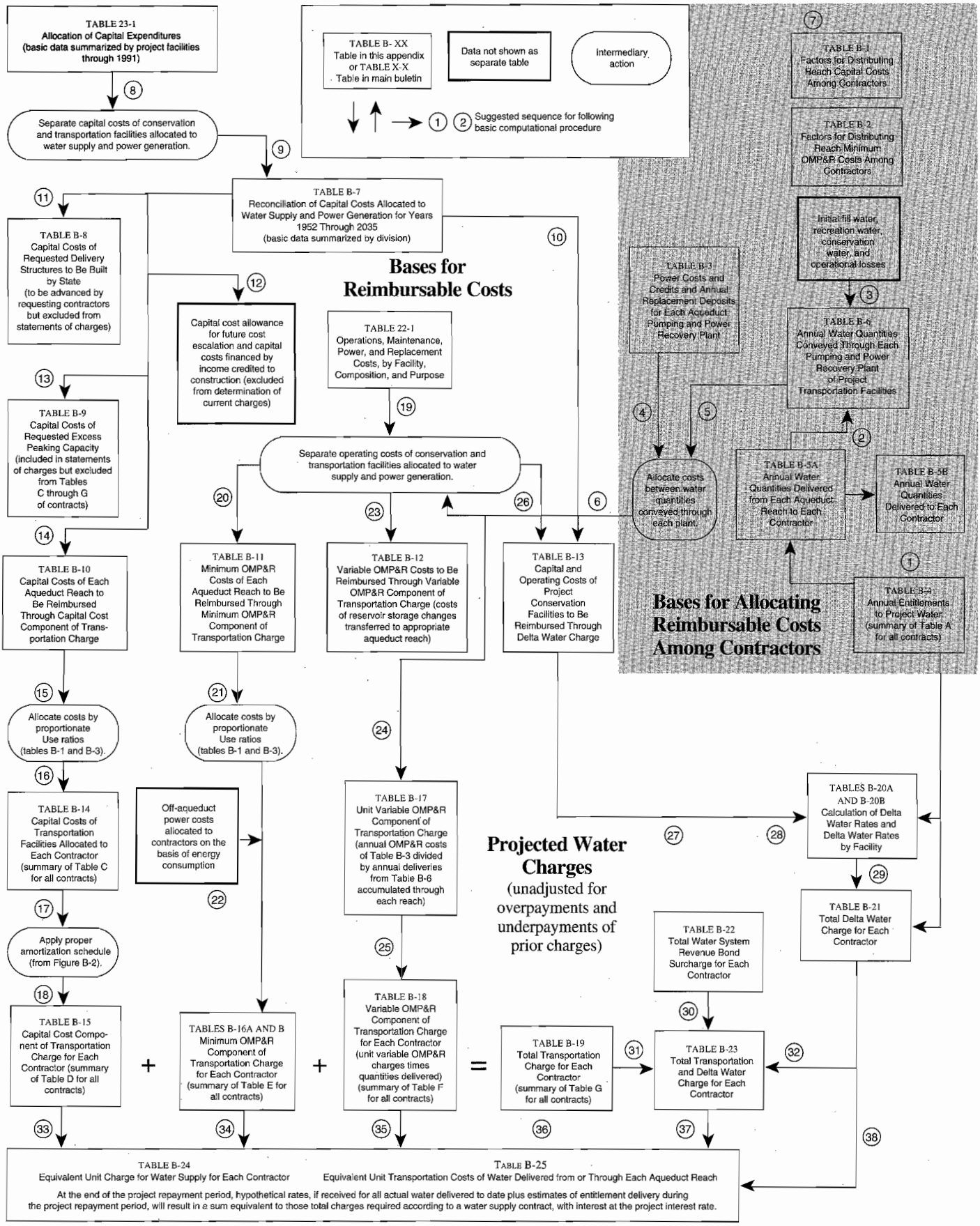


Fig. 1. Relationships of data used to substantiate statements of charges, by table numbers and titles

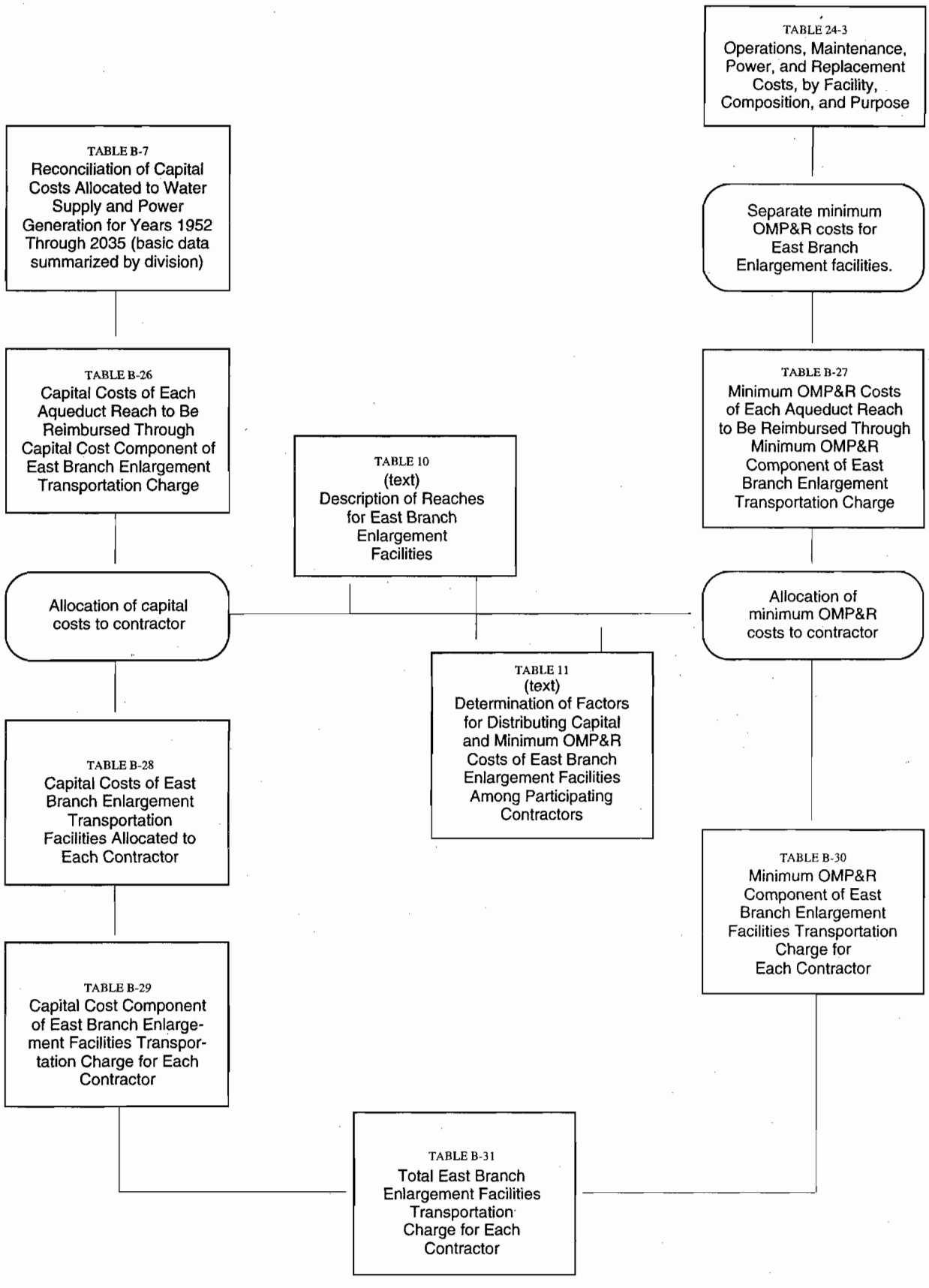


Fig. 2. Relationships of data used to substantiate East Branch Enlargement charges by table and figure numbers and titles

Antelope Dam and Lake
Oroville Dam and Lake Oroville
Oroville Power facilities
Delta facilities
A portion of the Governor Edmund G. Brown California Aqueduct from the Delta to Dos Amigos Pumping Plant
B. F. Sisk San Luis Dam, San Luis Reservoir, and William R. Gianelli Pumping-Generating Plant

Project Transportation Facilities

Grizzly Valley Pipeline
North Bay Aqueduct
South Bay Aqueduct, including Del Valle Dam and Lake Del Valle
Remainder of the California Aqueduct from the Delta to Dos Amigos Pumping Plant and all facilities south, including dams and lakes in southern California
Off-aqueduct power facilities (Reid Gardner Unit No. 4, Bottle Rock Powerplant, and South Geysers Powerplant)

The standard provisions provide for two basic annual charges for project water:

1. Delta Water Charge, which will be paid by all contractors and result in a return of all reimbursable costs of the project conservation facilities to the state
2. Transportation Charge, in addition to the Delta Water Charge, which will be paid by those contractors served by the project

Delta Water Charge

The Delta Water Charge is a unit charge applied to each acre-foot of SWP water the contractors are entitled to receive according to their contracts. The unit charge, if applied to each acre-foot of all such entitlements for the remainder of the project repayment period, is calculated to result in repayment of all outstanding reimbursable costs of the project conservation facilities, with appropriate interest, by 2035, the end of the repayment period.

Transportation Charge

The Transportation Charge is a charge for use of facilities to transport water to the vicinity of each contractor's turnout. Generally, the annual charge represents each contractor's proportionate share of the reimbursable capital costs and operating costs of the project's transportation facilities.

Each contractor's allocated share of those reimbursable capital costs is amortized for repayment to the state; and certain variations are allowed in the amortization methods. Essentially, the contractors' share of reimbursable operating costs are repaid in the year such costs are incurred by the state.

The East Branch Enlargement Transportation Charge will be paid by seven southern California contractors participating in the enlargement. San Bernardino Valley Municipal Water District elected to advance funds to pay the district's allocated capital costs for the East Branch Enlargement.

The remaining six contractors will pay an allocated share of the minimum operations, maintenance, power and replacement (OMP&R) costs of the East Branch Enlargement.

Composition and Timing of Water Charges

As included in Table 1, "Composition of Delta Water Charge and Transportation Charge," the Delta Water Charge and the Transportation Charge consist of the following three components:

1. Conservation and transportation capital cost components, which will result in a return to the state of all reimbursable capital costs
2. Conservation and transportation minimum OMP&R components, which are designed to return to the state all reimbursable operating costs that are not based

TABLE 1

Composition of Delta Water Charge and Transportation Charge

Delta Water Charge

Capital Cost Component

1. Planning, design, right-of-way, and construction costs of conservation facilities
2. Operations and maintenance costs for newly constructed conservation facilities prior to initial operation
3. Activation costs for newly constructed conservation facilities
4. Power costs allocated to initial filling of San Luis Reservoir
5. Capitalized O&M costs (major repair work and so forth) for conservation facilities
6. Program costs (portion) to mitigate impacts on current Delta fishery population due to SWP pumping prior to 1986 (Department of Water Resources – Department of Fish and Game agreement)

Minimum OMP&R Component

1. Direct O&M costs of conservation facilities
   a. Headquarters and field divisions (portion)
   b. Insurance and FERC costs (portion)
2. General O&M costs allocated to conservation facilities
   a. Contractor Accounting Office (portion)
   b. Financial and contract administration (portion)
   c. Water rights
   d. Power planning for SWP facilities (portion)
3. Replacement deposits for SWP control centers (portion)
4. Credits for a portion of Hyatt-Thermalito power generation
5. Power costs and credits related to pumping water to San Luis Reservoir for project operations (storage changes)
6. Value of power used and generated by William R. Gianelli Pumping-Generating Plant
7. Program costs (portion) to offset annual fish losses resulting from pumping at Harvey O. Banks Delta Pumping Plant (Department of Water Resources – Department of Fish and Game agreement)

Transportation Charge

Capital Cost Component

1. Planning, design, right-of-way, and construction costs of transportation facilities
2. O&M costs for newly constructed transportation facilities prior to initial operation
3. Activation costs for newly constructed transportation facilities
4. Power costs allocated to initial filling of southern California reservoirs
5. Capitalized O&M costs (major repair work and so forth) for transportation facilities
6. Program costs (portion) to mitigate impacts on current Delta fishery population due to SWP pumping prior to 1986 (Department of Water Resources – Department of Fish and Game agreement)

Minimum OMP&R Component

1. Direct O&M costs of transportation facilities
   a. Headquarters and field divisions (portion)
   b. Insurance and FERC costs (portion)
2. General O&M costs related to transportation facilities
   a. Contractor Accounting Office (portion)
   b. Financial and contract administration (portion)
   c. Power planning for SWP facilities (portion)
3. Power costs and credits related to pumping water to southern California reservoirs for project operations (storage changes)
4. Power costs for pumping water to replenish losses from transportation facilities
5. Other power costs
   a. Station service at transportation facility power and pumping plants
   b. Transmission service costs related to "backbone" transmission facilities
6. Replacement deposits for SWP control centers (portion)
7. Off-aqueduct power facility costs–bond service, bond cover costs (25 percent of bond service), bond reserves, transmission costs to provide service to "backbone," fuel costs taxes, and O&M–less power sales allocated to off-aqueduct power facilities
8. Program costs (portion) to offset annual fish losses resulting from pumping at Harvey O. Banks Delta Pumping Plant (Department of Water Resources – Department of Fish and Game agreement)

Variable OMP&R Component

1. Power purchase costs
   a. Capacity
   b. Energy
   c. Pine Flat bond service, O&M, and transmission costs allocated to aqueduct pumping plants
2. Alamo, Devil Canyon, William E. Warne, and Castaic power generation credited at the power plant reach and charged to aqueduct pumping plants
3. Hyatt-Thermalito and Thermalito Diversion Dam power plant generation charged to aqueduct pumping plants (credits for this generation are reflected in the Delta Water Rate)
4. Replacement deposits for equipment at pumping plants and power plants
5. Credits from sale of excess SWP system power
6. Program costs (portion) to offset annual fish losses resulting from pumping at Harvey O. Banks Delta Pumping Plant (Department of Water Resources – Department of Fish and Game agreement)

Note: Excludes costs recovered throughr the East Branch Enlargement Transportation Charge.

on quantities of water actually delivered to the contractors

3. A transportation variable OMP&R component, which is designed to return to the state all reimbursable operating costs that are based on and vary with quantities of water delivered to the contractors

Article 28 of the standard provisions of the water supply contracts provides that transportation charges be redetermined each year. The tables in Appendix B include the numerical data used in this redetermination. Transportation charges for prior years through 1991 included in those tables do not equal those amounts actually paid by contractors.

As provided under the Water System Revenue Bond Amendment to the water supply contracts, differences between actual payments and amounts computed in this redetermination are accumulated with interest and amortized during the remaining years of the contract repayment period. All computations for adjustments are included in the attachments accompanying each contractor's statement of charges and are reflected in revised copies of Table C through Table G of the contract, which are also furnished to each long-term water supply contractor in the annual statement of charges.

The formula for computing the Delta Water Rate, Article 22(f) of the standard provisions, has been designed to ensure that all adjustments for prior overpayments or underpayments of the Delta Water Charge are accounted for in a redetermination of the rate. Since the redetermined rate applies to all future entitlements, such adjustments are amortized during the remainder of the project. This appendix includes a redetermination of the Delta Water Rate for 1993.

Those redeterminations exclude four charges associated with water service other than the Delta Water Charge and the Transportation Charge. Those excluded charges (and the manner in which such excluded charges are treated in this appendix) are:

1. Advances of funds according to Article 24(d) of the standard provisions for excess capacity constructed by the state at the request of contractors.
2. Advances of funds according to Article 10(d) of the standard provisions for delivery structures (turnouts) constructed by the state at the request of contractors. Partial information concerning actual and projected capital costs of such delivery structures is included in this appendix. Statements concerning these costs and data are furnished to the appropriate contractors at various times and are not part of the annual statements.
3. Payments for sale and service of surplus water to entities other than contractors according to Article 21 of the standard provisions are also excluded. Those payments are generally based on the unit rates included in Table B-25, "Equivalent Unit Transportation Costs of Water Delivered from or Through Each Aqueduct Reach." Net revenues resulting from non contractor service are applied as indicated on page 24 of Bulletin 132-71.
4. Payments made according to provisions of the Devil Canyon-Castaic contract for costs of the Devil Canyon and Castaic facilities allocable to power generation. Charges billed as a result of the contract are billed separately from those billed as a result of the water supply contract. Information about the treatment of such charges in relation to redetermined transportation charges is included in special attachments to the bills of the six participating contractors.

The time and method of payment for corresponding components of the Delta Water Charge and the Transportation Charge are as follows:

1. The capital cost components of the Delta Water Charge and the Transportation Charge are paid in two semiannual installments. Those installments, due January 1 and July 1 of each year, are based on statements furnished by the state about July 1 of the preceding year.

2. The minimum OMP&R components of the Delta Water Charge and the Transportation Charge are paid in 12 equal installments, which are due the first of each month and based on statements furnished by the state about July 1 of the preceding year.
3. The variable OMP&R component of the Transportation Charge is paid in varying monthly amounts and due the fifteenth day of the second month following actual water delivery. The charges are projected based on a unit charge per acre-foot established about July 1 of the preceding year. Those unit charges may be revised several times during the year to reflect current power costs and revenues. The unit charges are applied to actual monthly delivery quantities as determined by the state on or before the fifteenth day of the month following actual delivery.

Bases for Allocating Reimbursable Costs Among Contractors

This section includes information about the state's procedures for allocating reimbursable costs of project transportation facilities among contractors (see upper right portion of Figure 1 for diagram). Those costs do not include annual costs of Off-Aqueduct Power facilities, which are described in the section "Project Water Charges."

Transportation Capital and Minimum OMP&R Costs

Figure 3, "Repayment reaches and descriptions," on the next page, includes information about repayment reaches. The method for allocating reimbursable costs of the project's transportation facilities among contractors is based on those repayment reaches.

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 development.

Information about the derivation of ratios that represent the proportionate maximum use of each aqueduct reach by the respective contractors was included in Bulletin 132-70. The ratios in Bulletin 132-70 were subsequently revised for the (1) North Bay Aqueduct; (2) South Bay Aqueduct; (3) California Aqueduct from the Delta to the Coastal Branch; and (4) Coastal Branch.

Revised ratios for the first reach of the California Aqueduct and for the South Bay Aqueduct are included in Bulletin 132-72 and reflect certain contractual amendments regarding South Bay Aqueduct use executed in early 1972 (see pages 33-35 of Bulletin 132-73).

Bulletin 132-83 also included information about revised ratios for reaches in the Coastal Branch and in the California Aqueduct from the Delta to the Coastal Branch. Those revisions reflected a contract amendment with Santa Barbara County Flood Control and Water Conservation District that resulted in a reduction of its maximum annual entitlement from 57,700 acre-feet to 45,486 acre-feet.

Bulletin 132-86, page 170, included information about revised ratios for reaches of the North Bay Aqueduct. Those revisions reflect contract amendments executed with Solano County Water Agency in 1985 and with Napa County Flood Control and Water Conservation District in 1986.

Bulletin 132-89, Table B-1 and Table B-2, include information about a revision to the ratios for South Bay Aqueduct Reach 8. That revision reflects a contract amendment executed with Alameda County Water District in 1988.

Table B-1, Factors for Distributing Reach Capital Costs Among Contractors," and Table B-2, "Factors for Distributing Reach Minimum OMP&R Costs Among Contractors," include information about a redetermination of reach ratios currently applicable to reimbursable capital and minimum OMP&R costs. That redetermination includes the revisions previously described and reflects the consolidation of Castaic Lake Water Agency and Devil's Den Water District.



North Bay Aqueduct

1 Barker Slough through Fairfield/Vacaville Turnout
2 Fairfeild/Vacaville Turnout to Cordelia Forebay
3A Cordelia Forebay through Benicia and Vallejo turnouts
3B Cordelia Forebay through Turnout Reservoir

South Bay Aqueduct

1 Bethany Reservoir through Altamont Turnout
2 Altamont Turnout through Patterson Reservior
4 Patterson Reservoir to Del Valle Junction
5 Del Valle Junction through Lake Del Valle
6 Del Valle Junction through South Livermore Turnout
7 South Livermore Turnout through Vallecitos Turnout
8 Vallecitos Turnout through Alameda-Bayside Turnout
9 Alameda-Bayside Turnout through Santa Clara Terminal Facilities

Coastal Branch, California Aqueduct

31A Avenal Gap to Devil's Den Pumping Plant
33A Devil's Den Pumping Plant through San Luis ObispoPowerplant
34 San Luis Obispo Powerplant to Arroyo Grande
35 Arroyo Grande through Santa Maria Terminus

West Branch, California Aqueduct

29A Junction, West Branch, California Aqueduct through Oso Pumping Plant
29F Oso Pumping Plant through Quail Embankment
29G Quail Embankment through William E. Warne Powerplant
29H Pyramid Dam and Lake
29J Pyramid Lake through Castaic Powerplant
30 Castaic Dam and Lake

California Aqueduct

North San Joaquin Division

1 Delta through 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 through Milham Avenue
8D Milham Avenue through Avenal Gap
9 Avenal Gap through Twisselman Road
10A Twisselman Road through Lost Hills
11B Lost Hills to 7th Standard Road
12D 7th Standard Road through Elk Hills Road
12E Elk Hills Road through Tupman Road
13B Tupman Road to Buena Vista Pumping Plant
14A Buena Vista Pumping Plant through Santiago Creek
14B Santiago Creek through Old River Road
14C Old River Road to Wheeler Ridge Pumping Plant
15A Wheeler Ridge Pumping Plant to Ira J. Chrisman Wind Gap Pumping Plant
16A Ira J. Chrisman Wind Gap Pumping Plant to A. D. Edmonston Pumping Plant

California Aqueduct (cont.)

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, California Aqueduct

18A Junction, West Branch, California Aqueduct through Alamo Powerplant
19 Alamo Powerplant to Fairmont
19C Buttes Junction through Buttes Reservoir
20A Fairmont through 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 through Devil Canyon Powerplant
28G Devil Canyon Powerplant to Barton Road
28H Barton Road to Lake Perris
28J Perris Dam and Lake Perris

Fig. 3. Repayment reaches and descriptions

Requested excess capacity is omitted when deriving ratios applicable to capital costs because the capital costs for the excess capacity are paid on an incremental cost basis and not a proportionate-use basis. However, requested excess capacity is accounted for in the ratios applicable to minimum OMP&R costs.

Transportation Variable OMP&R Costs

Article 26(a) includes provisions to ensure that the variable OMP&R component of the Transportation Charge will result in a return to the state of those costs that are based on and vary with the amount of SWP water delivered. (The minimum OMP&R component results in a return of those operating costs that do not vary with deliveries.) According to Article 26(a), all such costs for a reach for a given year will be allocated among contractors in proportion to the actual annual use of that reach by the respective contractors.

Table B-3, "Power Cost and Credits and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recover Plant," includes a summary of the total variable OMP&R costs for each SWP pumping and power plant. Those variable costs consist of:

- 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 major plant machinery components with economic lives shorter than the project repayment period. Sinking fund payments for 1962 through 1979 were based on a schedule determined in 1970. Sinking fund payments for 1980 through 2035 are based on revised replacement schedules. That schedule was updated in 1986 and 1991. The Department periodically updates the replacement deposit schedule.

Table B-3 excludes amounts of plant capacity and energy costs associated with surplus water service after May 1, 1973. Prior to that date, surplus water service was charged the same unit variable OMP&R component as entitlement water service. The rate structure for surplus water service was significantly changed on May 1, 1973. Since then, capacity and energy costs for pumping surplus water have been allocated directly to those water contractors receiving that water service.

In 1991 the rate structure was again revised by contract amendment to provide for payment of costs through a melded power rate. Those revisions to surplus and unscheduled water charges are effective from the date of the amendments and are not applied to past charges.

Water Conveyance

Four tables in this appendix, B-4, B-5A, B-5B, and B-6, include information about the water conveyance quantities that form the basis of allocation of costs.

Table B-4, "Annual Entitlements to Project Water," includes the schedules of annual entitlements as set forth in Table A and Article 6(a) of each water supply contract. Table B-5A, "Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor," includes amounts of actual and projected entitlement water quantities delivered from each aqueduct reach to each contractor. Projected deliveries for 1993 through 2035 are based on contractors' requests for future water deliveries. The quantities included in Table B-5A also include nonproject water delivered to contractors and surplus water delivered prior to May 1, 1973. (For a comparison of historical deliveries with annual entitlements, see Table 6-3 in Chapter 6.)

Table B-5B, "Annual Water Quantities Delivered to Each Contractor," includes a summary of amounts of actual and projected annual entitlement water quantities delivered or to be delivered to each contractor. The quantities also include

amounts of nonproject water and surplus water delivered prior to May 1, 1973.

Table B-6, "Annual Water Quantities Conveyed Through Each Pumping and Power Recovery Plant of Project Transportation Facilities," includes a summation of the amounts of annual entitlement water quantities conveyed or to be conveyed through each aqueduct pumping plant or power plant for each of the following functions:

Deliveries—Water Supply. Water made available to contractors at down-aqueduct delivery structures, including 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 are charged the same variable OMP&R costs per acre-foot as the deliveries actually conveyed that year from the Delta.

The hypothetical increases in the 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, "Unit Variable OMP&R Component of Transportation Charge") may be applied to the total annual quantities delivered either from aqueduct reservoir storage or from the Delta.

Initial Fill Water. Water required for initial filling of down-aqueduct reaches and reservoirs or for repayment of preconsolidation water used during construction.

Deliveries—Recreation. Water delivered to down-aqueduct recreation developments or used for fish and wildlife mitigation or enhancement.

Operational Losses. Water lost through evaporation and seepage from all down-aqueduct reaches.

Reservoir Storage Changes. Water placed in down-aqueduct reservoir storage after initial filling of the reservoirs, including 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, "Variable OMP&R Costs to Be Reimbursed Through Variable OMP&R Component of Transportation Charge") that are allocable to storage accretions are assigned (included with) to the minimum OMP&R costs of the respective reservoirs. With one exception, "Reservoir Storage Changes" also includes SWP water placed into southern California groundwater storage in 1978 through 1982 (as positive amounts) and water withdrawn from storage and delivered to contractors in 1979, 1982, 1987, 1988, and 1989 (as negative amounts). The exception is Banks Pumping Plant, where groundwater additions and withdrawals are included in "Conservation Water."

Table B-6 also includes a summary of the following two amounts listed under the heading "Conservation Water" (Column 25):

1. Net annual water amounts stored and projected to be stored in San Luis Reservoir
2. Water lost and projected to be lost through evaporation and seepage from San Luis Reservoir and from the water conservation portion of the California Aqueduct

Conservation water includes initial fill water operational losses, and net annual storage changes associated with San Luis Reservoir (and the portion of the California Aqueduct that is allocated to conservation). The same allocation procedure outlined in the previous paragraphs for transportation facilities also applies to conservation facilities. Except in the case of releases from San Luis Reservoir for delivery to downstream contractors, hypothetical cost increases are added to the variable OMP&R cost to be reimbursed through the Transportation Charge and deducted from the minimum OMP&R costs to be reimbursed through the Delta Water Charge.

San Luis Reservoir is operated to conserve water for future delivery to downstream contractors. To account for costs associated with reservoir storage, those power and replacement costs of the Banks Pumping Plant (a joint transportation-conservation facility) that are allocated 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 of net storage withdrawal from San Luis Reservoir, a portion of the minimum OMP&R cost of the reservoir is transferred to the variable OMP&R cost of the Banks Pumping Plant. That transfer is equal to the variable OMP&R cost per acre-foot of delivery through the Banks Pumping Plant for that year, multiplied by the acre-feet of deliveries derived from San Luis Reservoir storage for that year. Table B-6 also includes amounts of nonproject water and surplus water delivered prior to May 1, 1973.

Bases for Reimbursable Costs

This section includes descriptions of the methods used to derive the costs allocated by the procedures outlined in the preceding section. A diagram of the cost derivation process may be found in the upper left quadrant of Figure 1.

The capital and OMP&R costs of all SWP facilities are allocated among the various project purposes according to the allocation percentages in Table 2, "Cost Allocation Factors." Those percentages are subject to revision in the future. The redeterminations in this appendix involve only the costs that are allocated to water supply and power generation.

Capital Costs

Capital costs used in the redetermination in this appendix reflect prices prevailing on December 31, 1991; future cost escalations will be reflected in subsequent bulletins.

Table B-7, "Reconciliation of Capital Costs Allocated to Water Supply and Power Generation for Years 1952 Though 2035," includes a reconciliation of estimated total capital costs of each project conservation facility and each project transportation facility.

Table B-8, "Capital Costs of Requested Delivery Structures to Be Built by State," includes information about costs incurred and projected to be incurred by the state in connection with each contractor's turnouts. Costs incurred by the state for both state-constructed and contractor-constructed delivery structures are paid directly by the contractors for which the structures are built. (The state incurs design review and construction inspection costs in connection with contractor-constructed turnouts.)

TABLE 2
Cost Allocation Factors
(Percentages)

Project Facilities	*Water Supply and Power Generation*		*All Other Purposes (Nonreimbursable)*	
	Capital Costs	*Minimum OMP&R Costs*	*Capital Costs*	*Minimum OMP&R Costs*
Project Conservation Facilities				
Frenchman Dam and Lake	21.5	0.0	78.5	100.0
Antelope Dam and Lake	0.0	0.0	100.0	100.0
Grizzly Valley Dam and Lake Davis	1.0	1.8	99.0	98.2
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
Transportation Facilities				
Grizzly Valley Pipeline	100.0	100.0	0.0	0.0
North Bay Aqueduct	100.0	100.0	0.0	0.0
South Bay Aqueduct:				
Del Valle Dam and Lake Del Valle	25.2	22.0	74.8 (b	78.0 (c
Remainder of South Bay Aqueduct	100.0	100.0	0.0	0.0
California Aqueduct:				
Delta to Dos Amigos Pumping Plant	96.6	96.7	3.4	3.3
Dos Amigos Pumping Plant to termini (excluding Coastal Branch)	94.3	96.9	5.7	3.1
Coastal Branch	100.0	100.0	0.0	0.0

a) Percentages indicated are applicable to the remaining costs of division after excluding costs allocated to flood control that are reimbursed by the federal government (22 percent of capital costs) and excluding specific power costs of Edward Hyatt and Thermalito powerplant and switchyards.

b) Percentage indicated consists of 48.0 percent of costs allocated to recreation and 26.8 percent, to flood control.

c) Percentage indicated consists of 44.9 percent of costs allocated to recreation and 33.1 percent, to flood control.

Table B-9, "Capital Costs of Requested Excess Peaking Capacity," includes a list of costs and payments for excess capacity built into SWP transportation facilities according to amendments to contracts with the Metropolitan Water District of Southern California (MWDSC), San Gabriel Valley Municipal Water District, and Antelope Valley-East Kern Water Agency as follows:

1. Additional costs incurred by the state for requested excess capacity

2. Advances by water contractors of funds for such costs
3. Credits for advances in excess of costs, which were applied to the respective contractors' installments of the capital cost component of the Transportation Charge in 1981

According to Amendment 2 of MWDSC's contract, 809 cfs of excess capacity originally was constructed in reaches of the West Branch at MWDSC's request. According to Amendment 7, that capacity was reclassified as basic capacity of SWP transportation facilities. Metropolitan paid $16.3 million as a prepayment of the capital cost component of the Transportation Charge in lieu of advancing funds for the original requested capacity.

Amendment 5 to MWDSC's contract requires that additional costs for modifications to the Santa Ana Valley Pipeline (required for enlargement of Lake Perris) are to be allocated to MWDSC and returned to the state through payments of the Transportation Charge. The additional costs to be repaid through MWDSC's capital cost component for the aqueduct reach from Devil Canyon Powerplant to Barton Road total about $6.7 million as indicated in Bulletin 132-72, page 98.

Table B-10, "Capital Costs of Each Aqueduct Reach to Be Reimbursed Through Capital Cost Component of Transportation Charge," includes amounts of the actual and projected annual capital costs of each aqueduct reach that will eventually be returned to the state, with interest, through contractors' payments of the capital cost component under the Transportation Charge and of debt service under the Devil Canyon-Castaic contract.

Annual Operating Costs

Annual operating costs allocable to water supply and power generation are returned to the state through the minimum and variable OMP&R components of Delta Water Charge and Transportation Charge and through a portion of the revenues from energy sales. All reimbursable operating costs of conservation facilities are included in the minimum OMP&R component of the Delta Water Charge.

Transportation and Devil Canyon-Castaic Contract Costs

Table B-11, "Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed Though Minimum OMP&R Component of Transportation Charge," includes a listing of the amounts of the actual and projected costs to be reimbursed through payments of (1) the minimum OMP&R component under the Transportation Charge; and (2) allocated operating costs according to provisions of the Devil Canyon-Castaic contract.

Amounts of the following seven types of operating costs are also included in Table B-11. Those amounts, incurred each year, do not vary with water quantities delivered to the contractors.

1. All direct labor charges for field operation and maintenance personnel, including associated indirect costs
2. A distributed share of general operating costs that cannot be identified solely with one facility or aqueduct reach
3. Electric power transmission and station service costs allocable to aqueduct pumping and power recovery plants
4. All costs for equipment, materials, and supplies and replacement of electronic control systems
5. Portions of power and replacement costs of all up-aqueduct pumping and power plants that are allocable to the annual conveyance of water (1) lost to evaporation and seepage from respective aqueduct reaches; or (2) placed into storage in respective reservoirs of the project transportation facilities (after initial fill)
6. Credits, which offset those costs in (2) above, for deliveries drawn from reservoir storage
7. Escalation of projected operating costs at 5 percent per year for 1992,1993 and 1994

Table B-12, "Variable OMP&R Costs to Be Reimbursed Through Variable OMP&R Component of Transportation Charge," includes amounts of the portions of the variable OMP&R costs in Table B-3 that are allocable to the water supply delivery quantities included in Table B-6 and reimbursed through payments of the variable OMP&R component of the Transportation Charge.

The following five adjustments are made to Table B-3 costs to derive Table B-12 costs:

1. A portion of the variable OMP&R costs of each plant is allocated to recreation. The amount allocated to recreation is allocated in proportion to the quantity of water conveyed through each plant each year for delivery to on-shore recreational developments.
2. That portion of variable plant costs attributable to the initial fill of aqueduct reaches is allocated to the joint capital costs of respective down-aqueduct reaches and reservoirs.
3. That portion of costs attributable to evaporation and seepage is allocated to the joint minimum OMP&R costs of appropriate down-aqueduct reaches and reservoirs.
4. Adjustments are made for additions or withdrawals from storage in aqueduct reservoirs. In years when water is added to storage in aqueduct reservoirs, the cost of conveying this water into storage is charged to the minimum OMP&R costs of the corresponding reservoir. The unit cost is equal to the variable OMP&R unit rate for the year the water is conveyed into storage. In years when storage in aqueduct reservoirs is decreased for the purpose of making deliveries, a credit is applied to the minimum OMP&R costs of the reservoir from which the storage is released. This credit is equal to the number of acre-feet of storage reduction times the variable OMP&R unit rate for the year storage is released.
5. That portion of costs attributable to pumping water to replace evaporation and seepage losses and for additions or withdrawals from storage in San Luis Reservoir is charged to the minimum OMP&R component of the Delta Water Rate.

The remaining costs are allocated to Transportation water supply and repaid by the contractors.

Conservation Capital and Operating Costs

Table B-13, "Capital and Operating Costs of Project Conservation Facilities to Be Reimbursed Through Delta Water Charge," includes a summary of actual and projected capital and operating costs of the initial project conservation facilities to be reimbursed through payments under (1) the Delta Water Charge; (2) Oroville power sales; and (3) Gianelli Generating Plant credits. Included in Table B-13 are credits applied to the reimbursable capital costs of the project conservation facilities according to negotiated settlements concerning the magnitude of incurred planning costs for the period 1952 through 1978.

Project Water Charges

This section includes information about the redetermination of past and projected components of the Transportation Charge for annual revision of Table C through Table G of each water contract. This section also includes information about the Water System Revenue Bond Surcharge and a description of the derivation of the unit Delta Water Rates.

A summary of equivalent unit charges for each acre-foot of entitlement water service is also included for each contractor and each aqueduct reach. A diagram of all calculations may be found in the lower half of Figure 1.

Transportation Charges

The accumulation of allocated costs of each aqueduct reach to each contractor forms the basis for the components of the Transportation Charge. Table B-14, "Capital Costs of Transportation Fa-

TABLE 3

Criteria for Amortizing Capital Costs of Transportation Facilities

Contractor	Year of Initial Payment (a
Alameda County Flood Control and Water Conservation District, Zone 7	1963 (b
Alameda County Water District	1963
Antelope Valley-East Kern Water Agency	1963
Castaic Lake Water Agency	1964
City of Yuba City (c	
Coachella Valley Water District	1964
County of Butte	
County of Kings	1968
Crestline-Lake Arrowhead Water Agency	1964
Desert Water Agency	1963 (d
Dudley Ridge Water District	1968 (e
Empire West Side Irrigation District	1968
Kern County Water Agency	
Agricultural Use	1968
Municipal and Industrial Use	1965
Littlerock Creek Irrigation District	1964
Mojave Water Agency	1964
Napa County Flood Control and Water Conservation District	1966
Oak Flat Water District	1968
Palmdale Water District	1964
Plumas County Flood Control and Water Conservation District	1970
San Bernardino Valley Municipal Water District	1963
San Gabriel Valley Municipal Water District	1963
San Gorgonio Pass Water Agency	1963
San Luis Obispo County Flood Control and Water Conservation District	1964 (f
Santa Barbara County Flood Control and Water Conservation District	1964
Santa Clara Valley Water District	1963
Solano County Water Agency	1973
The Metropolitan Water District of Southern California	1963
Tulare Lake Basin Water Conservation District	1968
Ventura County Flood Control District	1964

a) Allocated capital costs of transportation facilities amortized in equal annual installments unless otherwise noted.

b) Principal payments on each annual capital cost prior to 1971 delayed until calendar year 1972, except payments for 1963.

c) For Yuba City, Butte County, San Gabriel Valley Municipal Water District, and San Gorgonio Pass Water Agency, payments for Delta Water Charge only.

d) Payment deferred for 1963 and added to 1964 payment with accrued interest.

e) For Dudley Ridge Water District, Empire West Side Irrigation District, Kern County Water Agency (agricultural use), Oak Flat Water District, and Tulare Lake Basin Water Conservation District, according to Article 45 of the contracts for supply of agricultural water, capital costs of transportation facilities allocated to agricultural water supply are amortized by using an equivalent unit rate per acre-foot applied to the annual entitlements (Table B-4) through the project repayment period.

f) For San Luis Obispo Flood Control and Water Conservation District and Santa Barbara County Flood Control and Water Conservation District, all principal and interest payments for costs of Coastal Stub deferred until 1976.

cilities Allocated to Each Contractor," includes a summary of each contractor's share of the capital costs of aqueduct reaches presented in Table B-10. Those amounts are determined by applying proportionate-use ratios set forth in Table B-1 to the costs shown in Table B-10. The resulting allocated costs are set forth in Table C of the respective water supply contracts.

Prepayments of the capital cost component, required under MWDSC's Amendment 7, are included as negative capital costs in Table B-14 and in Table C of MWDSC's Statement of Charges for 1993. Solano County Water Agency, Empire West Side Irrigation District, and Castaic Lake Water Agency also prepaid capital costs (see Table B-14 footnotes).

Both Table B-14 and Table C of the six contracts for project water service below Devil Canyon Powerplant and Castaic Powerplant include the capital costs reimbursable under the Devil Canyon-Castaic contract.

Table B-15, "Capital; Cost Component of Transportation Charge for Each Contractor," includes a summary of the capital cost components of the Transportation Charge for each contractor for each year of the project's repayment period based on the amortization schedules included in Table 3, "Criteria for Amortizing Capital Costs of Transportation Facilities," and determined at the current Project Interest Rate of 4.621 percent per annum.

Those estimated components, subsequently adjusted for prior overpayments or underpayments, are included in Table D of the water supply contracts. Costs of excess capacity are billed separately and are not included in Table B-15. Table B-15 includes the debt service payments due from the six contractors down-aqueduct from Devil Canyon Powerplant and Castaic Powerplant according to terms of the Devil Canyon-Castaic contract.

Table B-16A, "Minimum OMP&R Component of Transportation Charge for Each Contractor," includes a summary of the minimum OMP&R components of the Transportation Charge for each year of the project's repayment period. Those estimated components, subsequently adjusted for prior overpayments or underpayments, are included in Table E of the respective contracts.

The total amounts included in Table B-16A are determined by applying the proportionate-use

ratios included in Table B-2 to the reach costs presented in Table B-11. Charges for off-aqueduct power facilities, which are included separately in Table B-16B, "Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities," are excluded in Table B-16A. Both Table B-16A and Table E for the six contractors down-aqueduct from Devil Canyon Powerplant and Castaic Powerplant include the portion of operating costs payable under the Devil Canyon-Castaic contract.

As part of operating agreements with the Department, Kern County Water Agency (KCWA) is billed for any additional operating costs caused by early installation of units by Berrenda Mesa Water District in Las Perillas Pumping Plant and Badger Hill Pumping Plant (see Bulletin 132-71, page 7). According to those agreements, the minimum OMP&R costs of Reach 31A are assigned directly to KCWA, with the remaining reach costs allocated by application of the proportionate-use ratios. See Table 4, "Minimum OMP&R Costs of Reach 31A Charged to Kern County Water Agency, 1969 Through 1996."

Table B-16B includes a projection of the annual charges for off-aqueduct power facilities allocated to each water contractor, adjusted for prior overpayments or underpayments of charges. Those charges are to repay all off-aqueduct power costs, including bond service, deposits for reserves, operation and maintenance costs, fuel costs, taxes, and insurance.

The General Bond Resolution, adopted October 1, 1979, requires that sufficient revenues be collected each year to repay all of those costs. In addition, an amount totaling 25 percent of the annual bond service is collected each year to ensure that sufficient funds are available to cover all annual costs. Any revenues collected and not needed during the year are refunded to the contractors in the next year.

Table 5, "Off-Aqueduct Power Facility Charges for 1991," on this page, and Table 6, "Credits Related to Deliveries of Purchased Water, 1991," on the next page, include a summation of off-aqueduct power facility charges for 1991.

TABLE 4

Minimum OMP&R Costs of Reach 31A Charged to Kern County Water Agency 1969 Through 1996

Year	*Direct Charge*	*Year*	*Direct Charge*
1969	$46,510	1983	$89,968
1970	46,302	1984	105,534
1971	140,072	1985	157,474
1972	95,016	1986	135,509
1973	72,452	1987	130,382
1974	100,688	1988	133,043
1975	127,456	1989	121,234
1976	138,501	1990	128,648
1977	120,749	1991	141,706
1978	157,638	1992	283,204
1979	121,207	1993	316,614
1980	150,715	1994	292,540
1981	74,759	1995	278,653
1982	82,696	1996	279,521
Total			**$4,068,791**

TABLE 5

Off-Aqueduct Power Facility Charges for 1991

Facility	*Charges*
Reid Gardner Powerplant	$98,479,492
Bottle Rock Powerplant	18,640,871
South Geysers Powerplant	7,945,343
Subtotal	$125,065,706
Less credits from Table 6	$51,403,058
Total	**$73,662,648**

Table 7, "Amounts of Projected Charges for Off-Aqueduct Power Facilities," on the next page, includes amounts of projected charges for off-aqueduct power facilities and amounts equal to 25 percent of annual bond service for 1992 and each year thereafter.

The annual charges for off-aqueduct power facilities are allocated among contractors in proportion to the electrical energy required to pump entitlement water for the year. The initial allocation for the statements of charges is based on estimates of energy to pump requested entitlement water deliveries.

An interim adjustment in the allocation of power costs may be made in May of each year based on April revisions in water delivery schedules for annual entitlement and updated cost estimates. An additional adjustment is made the fol-

TABLE 6

Credits Related to Deliveries of Purchased Water, 1991

Credits	
Off-Aqueduct power sales	$9,101,103
Credits related to delivery of purchased water	
Alameda County Flood Control and Water Conservation District, Zone 7	$21,693
Alameda County Water District	642,108
City and County of San Francisco	2,515,587
Crestline-Lake Arrowhead Water District	39,981
Department of Fish and Game	363,077
Dudley Ridge Water District	202,469
Kern County Water Agency	2,214,263
Napa County Flood Control and Water Conservation District	248,115
Oak Flat Water District	10,748
Santa Clara Valley Water District	2,562,056
Solano County Water Agency	35,968
Metropolitan Water District of Southern California	34,302,240
Westlands Water District	143,650
Total	**$51,403,058**

TABLE 7

Amounts of Projected Charges for Off-Aqueduct Power Facilities

Year	*Direct Charge Annual Cost*	*25 Percent Bond Service*
1992	$127,076,276	$13,680,632
1993	130,297,672	13,292,825
1994	133,301,947	13,289,880
1995	130,304,571	13,287,604
1996	134,303,492	13,287,389
1997	133,317,908	13,290,272
1998	128,302,388	13,275,318
1999	124,067,594	13,279,904
2000	114,433,702	13,248,260
2001	112,100,180	13,242,691
2002	107,697,525	13,239,694
2003	101,289,246	13,256,773
2004	95,986,161	13,254,491
2005	86,235,282	13,020,850
2006	83,885,027	13,031,332
2007	78,478,404	13,029,342
2008	72,010,888	13,027,174
2009	67,630,378	13,017,807
2010	59,841,088	13,017,683
2011	55,852,000	13,020,400
2012	50,751,828	13,080,101
2013	11,677,031	4,426,888
2014	23,259,390	4,443,478
2015	9,924,390	1,776,478
2016	4,890,015	78,003
2017	2,217,265	443,453
2018	2,216,515	443,303
2019	2,223,765	444,753
2020	2,232,015	446,403
2021	2,228,390	445,678
2022	2,233,796	446,759
2023	2,240,297	448,060
2024	4,630,122	926,025

lowing year based on actual entitlement water deliveries and actual costs for the year.

The energy required to pump each contractor's entitlement water is calculated using the kWh/acre-foot factors for the pumping plants upstream from the delivery turnout listed in Table 8, "Energy Required to Pump Entitlement Water." The amounts listed include transmission losses.

The data in Table B-17, "Unit Variable OMP&R Component of Transportation Charge," are derived from actual and projected total variable OMP&R costs for each acre foot of water conveyed through each aqueduct pumping plant and power plant for each year of the project repayment period.

Those data are derived according to the following procedure specified in Article 26(a) of the Standard Provisions 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 the projected variable OMP&R costs to be incurred for each reach will be returned to the state.
- 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 to the contractor downstream of the reach.

Data contained in Table B-17 have been derived by dividing costs in Table B-3 by quantities of water in Table B-6. However, certain costs included in Table B-3 for extra peaking service, which would otherwise constitute variable OMP&R costs, are assigned directly to contractors requesting this service (see Bulletin 132-71, page 21, and Water Service Contractors Council Memo No. 593, July 10, 1970). Those costs are excluded from unit charges included in Table B-17. See Table 9, "Amounts of Extra Peaking Charges by Year, Contractor, and Pumping Plant," for the amounts of extra peaking charges for additional power capacity.

The unit rates indicated in Table B-17 constitute the rate for the pumping plants and power plants listed. The cumulative rates constitute the total rate, cumulative from the Sacramento-San Joaquin Delta, and are applicable to deliveries from or downstream of the pumping plants and power plants. Extra peaking service costs are excluded.

Table B-18, "Variable OMP&R Component of Transportation Charge for Each Contractor," includes the variable OMP&R components of the transportation charge for each contractor for each year of the project's repayment period. Table B-18 is developed from the costs per acre-foot included in Table B-17 and the delivery quantities from each contractor from each reach as indicated in Table B-5A, plus any costs for extra peaking service. Those estimated components, subsequently adjusted for prior overpayments or underpayments, are included in Table F of the respective water supply contracts.

Table B-19, "Total Transportation Charge for Each Contractor," includes a summation of the annual transportation charges for each contractor (the sums of the corresponding amounts included in tables B-15, B-16A, B-16B, and B-18). Those estimated payments, subsequently adjusted for prior overpayments or underpayments, are set forth in Table G of the respective water supply contracts.

Both Table B-19 and Table G for the six contractors down-aqueduct from Devil Canyon Powerplant and Castaic Powerplant include amounts of debt service and operating cost payments due according to provisions of the Devil Canyon-Castaic Contract.

Delta Water Charges

Table B-20A, "Calculation of Delta Water Rates," represents the calculation of the Delta Water Rate for the initial conservation facilities applicable in 1993 and 1994 according to the amended Articles 22(e) and 22(g) of all 29 contracts. The Delta Water Rate was calculated at a project interest rate of 4.621 percent. That Delta Water Rate is used to compute future Delta Water charges included in Table B-21.

Table B-20B, "Delta Water Rates, by Facility" includes each component of the 1993 Delta Water rates from Table B-20A.

Table B-21, "Total Delta Water Charge for Each Contractor," includes a summary of the annual Delta Water Charge for each contractor. Table B-21 is developed by applying the total rate per acre-foot, as indicated in Table B-20A, to the amount of entitlement water for each contractor as indicated in Table B-4.

TABLE 8

Energy Required to Pump Entitlement Water

Pumping Plant	*kWh per Acre-Foot*	
	At Plant	*Cumulative from Delta*
Barker Slough	223	223
Cordelia-Benicia	434	657
Cordelia-Vallejo	178	401
Cordelia-Napa	563	786
Harvey O. Banks Delta	296	296
South Bay (including Del Valle)	869	1,165
Dos Amigos	138	434
Las Perillas	77	511
Badger Hill	200	711
Buena Vista	242	676
Wheeler Ridge	295	971
Ira J. Chrisman Wind Gap	639	1,610
A. D. Edmonston	2,236	3,846
Pearblossom	703	4,549
Oso	280	4,126

TABLE 9

Amounts of Extra Peaking Charges, by Year, Contractor, and Pumping Plant

Year	*Contractor*	*Pumping Plant*	
		Dos Amigos	*Las Perillas and Badger Hill*
1972	Kern County Water Agency	$9,553	$24,700
	Tulare Lake Basin Water Agency	10	
1973	Kern County Water Agency		6,016
1974	Kern County Water Agency		7,140
1975	Kern County Water Agency	494	6,397
1976	Kern County Water Agency		1,981
1978	Kern County Water Agency	41,832	3,772
	Dudley Ridge Water District	2,086	
	County of Kings	43	
	Kern County Water Agency	2,322	
1979	Kern County Water Agency		3,245

Water System Revenue Bond Surcharge

Table B-22, "Total Water System Revenue Bond Surcharge for Each Contractor," includes a summary of the Water System Revenue Bond (WSRB) Surcharge to the Delta Water Charge and the transportation capital cost component of each contractor. The surcharge included in Table B-22 includes the financing costs of WSRB Series B through E.

This surcharge is levied according to an amendment to the water supply contracts for repaying Water System Revenue Bond financing costs. All long-term water supply contractors have signed that amendment.

Total Water Charges

Table B-19, "Total Transportation and Delta Water Charge for Each Contractor," includes a summary of the total annual charges to each contractor (the sum of the Transportation Charge in Table B-19, the Delta Water Charge in Table B-21, and the Water System Revenue Bond Surcharge in Table B-22). The charges are unadjusted for prior overpayments or underpayments. The total Transportation Charge for each contractor is listed in Table B-19 and Table B-21.

Equivalent Total Water Charges

Table B-24, "Equivalent Unit Charge for Water Supply for Each Contractor," includes information about the Transportation Charge and Delta Water Charge in terms of the equivalent unit charge for each acre-foot of entitlement water now estimated to be delivered to the respective contractors.

Those equivalent charges, if applied to (1) each acre-foot of entitlement water delivered to date; (2) all surplus water delivered prior to May 1, 1973; and (3) all entitlement water now estimated to be delivered during the remainder of the project repayment period (Table B-5B) would provide the same principal sum at the end of the project's repayment period as annual payments to be made as part of the Delta Water Charge and Transportation Charge, plus interest at the Project Interest Rate.

The equivalent unit Delta Water charges included in Table B-24 are greater than those in Table B-20A because current estimates of entitlement water service are less for most contractors than the amounts indicated in Table B20-A.

Equivalent Water Costs by Reach

Table B-25, "Equivalent Unit Transportation Costs of Water Delivered from or Through Each Aqueduct Reach," includes a summation of the equivalent unit transportation cost of conveying entitlement water through respective aqueduct reaches of the Project Transportation Facilities.

Those unit costs provide the basis of charges assessed for (1) extra service (such as for delivery of entitlements down-aqueduct from a contractor's turnout) together with the Delta Water Charge per acre-foot, surplus water service to entities other than the 29 long-term water supply contractors; and (2) wheeling service to entities other than the long-term supply contractors.

An explanation of wheeling services in the California Aqueduct may be found at the end of this appendix.

The cumulative unit conveyance costs indicated for reaches in Table B-25 do not necessarily equal the equivalent unit transportation charges to contractors served from such reaches. The unit charges in Table B-24 account for the rate of water demand buildup and cost allocation factors of the individual contractors; however, the unit costs included in Table B-25 reflect the effect of melding the respective buildups and allocation criteria of all contractors whose entitlements are conveyed through a given reach. Table B-25 also includes surplus water prior to May 1, 1973.

East Branch Enlargement Facility Charges

Table B-26, "Capital Costs of Each Aqueduct Reach to Be Reimbursed Through Capital

Cost Component of East Branch Enlargement Transportation Charge," reflects the Department's projection of annual capital costs of the East Branch Enlargement facilities for each aqueduct reach. Those projections will be redetermined in future bulletins to include:

1. A reallocation of costs of constructing the present East Branch facilities between Alamo Powerplant and Silverwood Lake
2. A reallocation of costs of Silverwood Lake to reflect additional use as a result of East Branch Enlargement operation
3. Reallocation of costs of San Bernardino Tunnel to reflect redistribution of flow capacities necessary for the East Branch Enlargement facilities
4. Actual construction costs of the enlargement

The costs in items one through four will be recovered with interest through payments by the seven southern California water contractors participating in the enlargement, according to their amended water supply contracts. See Table 10, "Description of Reaches for East Branch Enlargement Facilities," and Table 11, "Determination of Factors for Distributing Capital and Minimum OMP&R Costs of East Branch Enlargement Facilities Among Participating Contractors," on the next page.

Table B-27, Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed Through Minimum OMP&R Component of East Branch Enlargement Transportation Charge," includes a listing of the projected minimum OMP&R costs for each reach of the enlargement to be repaid by the seven southern California contractors participating in the East Branch Enlargement.

Currently, Table B-27 includes only the amounts of estimated incremental minimum OMP&R costs attributable to the East Branch Enlargement. According to Article 49(e)(1), the contractors participating in the East Branch Enlargement will also share in the remaining minimum OMP&R costs of the affected reaches according to a formula to be developed by the Department in consultation with the affected contractors. Once the formula is developed, subsequent versions of this table will reflect the transfer of a share of the minimum OMP&R costs now included in Table B-11.

TABLE 10

Description of Reaches for East Branch Enlargement Facilities

Reach Number	*Description*
18A	Junction, West Branch, California Aqueduct, through Alamo Powerplant
19	Alamo Powerplant to Fairmont
20A	Fairmont through 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
23B	West Fork Mojave River to Silverwood Lake (excluding Mojave Siphon Powerplant facilities)
23C	Mojave Siphon Powerplant facilities
24	Cedar Springs Dam and Silverwood Lake
25	Silverwood Lake to South Portal, San Bernardino Tunnel
26A	South Portal, San Bernardino Tunnel through Devil Canyon Powerplant
26B	Devil Canyon Powerplant Bypass

Table B-28, "Capital Costs of East Branch Enlargement Facilities Allocated to Each Contractor," includes a summary of the amounts of each participating contractor's share of the estimated capital costs of the East Branch Enlargement. Table B-29, "Capital Cost Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor," includes a summary of the amounts of the annual capital cost components for the East Branch Enlargement Transportation Charge for each contractor participating in the project.

Table B-30, "Minimum OMP&R Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor," includes a summary of the amounts of the minimum OMP&R components of the East Branch Enlargement Transportation Charge for each participating contractor for each year of the project repayment period.

Table B-31, "Total East Branch Enlargement Facilities Transportation Charge for Each Contractor," includes a summary of the amounts of the annual East Branch Enlargement Transportation charges for each participating contractor

TABLE 11

Determination of Factors for Distributing Capital and Minimum OMP&R Costs of East Branch Enlargement Facilities Among Participating Contractors

Reach Number	Antelope Valley-East Kern Water Agency	Coachella Valley Water District	Desert Water Agency	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	Metropolitan Water District of Southern California	Total
Share of Enlargement Capacity (cfs)								
18A		151	13	136	6		1200	1506
19		151	13	136	6		1200	1506
20A	35	151	13	136	6		1200	1541
20B	35	151	13	136	6		1200	1541
21	35	151	13	136			1200	1535
22A	35	151	13	136			1200	1535
22B		151	13	136			1200	1500
23B		184	67	212			1200	1663
23C		184	67				1200	1451
24		190	78				1200	1468
25		193	83					
26A		193	83			63	1200	1539
26B						63	1200	1539
							300	300
Factors for Distributing Capital and Minimum OMP&R Costs of East Branch Enlargement Facilities (flow ratios)								
18A	0.00000000	0.10026560	0.00863214	0.09030544	0.00398406	0.00000000	0.79681276	1.00000000
19	0.00000000	0.10026560	0.00863214	0.09030544	0.00398406	0.00000000	0.79681276	1.00000000
20A	0.02271252	0.09798832	0.00843608	0.08825438	0.00389358	0.00000000	0.77871512	1.00000000
20B	0.02271252	0.09798832	0.00843608	0.08825438	0.00389358	0.00000000	0.77871512	1.00000000
21	0.02280130	0.09837134	0.00846906	0.08859935	0.00000000	0.00000000	0.78175895	1.00000000
22A	0.02280130	0.09837134	0.00846906	0.08859935	0.00000000	0.00000000	0.78175895	1.00000000
22B	0.00000000	0.10066667	0.00866667	0.09066667	0.00000000	0.00000000	0.79999999	1.00000000
23B	0.00000000	0.11064342	0.04028863	0.12748046	0.00000000	0.00000000	0.72158749	1.00000000
23C	0.00000000	0.12680910	0.04617505	0.00000000	0.00000000	0.00000000	0.82701585	1.00000000
24	0.00000000	0.12942779	0.05313351	0.00000000	0.00000000	0.00000000	0.81743870	1.00000000
25	0.00000000	0.12540611	0.05393112	0.00000000	0.00000000	0.04093567	0.77972710	1.00000000
26A	0.00000000	0.12540611	0.05393112	0.00000000	0.00000000	0.04093567	0.77972710	1.00000000
26B	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	1.00000000	1.00000000

(the sums of the corresponding amounts included in tables B-29 and B-30).

Surplus and Other Water Services

Surplus and unscheduled water has been delivered from 1968 through 1991, except during the drought years of 1977, 1988, and 1989. Table B-32, "Annual Surplus and Unscheduled Water Deliveries," includes the quantities of surplus and unscheduled water delivered to long-term contractors during the period of May 1, 1973, through December 31, 1991.

Table B-33, "Power Costs for Pumping Surplus Water," includes the amounts of the costs for power that have been incurred by the state at each pumping plant associated with surplus water deliveries included in Table B-32.

Table B-34, "Power, Replacement, and Administrative Charges for Surplus Water Deliveries," includes the amounts of the actual charges to each contractor for delivery of the surplus water quantities included in Table B-32. The method of determining those charges is described in Bulletin 132-77, page 117.

Wheeling Services in the California Aqueduct

When SWP has additional capability to move nonproject water through the California Aqueduct, services can include pumping, transporting (wheeling), and, if needed, storing in San Luis Reservoir.

In 1975 and 1976, nine 20-year wheeling agreements were signed with the U.S. Bureau of Reclamation (USBR) and nine San Joaquin Valley agencies. Those agreements provide for wheeling Central Valley Project (CVP) water through SWP facilities to the Cross Valley Canal in Kern County. Additional agreements provide for storage, generally in cases when water cannot be wheeled directly from the Delta to the user on a demand basis. In addition, through separate annual agreements, SWP may provide wheeling to federal water contractors. For all agreements to wheel CVP water, CVP provides the water and electrical power.

For the most part, rates for wheeling and storing water are developed from information included in Appendix B. Wheeling rates are calculated from Appendix B tables used in developing contractors' charges for the year the water is wheeled. Wheeling rates for 1992 were developed from Appendix B tables in Bulletin 132-91.

Annual wheeling rates are developed from the following four sources:

1. *Table B-25.* Capital and minimum OMP&R equivalent unit transportation costs of water for the aqueduct reaches used.
2. *Table B-20B.* That portion of the Delta Water Rate associated with capital and minimum costs of California Aqueduct reaches 1, 2A, 2B, and 3. For SWP purposes, a portion of costs for these reaches is allocated to SWP contractors as part of the Delta Water Rate. Those costs are added to wheeling rates because they reflect the total costs of constructing and maintaining these reaches, irrespective of the SWP repayment system.
3. *Variable replacement costs.* The Department charges a fixed rate for every acre-foot of water going through SWP pumping plants to provide funds for eventual replacement of equipment. Wheeling is through the Banks Pumping Plant and sometimes through the Dos Amigos Pumping Plant. For 1992, the rates for Banks Pumping Plant is $0.25 and for Dos Amigos, $0.31. Rates are revised periodically.
4. *Fish agreement costs.* On December 30, 1986, the Department of Water Resources and the Department of Fish and Game (DFG) entered into an agreement to provide a means to offset specific fish losses at the Banks Pumping Plant. Specific fish losses are calculated each year; those calculations are used to develop payment amounts for a fund to pay fishery program costs. Those costs are then recalculated on an acre-foot basis by the Department and reallocated to water users based on acre-feet of pumped water. Wheeling charges are based on estimates of the maximum number of fish likely to be lost each year due to pumping in the Delta. (See Chapter 13 for additional information about the agreement between the Department and DFG).

During May, June, and July, SWP operates under Delta export limitations as a condition of obtaining water rights permits. When deliveries from the California Aqueduct are requested during key summer months, some Cross Valley Canal contractors or contractors with annual wheeling agreements may wish to use SWP's share of water stored in San Luis Reservoir.

Advance deliveries are made from SWP water stored in San Luis Reservoir provided that USBR agrees to replace the water later in the year. The charge for using the San Luis Reservoir is equal to the San Luis Reservoir portion of the Delta Water Rate as indicated in Table B-20B

plus the estimated value of the net energy costs to replace water in the San Luis Reservoir.

Surplus and Unscheduled Water Administrative Charges

The costs associated with administering the surplus and unscheduled water programs are divided into the five following categories. The costs are updated annually, and both programs are administered separately. (See Chapter 5 for additional information about surplus and unscheduled water).

Category 1, Setup Costs. Activities include setting up the initial surplus or unscheduled water program, receiving and verifying surplus water requests, preparing annual surplus or unscheduled water contracts, and determining availability of surplus water.

Category 2, Determination of Costs. Activities include either preparing letters notifying all surplus water contractors or verbally notifying all unscheduled water contractors of the maximum charge for water each month and determining final delivery amounts and charges.

Category 3, Schedule Revision Costs. This cost is applicable only to the surplus water program. Activities include analyzing revised operation studies and preparing revised delivery schedules.

Category 4, Delivery Billing Costs. Activities include analyzing delivery data from Division of Operations and Maintenance field divisions, updating data summaries, and preparing bills monthly. The costs associated with scheduling deliveries each month for unscheduled water is included in the delivery billing costs.

Category 5, Computer Program Development Costs. Activities include developing computer programs to allocate available surplus or unscheduled water among contractors and determining the power charge for pumping surplus or unscheduled water. Those costs are not incurred annually.

Tables for Determining Water Charges

TABLE B-1

Factors for Distributing Reach Capital Costs Among Contractors

Reach No.	Reach Description	NORTH BAY AREA		SOUTH BAY AREA				Total
		Napa County FC&WCD	Solano County WA	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Future Contractor	
	NORTH BAY AQUEDUCT							
1	Barker Slough thru Fairfield/Vacaville Turnout	0.29667896	0.70332104					1.00000000
2	Fairfield/Vacaville Turnout to Cordelia Forebay	0.38414552	0.61585448					1.00000000
3A	Cordelia Forebay thru Benicia and Vallejo Turnouts		1.00000000					1.00000000
3B	Cordelia Forebay thru Napa Turnout Reservoir	1.00000000						1.00000000
	SOUTH BAY AQUEDUCT							
1	Bethany Reservoir thru Altamont Turnout			0.22599612	0.20663021	0.49237700	0.07499667	1.00000000
2	Altamont Turnout thru Patterson Reservoir			0.22599658	0.20663059	0.49237783	0.07499500	1.00000000
4	Patterson Reservoir to Del Valle Junction			0.19504795	0.21450017	0.51113249	0.07931939	1.00000000
5	*Del Valle Junction thru Lake Del Valle*			0.14436367	0.12972254	0.33715573	0.38875806	1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.14599918	0.21144710	0.50574745	0.13680627	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout				0.25176680	0.60218448	0.14604872	1.00000000
8	Vallecitos Turnout thru Alameda-Bayside Turnout				0.27934645	0.72065355		1.00000000
9	Alameda-Bayside Turnout thru Santa Clara Terminal *Facilities*					1.00000000		1.00000000
	CALIFORNIA AQUEDUCT							
1	Delta thru Bethany Reservoir			0.00954737	0.00872917	0.02080118	0.00342507	N/A

Reach No.	Reach Description	CENTRAL COASTAL AREA		SOUTHERN CALIFORNIA AREA				
		San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Antelope Valley–East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley Water District	Crestline–Lake Arrowhead Water Agency	Desert Water Agency
	CALIFORNIA AQUEDUCT							
1	Delta thru Bethany Reservoir	0.00533010	0.00983337	0.02939084	0.01285827	0.00528315	0.00133612	0.00871300
2A	Bethany Reservoir to Orestimba Creek	0.00557213	0.01027988	0.03072531	0.01343201	0.00552068	0.00139620	0.00910474
2B	Orestimba Creek to O'Neill Forebay	0.00557824	0.01029119	0.03075915	0.01345351	0.00552831	0.00139814	0.00911733
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557719	0.01028923	0.03075332	0.01345294	0.00552772	0.00139798	0.00911637
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557607	0.01028717	0.03074719	0.01345233	0.00552710	0.00139784	0.00911536
5	Panoche Creek to Five Points	0.00557467	0.01028462	0.03073954	0.01345157	0.00552633	0.00139763	0.00911409
6	Five Points to Arroyo Pasajero	0.00557257	0.01028074	0.03072799	0.01345042	0.00552517	0.00139733	0.00911216
7	Arroyo Pasajero to Kettleman City	0.00557189	0.01027949	0.03072428	0.01345006	0.00552480	0.00139723	0.00911154
8C	Kettleman City thru Milham Avenue	0.00557103	0.01027792	0.03071961	0.01344960	0.00552432	0.00139712	0.00911076
8D	Milham Avenue thru Avenal Gap	0.00568611	0.01049020	0.03135418	0.01373353	0.00563986	0.00142632	0.00930130
9	Avenal Gap thru Twisselman Road			0.03426625	0.01356094	0.00616886	0.00156011	0.01017373
10A	Twisselman Road thru Lost Hills			0.03481391	0.01377767	0.00626946	0.00158556	0.01033963
11B	Lost Hills to 7th Standard Road			0.03835043	0.01517717	0.00691699	0.00174933	0.01140749
12D	7th Standard Road thru Elk Hills Road			0.04031661	0.01595523	0.00727790	0.00184059	0.01200265
12E	Elk Hills Road thru Tupman Road			0.04037074	0.01597665	0.00728878	0.00184332	0.01202059
13B	Tupman Road to Buena Vista Pumping Plant			0.04379882	0.01733322	0.00791595	0.00200194	0.01305492
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04599268	0.01820137	0.00831952	0.00210399	0.01372049
14B	Santiago Creek thru Old River Road			0.04682530	0.01853084	0.00847388	0.00214303	0.01397505
14C	Old River Road to Wheeler Ridge Pumping Plant			0.04825217	0.01909545	0.00873768	0.00220973	0.01441013
15A	Wheeler Ridge Pumping Plant to Chrisman Pumping Plant			0.04905609	0.01941356	0.00888679	0.00224744	0.01465600
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.05089794	0.02014241	0.00922722	0.00233351	0.01521742
17E	Edmonston Pumping Plant to Porter Tunnel			0.05329388	0.02109050	0.00967107	0.00244575	0.01594937
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05340725	0.02113537	0.00969176	0.00245098	0.01598349
18A	Junction, West Branch, Calif. Aqueduct thru Alamo Pwp.			0.13238112		0.02399391	0.00606795	0.03957043
19	Alamo Powerplant to Fairmont			0.13237766		0.02399451	0.00606811	0.03957141
19C	Buttes Junction thru Buttes Reservoir			1.00000000				
20A	Fairmont thru 70th Street West			0.06847931		0.02576425	0.00651573	0.04249001
20B	70th Street West to Palmdale			0.02276024		0.02702917	0.00683555	0.04457607
21	*Palmdale to Littlerock Creek*			0.02318952		0.02754716	0.00696651	0.04543034
22A	Littlerock Creek to Pearblossom Pumping Plant			0.01181870		0.02794143	0.00706621	0.04608043
22B	Pearblossom Pumping Plant to West Fork Mojave River					0.02827552	0.00715074	0.04663153
23	West Fork Mojave River to Silverwood Lake					0.00324449	0.00818122	0.00535117
24	Cedar Springs Dam and Silverwood Lake					0.01024605	0.01251569	0.01690478
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 P. P.				0.03544337			
29F	Oso Pumping Plant thru Quail Embankment				0.03544339			
29G	Quail Embankment thru Warne Powerplant				0.03544339			
29H	Pyramid Dam and Lake				0.02817144			
29J	Pyramid Lake thru Castaic Powerplant				0.03544338			
30	Castaic Dam and Lake				0.02927284			
31A	Avenal Gap to Devil's Den Pumping Plant	0.10560301	0.19482503		0.07364766			
33A	Devil's Den Pumping Plant thru San Luis Obispo Powerplant	0.35150791	0.64849209					
34	San Luis Obispo Powerplant to Arroyo Grande	0.24688802	0.75311198					
35	Arroyo Grande thru Santa Maria Terminus	0.18022521	0.81977479					

TABLE B-1

Factors for Distributing Reach Capital Costs Among Contractors (Continued)

Reach No.	SAN JOAQUIN VALLEY AREA							
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
				Municipal and Industrial	Agricultural			
	CALIFORNIA AQUEDUCT							
1	0.01707770	0.00088678	0.00254693	0.02741768	0.30629913	0.00090695	0.00167121	0.03504975
2A	0.01781031	0.00092482	0.00266258	0.02864263	0.31945188	0.00094747	0.00174288	0.03655331
2B	0.01785838	0.00092731	0.00266550	0.02868743	0.32030556	0.00094896		0.03665201
3	0.01786337	0.00092757	0.00266499	0.02868589	0.32039254	0.00094892		0.03666225
4	0.01786863	0.00092785	0.00266446	0.02868428	0.32048398	0.00094886		0.03667303
5	0.01787517	0.00092819	0.00266380	0.02868227	0.32059816	0.00094879		0.03668649
6	0.01788508	0.00092870	0.00266279	0.02867923	0.32077093	0.00094868		0.03670685
7	0.01788826	0.00092887	0.00266246	0.02867825	0.32082633	0.00094864		0.03671338
8C	0.01789228	0.00092909	0.00266205	0.02867702	0.32089625	0.00094859		0.03672162
8D	0.01828779		0.00271703	0.02928147	0.32798200			0.01820857
9				0.03204523	0.32739538			
10A				0.03257442	0.31658608			
11B				0.03597398	0.24684668			
12D				0.03787171	0.20804762			
12E				0.03793198	0.20695175			
13B				0.01458796	0.16600071			
14A				0.00620338	0.13319181			
14B				0.00632023	0.11741558			
14C				0.00651962	0.09039633			
15A				0.00663252	0.07516317			
16A				0.00688973	0.04028829			
17E				0.00212516				
31A			0.05046240		0.57546190			

Reach No.	SOUTHERN CALIFORNIA AREA (continued)								Total
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino 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	
1	0.00049180	0.01101147	0.00369131	0.02362857	0.00650354	0.00398392	0.43929350	0.00429212	1.00000000
2A	0.00051413	0.01151136	0.00385891	0.02469101	0.00679699	0.00416304	0.45921072	0.00448701	1.00000000
2B	0.00051469	0.01152409	0.00386317	0.02472511	0.00680570	0.00416880	0.45973548	0.00449194	1.00000000
3	0.00051461	0.01152193	0.00386244	0.02472246	0.00680478	0.00416835	0.45965407	0.00449108	1.00000000
4	0.00051451	0.01151965	0.00386167	0.02471968	0.00680380	0.00416787	0.45956848	0.00449019	1.00000000
5	0.00051440	0.01151681	0.00386070	0.02471620	0.00680259	0.00416730	0.45946161	0.00448907	1.00000000
6	0.00051419	0.01151251	0.00385926	0.02471095	0.00680076	0.00416640	0.45929991	0.00448738	1.00000000
7	0.00051413	0.01151113	0.00385879	0.02470927	0.00680016	0.00416612	0.45924807	0.00448685	1.00000000
8C	0.00051405	0.01150938	0.00385821	0.02470716	0.00679941	0.00416576	0.45918261	0.00448616	1.00000000
8D	0.00052466	0.01174718	0.00393793	0.02522383	0.00694100	0.00425288	0.46868533	0.00457883	1.00000000
9	0.00057339	0.01283841	0.00430367	0.02758959	0.00758975	0.00465175	0.51227887	0.00500407	1.00000000
10A	0.00058254	0.01304366	0.00437246	0.02803943	0.00771262	0.00472760	0.52049091	0.00508405	1.00000000
11B	0.00064171	0.01436906	0.00481665	0.03093503	0.00850448	0.00521581	0.57349473	0.00560046	1.00000000
12D	0.00067463	0.01510596	0.00506361	0.03254889	0.00894541	0.00548790	0.60297374	0.00588755	1.00000000
12E	0.00067553	0.01512626	0.00507040	0.03259749	0.00895830	0.00549608	0.60379667	0.00589546	1.00000000
13B	0.00073290	0.01641098	0.00550099	0.03540212	0.00972547	0.00596896	0.65516902	0.00639604	1.00000000
14A	0.00076961	0.01723325	0.00577656	0.03720681	0.01021819	0.00627322	0.68807273	0.00671639	1.00000000
14B	0.00078354	0.01754538	0.00588113	0.03789703	0.01040613	0.00638960	0.70057530	0.00683798	1.00000000
14C	0.00080743	0.01808019	0.00606036	0.03907670	0.01072763	0.00658850	0.72199174	0.00704634	1.00000000
15A	0.00082089	0.01838154	0.00616135	0.03974336	0.01090913	0.00670088	0.73406357	0.00716371	1.00000000
16A	0.00085171	0.01907194	0.00639271	0.04126559	0.01132404	0.00695754	0.76170731	0.00743264	1.00000000
17E	0.00089182	0.01997003	0.00669365	0.04325018	0.01186455	0.00729213	0.79767940	0.00778251	1.00000000
17F	0.00089372	0.02001251	0.00670788	0.04334270	0.01188988	0.00730773	0.79937767	0.00779906	1.00000000
18A	0.00221525	0.04960424	0.01662680	0.10730448	0.02944860	0.01809192	0.57469530		1.00000000
19	0.00221522	0.04960300	0.01662640	0.10730707	0.02944876	0.01809230	0.57469556		1.00000000
19C									1.00000000
20A	0.00237800	0.05324853	0.01784830	0.11522152	0.03161798	0.01942666	0.61700971		1.00000000
20B	0.00249470	0.05586076	0.01872390	0.12087843	0.03316986	0.02038045	0.64729087		1.00000000
21	0.00254199	0.05692053		0.12319480	0.03380324	0.02077093	0.65963498		1.00000000
22A		0.05773082		0.12495766	0.03428605	0.02106816	0.66905054		1.00000000
22B		0.05842136		0.12645207	0.03469614	0.02132008	0.67705256		1.00000000
23				0.14467451	0.03969010	0.02439237	0.77446614		1.00000000
24				0.22243002	0.04339444	0.02843498	0.66607404		1.00000000
25				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
26A				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
28G				0.05126137			0.94873863		1.00000000
28H							1.00000000		1.00000000
28J							1.00000000		1.00000000
29A							0.95147783	0.01307880	1.00000000
29F							0.95147785	0.01307876	1.00000000
29G							0.95147785	0.01307876	1.00000000
29H							0.96278381	0.00904475	1.00000000
29J							0.95147787	0.01307875	1.00000000
30							0.96212388	0.00860328	1.00000000
31A									1.00000000
33A									1.00000000
34									1.00000000
35									1.00000000

TABLE B-2

Factors for Distributing Reach Minimum OMP&R Costs Among Contractors

Reach No.	Reach Description	NORTH BAY AREA		SOUTH BAY AREA				Total
		Napa County FC&WCD	Solano County WA	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Future Contractor	
	NORTH BAY AQUEDUCT							
1	Barker Slough thru Fairfield/Vacaville Turnout	0.27960541	0.72039459					1.00000000
2	Fairfield/Vacaville Turnout to Cordelia Forebay	0.38414552	0.61585448					1.00000000
3A	Cordelia Forebay thru Benicia and Vallejo Turnouts		1.00000000					1.00000000
3B	Cordelia Forebay thru Napa Turnout Reservoir	1.00000000						1.00000000
	SOUTH BAY AQUEDUCT							
1	Bethany Reservoir thru Altamont Turnout			0.22599612	0.20663021	0.49237700	0.07499667	1.00000000
2	Altamont Turnout thru Patterson Reservoir			0.22599658	0.20663059	0.49237783	0.07499500	1.00000000
4	Patterson Reservoir to Del Valle Junction			0.19504795	0.21450017	0.51113249	0.07931939	1.00000000
5	Del Valle Junction thru Lake Del Valle			0.14436367	0.12972254	0.33715573	0.38875806	1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.14599918	0.21144710	0.50574745	0.13680627	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout				0.25176680	0.60218448	0.14604872	1.00000000
8	Vallecitos Turnout thru Alameda-Bayside Turnout				0.27934645	0.72065355		1.00000000
9	Alameda-Bayside Turnout thru Santa Clara Terminal Facilities					1.00000000		1.00000000
	CALIFORNIA AQUEDUCT							
1	Delta thru Bethany Reservoir			0.00954737	0.00872917	0.02080118	0.00342507	N/A

Reach No.	Reach Description	CENTRAL COASTAL AREA		SOUTHERN CALIFORNIA AREA				
		San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley Water District	Crestline-Lake Arrowhead Water Agency	Desert Water Agency
	CALIFORNIA AQUEDUCT							
1	Delta thru Bethany Reservoir	0.00533010	0.00983337	0.02939084	0.01285827	0.00528315	0.00133612	0.00871300
2A	Bethany Reservoir to Orestimba Creek	0.00557213	0.01027988	0.03072531	0.01343201	0.00552068	0.00139620	0.00910474
2B	Orestimba Creek to O'Neill Forebay	0.00557824	0.01029119	0.03075915	0.01345351	0.00552831	0.00139814	0.00911733
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557719	0.01028923	0.03075332	0.01345294	0.00552772	0.00139798	0.00911637
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557607	0.01028717	0.03074719	0.01345233	0.00552710	0.00139784	0.00911536
5	Panoche Creek to Five Points	0.00557467	0.01028462	0.03073954	0.01345157	0.00552633	0.00139763	0.00911409
6	Five Points to Arroyo Pasajero	0.00557257	0.01028074	0.03072799	0.01345042	0.00552517	0.00139733	0.00911216
7	Arroyo Pasajero to Kettleman City	0.00557189	0.01027949	0.03072428	0.01345006	0.00552480	0.00139723	0.00911154
8C	Kettleman City thru Milham Avenue	0.00551596	0.01017632	0.03041581	0.01329997	0.00546583	0.00138232	0.00901430
8D	Milham Avenue thru Avenal Gap	0.00562824	0.01038343	0.03103491	0.01357628	0.00557838	0.00141078	0.00919992
9	Avenal Gap thru Twisselman Road			0.03387464	0.01340600	0.00609344	0.00154104	0.01004936
10A	Twisselman Road thru Lost Hills			0.03440598	0.01361627	0.00619088	0.00156569	0.01021004
11B	Lost Hills to 7th Standard Road			0.03783014	0.01497132	0.00681674	0.00172398	0.01124216
12D	7th Standard Road thru Elk Hills Road			0.03972579	0.01572148	0.00716403	0.00181179	0.01181489
12E	Elk Hills Road thru Tupman Road			0.03977669	0.01574162	0.00717426	0.00181437	0.01183175
13B	Tupman Road to Buena Vista Pumping Plant			0.04307711	0.01704769	0.00777681	0.00196675	0.01282547
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04517714	0.01787870	0.00816225	0.00206423	0.01346114
14B	Santiago Creek thru Old River Road			0.04596983	0.01819238	0.00830887	0.00210130	0.01370294
14C	Old River Road to Wheeler Ridge Pumping Plant			0.04732690	0.01872938	0.00855917	0.00216459	0.01411577
15A	Wheeler Ridge Pumping Plant to Chrisman Pumping Plant			0.04808935	0.01903108	0.00870025	0.00220027	0.01434839
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.04983435	0.01972161	0.00902198	0.00228161	0.01487897
17E	Edmonston Pumping Plant to Porter Tunnel			0.05209597	0.02061656	0.00943985	0.00238729	0.01556809
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05220390	0.02065927	0.00945949	0.00239225	0.01560048
18A	Junction, West Branch, Calif. Aqueduct thru Alamo Pwp.			0.13238112		0.02399391	0.00606795	0.03957043
19	Alamo Powerplant to Fairmont			0.13237766		0.02399451	0.00606811	0.03957141
19C	Buttes Junction thru Buttes Reservoir			1.00000000				
20A	Fairmont thru 70th Street West			0.06847931		0.02576425	0.00651573	0.04249001
20B	70th Street West to Palmdale			0.02276024		0.02702917	0.00683555	0.04457607
21	Palmdale to Littlerock Creek			0.02318952		0.02754716	0.00696651	0.04543034
22A	Littlerock Creek to Pearblossom Pumping Plant			0.01181870		0.02794143	0.00706621	0.04608043
22B	Pearblossom Pumping Plant to West Fork Mojave River					0.02827552	0.00715074	0.04663153
23	West Fork Mojave River to Silverwood Lake					0.00324449	0.00818122	0.00535117
24	Cedar Springs Dam and Silverwood Lake					0.01024605	0.01251569	0.01690478
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 P. P.			0.00302472	0.03533617			
29F	Oso Pumping Plant thru Quail Embankment			0.00302551	0.03533615			
29G	Quail Embankment thru Warne Powerplant				0.03544339			
29H	Pyramid Dam and Lake				0.02817144			
29J	Pyramid Lake thru Castaic Powerplant				0.03544338			
30	Castaic Dam and Lake				0.02927284			
31A	Avenal Gap to Devil's Den Pumping Plant	0.10560301	0.19482503		0.07364766			
33A	Devil's Den Pumping Plant thru San Luis Obispo Powerplant	0.35150791	0.64849209					
34	San Luis Obispo Powerplant to Arroyo Grande	0.24688802	0.75311198					
35	Arroyo Grande thru Santa Maria Terminus	0.18022521	0.81977479					

TABLE B-2

Factors for Distributing Reach Minimum OMP&R Costs Among Contractors (Continued)

Reach No.	SAN JOAQUIN VALLEY AREA							
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
				Municipal and Industrial	Agricultural			
	CALIFORNIA AQUEDUCT							
1	0.01707770	0.00088678	0.00254693	0.02741768	0.30629913	0.00090695	0.00167121	0.03504975
2A	0.01781031	0.00092482	0.00266258	0.02864263	0.31945188	0.00094747	0.00174288	0.03655331
2B	0.01785838	0.00092731	0.00266550	0.02868743	0.32030556	0.00094896		0.03665201
3	0.01786337	0.00092757	0.00266499	0.02868589	0.32039254	0.00094892		0.03666225
4	0.01786863	0.00092785	0.00266446	0.02868428	0.32048398	0.00094886		0.03667303
5	0.01787517	0.00092819	0.00266380	0.02868227	0.32059816	0.00094879		0.03668649
6	0.01788508	0.00092870	0.00266279	0.02867923	0.32077093	0.00094868		0.03670685
7	0.01788826	0.00092887	0.00266246	0.02867825	0.32082633	0.00094864		0.03671338
8C	0.01764479	0.00091624	0.00263575	0.02836054	0.31647868	0.00093812		0.03621361
8D	0.01802770		0.00268939	0.02894888	0.32333939			0.01794960
9				0.03163713	0.32219659			
10A				0.03214916	0.31143611			
11B				0.03543138	0.24223373			
12D				0.03725540	0.20386623			
12E				0.03731203	0.20277371			
13B				0.01432141	0.16226809			
14A				0.00608155	0.12998083			
14B				0.00619239	0.11450333			
14C				0.00638131	0.08804967			
15A				0.00648796	0.07316084			
16A				0.00673069	0.03915469			
17E				0.00207245				
31A			0.05046240		0.57546190			

Reach No.	SOUTHERN CALIFORNIA AREA (continued)								Total
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino 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	
1	0.00049180	0.01101147	0.00369131	0.02362857	0.00650354	0.00398392	0.43929350	0.00429212	1.00000000
2A	0.00051413	0.01151136	0.00385891	0.02469101	0.00679699	0.00416304	0.45921072	0.00448701	1.00000000
2B	0.00051469	0.01152409	0.00386317	0.02472511	0.00680570	0.00416880	0.45973548	0.00449194	1.00000000
3	0.00051461	0.01152193	0.00386244	0.02472246	0.00680478	0.00416835	0.45965407	0.00449108	1.00000000
4	0.00051451	0.01151965	0.00386167	0.02471968	0.00680380	0.00416787	0.45956848	0.00449019	1.00000000
5	0.00051440	0.01151681	0.00386070	0.02471620	0.00680259	0.00416730	0.45946161	0.00448907	1.00000000
6	0.00051419	0.01151251	0.00385926	0.02471095	0.00680076	0.00416640	0.45929991	0.00448738	1.00000000
7	0.00051413	0.01151113	0.00385879	0.02470927	0.00680016	0.00416612	0.45924807	0.00448685	1.00000000
8C	0.00050897	0.01139543	0.00382005	0.02444566	0.00672913	0.00412167	0.46607904	0.00444181	1.00000000
8D	0.00051932	0.01162742	0.00389782	0.02494901	0.00686714	0.00420655	0.47563362	0.00453222	1.00000000
9	0.00056683	0.01269152	0.00425448	0.02725243	0.00749914	0.00459491	0.51939559	0.00494690	1.00000000
10A	0.00057571	0.01289064	0.00432121	0.02768814	0.00761823	0.00466838	0.52763907	0.00502449	1.00000000
11B	0.00063300	0.01417390	0.00475129	0.03048687	0.00838406	0.00514026	0.58065667	0.00552450	1.00000000
12D	0.00066474	0.01488434	0.00498939	0.03203990	0.00880866	0.00540209	0.61004998	0.00580129	1.00000000
12E	0.00066559	0.01490343	0.00499577	0.03208558	0.00882077	0.00540978	0.61088592	0.00580873	1.00000000
13B	0.00072082	0.01614026	0.00541032	0.03478013	0.00955838	0.00586410	0.66195198	0.00629068	1.00000000
14A	0.00075596	0.01692733	0.00567410	0.03650376	0.01002933	0.00615469	0.69455166	0.00659733	1.00000000
14B	0.00076922	0.01722449	0.00577366	0.03715939	0.01020799	0.00626523	0.70691589	0.00671309	1.00000000
14C	0.00079194	0.01773312	0.00594412	0.03827874	0.01051330	0.00645397	0.72804676	0.00691126	1.00000000
15A	0.00080471	0.01801891	0.00603990	0.03890949	0.01068518	0.00656030	0.73994080	0.00702257	1.00000000
16A	0.00083391	0.01867297	0.00625909	0.04034814	0.01107764	0.00680287	0.76710412	0.00727736	1.00000000
17E	0.00087177	0.01952067	0.00654315	0.04221660	0.01158699	0.00711787	0.80235512	0.00760762	1.00000000
17F	0.00087358	0.01956112	0.00655671	0.04230442	0.01161106	0.00713268	0.80402166	0.00762338	1.00000000
18A	0.00221525	0.04960424	0.01662680	0.10730448	0.02944860	0.01809192	0.57469530		1.00000000
19	0.00221522	0.04960300	0.01662640	0.10730707	0.02944876	0.01809230	0.57469556		1.00000000
19C									1.00000000
20A	0.00237800	0.05324853	0.01784830	0.11522152	0.03161798	0.01942666	0.61700971		1.00000000
20B	0.00249470	0.05586076	0.01872390	0.12087843	0.03316986	0.02038045	0.64729087		1.00000000
21	0.00254199	0.05692053		0.12319480	0.03380324	0.02077093	0.65963498		1.00000000
22A		0.05773082		0.12495766	0.03428605	0.02106816	0.66905054		1.00000000
22B		0.05842136		0.12645207	0.03469614	0.02132008	0.67705256		1.00000000
23				0.14467451	0.03969010	0.02439237	0.77446614		1.00000000
24				0.22243002	0.04339444	0.02843498	0.66607404		1.00000000
25				0.11825184	0.03722720	0.01993915	0.82458181		1.00000000
26A				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
28G				0.05126137			0.94873863		1.00000000
28H							1.00000000		1.00000000
28J							1.00000000		1.00000000
29A							0.94859988	0.01303923	1.00000000
29F							0.94859915	0.01303919	1.00000000
29G							0.95147785	0.01307876	1.00000000
29H							0.96278381	0.00904475	1.00000000
29J							0.95147787	0.01307875	1.00000000
30							0.96212388	0.00860328	1.00000000
31A									1.00000000
33A									1.00000000
34									1.00000000
35									1.00000000

TABLE B-3

Power Cost and Credits and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant

(in dollars)

Calendar Year	NORTH BAY AQUEDUCT			SOUTH BAY AQUEDUCT	CALIFORNIA AQUEDUCT					
	Reach 1	Reach 3A	Reach 3B	Reach 1 (b	Reach 1	Reach 4	Reach 14A	Reach 15A	Reach 16A	Reach 17E
	Barker Slough Pumping P.	Cordelia Pumping P. Solano	Cordelia Pumping P. Napa (a	South Bay & Del Valle Pumping P.	Banks Pumping P.	Dos Amigos Pumping P.	Buena Vista Pumping P.	Wheeler Ridge Pumping P.	Chrisman Pumping P.	Edmonston Pumping P.
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	38,130	0	0	0	0	0	0
1963	0	0	0	58,871	0	0	0	0	0	0
1964	0	0	0	75,239	0	0	0	0	0	0
1965	0	0	0	146,297	0	0	0	0	0	0
1966	0	0	0	198,643	0	0	0	0	0	0
1967	0	0	0	229,629	26,982	0	0	0	0	0
1968	0	0	7,128	342,761	1,324,777	239,505	0	0	0	0
1969	0	0	8,557	279,751	855,304	143,403	0	0	0	0
1970	0	0	13,666	448,383	368,508	217,820	2,940	0	0	0
1971	0	0	10,626	422,057	597,946	229,306	156,540	23,021	18,577	29,067
1972	0	0	14,430	623,564	1,110,833	575,291	348,668	187,825	385,935	1,263,087
1973	0	0	14,453	485,534	918,234	493,776	511,904	514,487	883,725	3,139,297
1974	0	0	17,508	510,873	997,269	560,461	556,968	595,585	1,048,196	3,700,573
1975	0	0	14,801	382,106	1,353,916	561,089	650,781	707,038	1,394,918	4,853,538
1976	0	0	20,867	589,007	916,728	596,426	701,061	687,677	1,414,902	4,917,776
1977	0	0	22,640	541,803	653,304	191,906	170,689	173,496	337,890	1,130,422
1978	0	0	21,670	568,381	3,871,011	723,989	1,009,556	968,744	1,782,668	6,281,786
1979	0	0	16,240	622,517	3,431,278	1,019,021	848,639	830,839	1,666,505	5,741,609
1980	0	0	19,936	523,445	2,267,876	1,097,085	1,007,198	997,877	2,018,282	6,671,880
1981	0	0	23,859	630,690	2,553,431	1,984,530	1,392,248	1,390,323	3,001,888	9,863,443
1982	0	0	12,080	411,857	3,827,839	1,469,486	1,342,169	1,394,369	2,804,202	9,789,297
1983	0	0	2,666	86,254	1,579,173	427,302	438,513	419,658	755,558	2,270,437
1984	0	0	4,516	247,330	1,974,005	1,027,553	805,301	755,735	1,461,935	4,511,753
1985	0	0	10,007	507,149	3,398,162	1,756,321	1,627,933	1,655,070	3,366,693	11,212,883
1986	0	0	15,394	842,206	7,675,563	2,684,319	2,516,878	2,565,847	5,311,848	18,004,889
1987	0	0	27,269	890,242	6,104,650	2,609,752	2,291,858	2,326,454	4,591,541	15,060,706
1988	14,331	35,856	27,241	888,030	7,164,458	2,707,477	2,652,923	2,686,898	5,344,573	17,588,093
1989	34,063	61,786	27,065	1,196,442	10,807,023	4,154,602	4,106,602	4,150,732	8,739,344	29,265,092
1990	57,861	105,406	43,140	1,884,199	11,099,523	4,563,726	5,914,365	6,197,591	14,001,168	49,503,198
1991	21,424	31,341	3,787	468,515	3,412,560	838,349	873,393	936,763	2,120,357	7,438,058
1992	25,988	23,268	17,905	678,779	9,457,399	3,348,164	3,409,599	3,889,906	7,596,952	25,690,141
1993	137,923	114,721	89,976	2,914,738	27,189,780	11,045,416	12,545,206	14,380,954	29,925,237	104,814,946
1994	161,310	127,877	105,414	3,247,295	28,944,375	11,928,713	13,603,328	15,599,061	32,490,697	113,846,996
1995	211,352	150,404	140,311	4,498,393	37,796,207	15,897,080	18,189,460	20,907,831	43,854,840	154,273,881
1996	227,723	151,506	145,514	4,425,451	38,187,469	15,525,058	17,525,397	20,130,206	42,187,587	148,346,657
1997	240,176	157,849	158,833	4,597,760	41,573,529	16,381,379	18,803,969	21,498,190	44,976,186	157,849,772
1998	246,206	160,709	168,213	4,595,908	40,043,711	16,225,082	18,529,065	21,163,407	44,251,343	155,262,314
1999	256,883	165,949	180,580	4,681,901	38,271,127	16,600,547	19,031,357	21,750,554	45,508,019	159,723,683
2000	288,934	184,135	209,441	5,127,748	41,550,205	18,112,484	20,913,775	23,914,775	50,118,199	176,049,966
2001	293,112	184,435	219,771	5,136,120	41,809,269	18,200,730	21,054,546	24,084,030	50,483,503	177,351,836
2002	299,495	186,296	230,617	5,187,918	42,219,093	18,324,840	21,175,773	24,216,576	50,761,431	178,328,619
2003	306,045	187,863	242,795	5,231,552	42,312,025	18,425,724	21,271,513	24,320,332	50,978,782	179,091,672
2004	315,003	190,847	256,793	5,314,680	43,314,110	18,797,060	21,772,917	24,907,434	52,235,856	183,554,989
2005	368,194	225,521	296,569	5,900,412	47,938,060	20,973,666	24,568,925	28,144,432	59,145,738	208,050,298
2006	372,075	225,686	305,308	5,904,740	48,223,985	20,967,170	24,548,833	28,118,635	59,089,065	207,846,791
2007	378,835	227,228	317,865	5,945,086	48,519,170	21,094,329	24,697,932	28,288,494	59,449,987	209,123,784
2008	386,816	229,026	333,059	5,992,133	48,984,813	21,272,233	24,924,496	28,551,088	60,010,467	211,110,428
2009	393,528	230,425	345,710	6,028,713	49,191,715	21,367,714	25,024,424	28,661,906	60,244,350	211,934,516
2010	406,981	236,536	362,832	6,133,670	50,305,104	21,940,672	25,843,188	29,629,751	62,322,537	219,323,119
2011	432,417	248,119	395,077	6,434,001	52,935,076	22,963,957	27,089,660	31,061,048	65,370,770	230,116,366
2012	438,799	249,061	408,822	6,458,442	52,951,237	23,020,614	27,143,794	31,119,896	65,493,544	230,547,545
2013	448,078	251,207	427,801	6,514,100	53,490,794	23,218,686	27,389,984	31,403,890	66,098,928	232,692,278
2014	456,711	252,810	446,007	6,555,677	53,497,102	23,311,287	27,475,196	31,495,332	66,289,846	233,361,831
2015	465,031	255,338	462,344	6,558,812	53,935,297	23,362,799	27,561,112	31,599,377	66,514,588	234,163,165
2016	470,443	255,489	477,707	6,562,683	53,878,030	23,431,006	27,675,243	31,737,315	66,813,077	235,227,440
2017	488,782	262,359	506,463	6,739,178	55,215,360	24,004,067	28,357,399	32,517,309	68,471,752	241,096,657
2018	494,163	262,328	522,473	6,738,374	55,104,620	23,994,304	28,341,369	32,498,031	68,430,029	240,948,260
2019	500,384	262,566	539,361	6,744,464	55,450,279	24,042,305	28,415,250	32,586,280	68,620,163	241,625,372
2020	500,491	259,796	551,055	6,673,300	54,572,431	23,811,593	28,140,660	32,272,312	67,952,520	239,263,065
2021	501,569	259,803	553,848	6,673,520	54,613,526	23,803,073	28,125,199	32,253,270	67,911,346	239,115,516
2022	501,718	259,881	554,013	6,675,506	54,898,929	23,823,547	28,157,766	32,292,472	67,995,693	239,416,480
2023	501,821	259,934	554,126	6,676,874	54,664,499	23,827,566	28,162,412	32,297,990	68,007,236	239,456,988
2024	501,326	259,678	553,580	6,670,285	54,780,518	23,757,784	28,050,766	32,163,618	67,717,305	238,423,739
2025	501,986	260,019	554,308	6,679,063	54,838,946	23,840,979	28,182,234	32,321,183	68,057,530	239,635,726
2026	500,506	259,253	552,675	6,659,382	54,701,447	23,763,641	28,082,163	32,204,997	67,809,251	238,755,347
2027	500,588	259,296	552,764	6,660,463	54,676,335	23,773,609	28,097,558	32,223,654	67,849,260	238,898,016
2028	500,584	259,293	552,761	6,660,416	54,674,425	23,772,759	28,096,349	32,221,887	67,845,739	238,885,247
2029	500,816	259,413	553,016	6,663,499	54,693,270	23,830,951	28,193,697	32,339,935	68,100,705	239,795,081
2030	500,144	259,066	552,275	6,654,566	54,622,408	23,757,067	28,079,745	32,203,561	67,806,784	238,747,882
2031	500,314	259,154	552,462	6,656,818	54,646,087	23,771,899	28,101,669	32,229,622	67,863,209	238,948,204
2032	500,186	259,087	552,321	6,655,121	54,678,923	23,761,144	28,085,568	32,210,495	67,821,926	238,802,184
2033	500,260	259,126	552,403	6,656,105	54,659,800	23,771,843	28,102,966	32,231,462	67,867,186	238,962,484
2034	500,776	259,393	552,972	6,662,968	54,791,110	23,796,961	28,134,301	32,267,665	67,944,349	239,236,085
2035	500,941	259,479	553,155	6,665,167	55,888,725	23,799,763	28,135,484	32,268,351	67,945,434	239,240,087
TOTAL	17,653,092	10,045,618	17,560,841	272,631,686	2,206,980,673	949,313,760	1,106,738,374	1,264,344,543	2,656,679,651	9,339,172,337

a) Power costs for the period 1968 through 1987 are for an interim facility.
b) The costs of Del Valle Pumping Plant are combined with those of South Bay Pumping Plant to simplify the cost allocations.

TABLE B-3

Power Cost and Credits and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant (Continued)

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)									GRAND TOTAL
	Reach 18A Alamo Powerplant	Reach 22B Pearblossom Pumping Plant	Reach 23 Mojave Siphon Powerplant	Reach 26A Devil Canyon Powerplant	Reach 29A Oso Pumping Plant	Reach 29G Warne Powerplant	Reach 29J Castaic Powerplant	Reach 31A Las Perillas and Badger Hill umping Plant	Reach 33A Devil's Den, Bluestone and Polonio PP's and San Luis Obispo Pwp.	
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	38,130
1963	0	0	0	0	0	0	0	0	0	58,871
1964	0	0	0	0	0	0	0	0	0	75,239
1965	0	0	0	0	0	0	0	0	0	146,297
1966	0	0	0	0	0	0	0	0	0	198,643
1967	0	0	0	0	0	0	0	6,517	0	263,128
1968	0	0	0	0	0	0	0	120,278	0	2,034,449
1969	0	0	0	0	0	0	0	79,620	0	1,366,635
1970	0	0	0	0	0	0	0	137,449	0	1,188,766
1971	0	64,807	0	0	1,696	0	0	171,389	0	1,725,032
1972	0	103,584	0	(3,112)	180,005	0	(385,696)	240,651	0	4,645,065
1973	0	615,309	0	(931,697)	274,450	0	(1,193,216)	128,730	0	5,854,986
1974	0	595,646	0	(939,072)	322,440	0	(1,823,397)	129,345	0	6,272,395
1975	0	616,327	0	(1,101,445)	457,487	0	(2,835,302)	101,109	0	7,156,363
1976	0	914,440	0	(1,520,412)	314,669	0	(2,512,021)	151,211	0	7,192,331
1977	0	318,880	0	(1,216,060)	53,119	0	(1,701,284)	85,538	0	762,343
1978	0	1,801,373	0	(3,298,247)	251,373	0	(2,361,377)	197,217	0	11,818,144
1979	0	1,813,744	0	(3,335,069)	157,934	0	(2,749,296)	209,088	0	10,273,049
1980	0	1,866,161	0	(3,508,195)	170,688	0	(2,721,871)	182,996	0	10,593,358
1981	0	2,187,538	0	(3,769,972)	514,832	0	(3,248,819)	186,954	0	16,710,945
1982	0	1,686,830	0	(3,172,286)	625,856	(973,898)	(3,476,126)	182,271	0	15,923,946
1983	0	360,441	0	(5,796,266)	234,922	(1,387,177)	(3,932,510)	(10,064)	0	(4,551,093)
1984	0	555,171	0	(7,768,115)	508,003	(2,299,250)	3,454,892	103,552	0	5,342,381
1985	0	1,261,984	0	(10,516,348)	1,089,424	(8,517,062)	(19,689,709)	160,283	0	(12,677,210)
1986	(1,061,528)	2,537,593	0	(12,055,166)	1,348,148	(6,331,000)	(11,466,465)	311,378	0	12,899,904
1987	(1,002,243)	1,896,202	0	(10,586,702)	1,394,844	(6,691,232)	(11,630,604)	274,220	0	7,556,957
1988	(761,357)	2,493,363	0	(14,654,108)	1,511,414	(7,361,824)	(12,678,827)	236,397	0	7,894,938
1989	(791,073)	4,265,818	0	(18,688,631)	2,147,430	(8,822,367)	(15,535,849)	290,780	0	25,408,859
1990	(841,078)	6,682,720	0	(21,042,786)	2,959,535	(11,225,401)	(20,510,539)	426,931	0	49,819,559
1991	(357,621)	861,970	0	(6,921,017)	535,619	(5,319,482)	(9,116,935)	8,934	0	(4,163,985)
1992	(608,424)	3,595,332	0	(13,874,724)	2,053,900	(8,378,030)	(14,596,100)	170,026	0	22,500,081
1993	(1,173,046)	15,821,115	0	(29,849,960)	6,552,982	(15,196,307)	(26,661,100)	698,168	0	153,350,749
1994	(1,193,498)	16,866,974	0	(29,589,458)	7,201,614	(15,574,372)	(27,296,100)	752,612	0	171,222,838
1995	(4,509,818)	22,829,311	(9,101,184)	(30,937,908)	9,542,382	(17,347,022)	(27,871,300)	983,556	0	239,507,776
1996	(4,288,698)	21,133,498	(9,121,920)	(29,476,208)	9,472,383	(17,591,247)	(28,504,800)	1,224,465	1,653,003	231,353,044
1997	(4,359,578)	22,232,137	(9,479,904)	(29,562,108)	10,153,022	(18,348,122)	(29,776,550)	1,570,507	3,434,970	252,102,017
1998	(4,411,858)	22,187,122	(9,801,984)	(29,751,983)	9,853,841	(17,904,447)	(28,894,700)	1,569,874	3,433,188	246,925,011
1999	(4,419,098)	22,728,447	(9,449,280)	(30,055,008)	10,169,782	(18,118,372)	(29,313,450)	1,599,248	3,516,009	252,828,878
2000	(4,488,178)	25,053,172	(9,944,640)	(30,061,233)	11,058,841	(18,091,297)	(29,254,800)	1,688,260	3,945,420	286,375,207
2001	(4,505,298)	25,179,810	(9,794,208)	(30,150,983)	11,166,433	(18,211,697)	(29,496,650)	1,691,017	3,953,484	288,649,260
2002	(4,483,698)	25,314,166	(9,752,928)	(30,021,483)	11,222,115	(18,143,922)	(29,355,100)	1,708,071	4,003,374	291,421,253
2003	(4,434,418)	25,287,132	(9,749,088)	(29,998,633)	11,317,449	(18,151,897)	(29,371,050)	1,722,437	4,045,398	293,035,633
2004	(4,515,258)	26,102,111	(10,011,648)	(29,887,008)	11,523,458	(18,198,022)	(29,463,300)	1,749,806	4,125,462	302,085,290
2005	(4,713,738)	29,803,024	(10,453,152)	(31,052,833)	12,732,652	(18,207,572)	(29,476,800)	1,888,672	4,689,603	350,821,671
2006	(4,689,538)	29,671,645	(10,309,728)	(30,952,433)	12,758,955	(18,226,747)	(29,517,050)	1,890,057	4,693,770	350,921,219
2007	(4,683,298)	29,835,818	(10,277,472)	(30,972,258)	12,840,565	(18,225,297)	(29,509,150)	1,902,972	4,732,629	353,687,219
2008	(4,701,098)	30,172,647	(10,375,200)	(30,876,583)	12,938,875	(18,226,372)	(29,512,400)	1,918,030	4,777,941	357,910,399
2009	(4,676,178)	30,236,383	(10,168,608)	(31,172,958)	13,005,854	(18,217,172)	(29,493,300)	1,929,739	4,813,173	359,679,934
2010	(4,824,818)	31,366,833	(10,588,512)	(31,438,333)	13,227,154	(18,219,397)	(29,505,150)	1,963,336	4,914,261	373,399,764
2011	(4,812,338)	32,858,492	(10,319,424)	(31,380,858)	13,848,655	(18,223,922)	(29,512,250)	2,059,469	5,203,521	396,767,836
2012	(4,796,658)	32,857,791	(10,164,384)	(31,466,833)	13,894,986	(18,221,097)	(29,503,950)	2,067,292	5,227,062	397,725,963
2013	(4,802,778)	33,202,687	(10,213,824)	(31,496,333)	14,005,356	(18,216,972)	(29,495,150)	2,085,108	5,280,666	402,284,506
2014	(4,762,898)	33,138,252	(10,206,720)	(31,450,783)	14,101,485	(18,227,272)	(29,517,200)	2,098,416	5,320,710	403,635,789
2015	(4,813,978)	33,399,570	(10,528,416)	(31,410,658)	14,094,904	(18,214,597)	(29,490,100)	2,099,420	5,323,731	405,337,739
2016	(4,858,338)	33,688,822	(10,585,152)	(31,624,358)	14,109,249	(18,221,897)	(29,503,650)	2,100,659	5,327,460	406,961,228
2017	(4,833,458)	34,461,427	(10,538,496)	(31,516,783)	14,472,497	(18,221,847)	(29,503,600)	2,157,154	5,497,449	419,633,669
2018	(4,821,618)	34,398,676	(10,540,032)	(31,473,833)	14,479,537	(18,229,997)	(29,521,100)	2,156,897	5,496,675	419,279,156
2019	(4,846,418)	34,647,069	(10,493,088)	(31,418,633)	14,462,175	(18,201,722)	(29,460,250)	2,158,846	5,502,540	421,136,943
2020	(4,857,818)	34,252,903	(10,637,088)	(31,790,608)	14,349,032	(18,234,472)	(29,528,350)	2,136,066	5,433,999	415,120,887
2021	(4,855,658)	34,234,635	(10,591,392)	(31,607,283)	14,338,058	(18,222,397)	(29,504,950)	2,136,137	5,434,209	415,172,029
2022	(4,857,738)	34,306,488	(10,674,144)	(31,681,983)	14,345,860	(18,226,897)	(29,512,650)	2,136,773	5,436,123	415,847,837
2023	(4,856,178)	34,321,864	(10,698,720)	(31,565,758)	14,344,390	(18,222,022)	(29,503,600)	2,137,210	5,437,440	415,804,072
2024	(4,826,858)	34,052,549	(10,548,384)	(31,508,583)	14,326,464	(18,218,172)	(29,495,050)	2,135,102	5,431,095	414,226,762
2025	(4,835,298)	34,352,816	(10,632,000)	(31,693,683)	14,353,347	(18,225,797)	(29,512,850)	2,137,912	5,439,549	416,255,970
2026	(4,827,338)	34,208,350	(10,668,768)	(31,615,333)	14,308,309	(18,221,547)	(29,503,450)	2,131,611	5,420,595	414,521,091
2027	(4,829,298)	34,246,143	(10,682,304)	(31,652,183)	14,310,450	(18,221,547)	(29,503,450)	2,131,957	5,421,633	414,712,944
2028	(4,832,578)	34,253,198	(10,681,728)	(31,660,708)	14,306,159	(18,217,347)	(29,494,650)	2,131,943	5,421,591	414,695,340
2029	(4,870,098)	34,505,488	(10,780,992)	(31,742,508)	14,316,453	(18,220,847)	(29,502,800)	2,132,929	5,424,558	416,192,566
2030	(4,871,618)	34,241,676	(10,604,256)	(31,751,333)	14,295,465	(18,219,572)	(29,497,500)	2,130,070	5,415,954	414,322,384
2031	(4,871,218)	34,282,872	(10,707,264)	(31,709,658)	14,303,072	(18,222,872)	(29,503,650)	2,130,791	5,418,123	414,649,634
2032	(4,861,498)	34,247,475	(10,678,944)	(31,686,908)	14,299,618	(18,222,572)	(29,503,800)	2,130,247	5,416,488	414,467,061
2033	(4,874,778)	34,302,230	(10,664,448)	(31,665,808)	14,297,369	(18,218,797)	(29,494,850)	2,130,562	5,417,436	414,792,551
2034	(4,874,938)	34,317,533	(10,550,976)	(31,718,633)	14,322,899	(18,228,297)	(29,518,250)	2,132,759	5,424,048	415,452,725
2035	(4,891,258)	34,493,053	(10,266,720)	(31,506,558)	14,252,837	(18,154,022)	(29,365,150)	2,133,464	5,426,166	417,378,398
TOTAL	(201,537,086)	1,340,188,637	(422,037,120)	(1,480,303,401)	570,384,771	(842,982,504)	(1,400,436,051)	85,852,421	195,730,506	15,685,980,748

TABLE B-4

Annual Entitlements to Project Water

(in acre-feet)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA (a				CENTRAL COASTAL AREA		
	(b Napa County FC&WCD	Solano County WA	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	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	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	0	500	500	22,000	24,800	88,000	134,800	1,000	946	1,946
1981	0	650	650	23,000	26,000	88,000	137,000	1,000	1,813	2,813
1982	0	800	800	24,000	27,200	88,000	139,200	2,000	3,626	5,626
1983	0	950	950	25,000	28,400	88,000	141,400	3,000	5,439	8,439
1984	0	1,100	1,100	26,000	29,600	88,000	143,600	4,500	8,198	12,698
1985	0	1,250	1,250	27,000	30,800	88,000	145,800	7,500	13,638	21,138
1986	0	1,400	1,400	28,000	32,100	88,000	148,100	10,000	18,210	28,210
1987	0	1,550	1,550	29,000	33,300	88,000	150,300	12,500	22,704	35,204
1988	5,745	9,726	15,471	30,000	34,500	88,000	152,500	15,500	28,222	43,722
1989	6,195	18,420	24,615	31,000	35,700	90,000	156,700	20,000	36,342	56,342
1990	6,940	21,250	28,190	32,000	36,900	92,000	160,900	25,000	45,486	70,486
1991	7,290	22,300	29,590	34,000	38,400	94,000	166,400	25,000	45,486	70,486
1992	7,840	24,170	32,010	36,000	39,900	96,000	171,900	25,000	45,486	70,486
1993	8,490	26,130	34,620	38,000	41,400	98,000	177,400	25,000	45,486	70,486
1994	9,135	28,080	37,215	40,000	42,000	100,000	182,000	25,000	45,486	70,486
1995	9,780	34,250	44,030	42,000	42,000	100,000	184,000	25,000	45,486	70,486
1996	10,425	37,800	48,225	44,000	42,000	100,000	186,000	25,000	45,486	70,486
1997	11,065	38,250	49,315	46,000	42,000	100,000	188,000	25,000	45,486	70,486
1998	11,710	38,710	50,420	46,000	42,000	100,000	188,000	25,000	45,486	70,486
1999	12,330	39,170	51,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2000	13,050	39,620	52,670	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2001	13,665	40,080	53,745	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2002	14,185	40,540	54,725	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2003	14,800	41,000	55,800	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2004	15,400	41,450	56,850	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2005	16,000	41,500	57,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2006	16,450	41,550	58,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2007	17,000	41,600	58,600	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2008	17,650	41,650	59,300	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2009	18,200	41,700	59,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2010	18,750	41,750	60,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2011	19,400	41,800	61,200	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2012	19,950	41,850	61,800	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2013	20,600	41,900	62,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2014	21,250	41,950	63,200	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2015	21,900	42,000	63,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2016	22,500	42,000	64,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2017	23,100	42,000	65,100	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2018	23,700	42,000	65,700	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2019	24,300	42,000	66,300	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2020	24,900	42,000	66,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2021	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2022	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2023	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2024	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2025	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2026	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2027	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2028	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2029	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2030	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2031	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2032	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2033	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2034	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2035	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
TOTAL	878,695	1,848,396	2,727,091	2,494,607	2,459,248	6,510,783	11,464,638	1,227,000	2,231,494	3,458,494

a) Entitlements for the South Bay area were supplied by non-Project water for the period June 1962 through November 1967. Actual delivery quantities of Project water are sh for 1967.

b) District's Table A quantities exclude amounts during the period 1968 through 1987 that are assumed to be supplied by non-Project water.

TABLE B-4

Annual Entitlements to Project Water (Continued)

(in acre-feet)

Calendar Year	SAN JOAQUIN VALLEY AREA								
		Empire	Kern County Water Agency					Tulare Lake	
	Dudley Ridge Water District	West Side Irrigation District	Municipal and Industrial	Agricultural	Total	County of Kings	Oak Flat Water District	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	14,300	1,000	0	46,600	46,600	900	2,300	12,250	77,350
1969	14,325	3,000	0	95,700	95,700	1,200	2,500	46,350	163,075
1970	15,700	3,000	28,700	116,400	145,100	1,300	2,600	34,300	202,000
1971	17,900	3,000	35,700	154,600	190,300	1,300	2,800	36,500	251,800
1972	20,000	3,000	39,200	231,500	270,700	1,400	5,366	112,600	413,066
1973	22,000	3,000	43,500	267,000	310,500	1,500	3,100	43,552	383,652
1974	33,390	3,000	48,000	299,000	347,000	1,500	3,471	72,289	460,650
1975	40,555	3,000	52,700	358,120	410,820	1,600	3,576	86,258	545,809
1976	30,921	3,000	56,100	386,050	442,150	1,600	4,039	61,707	543,417
1977	30,400	3,000	60,600	423,000	483,600	1,700	3,700	59,000	581,400
1978	32,500	0	64,100	470,200	534,300	1,900	3,900	63,300	635,900
1979	38,544	3,000	67,600	516,300	583,900	2,000	4,000	71,241	702,685
1980	41,000	3,000	71,100	563,400	634,500	2,200	5,700	71,700	758,100
1981	41,000	3,000	74,800	616,600	691,400	2,300	4,300	76,000	818,000
1982	41,000	3,000	79,600	665,700	745,300	2,500	4,500	80,200	876,500
1983	42,900	3,000	83,500	721,600	805,100	2,800	4,600	9,548	867,948
1984	45,100	3,000	103,600	757,000	860,600	3,100	4,800	62,611	979,211
1985	47,200	3,000	108,900	806,100	915,000	3,400	4,900	45,549	1,019,049
1986	49,300	3,000	113,400	854,800	968,200	3,700	5,100	97,200	1,126,500
1987	51,400	3,000	119,100	904,400	1,023,500	4,000	5,200	101,400	1,188,500
1988	53,500	3,000	123,900	950,700	1,074,600	4,000	5,400	105,600	1,246,100
1989	55,600	3,000	128,200	984,100	1,112,300	4,000	5,600	109,900	1,290,400
1990	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1991	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1992	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1993	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1994	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1995	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1996	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1997	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1998	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1999	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2000	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2001	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2002	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2003	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2004	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2005	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2006	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2007	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2008	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2009	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2010	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2011	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2012	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2013	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2014	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2015	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2016	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2017	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2018	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2019	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2020	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2021	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2022	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2023	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2024	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2025	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2026	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2027	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2028	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2029	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2030	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2031	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2032	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2033	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2034	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2035	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
TOTAL	3,432,735	199,000	7,693,900	58,053,670	65,747,570	233,900	353,652	6,910,055	76,876,912

TABLE B-4

Annual Entitlements to Project Water (Continued)

(in acre-feet)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley–East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley 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	3,700	0	0	0	0	0	0	0	0
1969	0	5,000	0	0	0	0	0	0	0	0
1970	0	5,700	0	0	0	0	0	0	0	0
1971	0	6,700	0	0	0	0	0	0	0	0
1972	20,000	8,936	5,200	526	8,000	170	8,400	1,620	1,677	122
1973	25,000	12,400	5,800	870	9,000	290	10,700	2,940	48,000	11,500
1974	30,000	15,400	6,400	1,160	10,000	400	13,100	4,260	50,000	12,300
1975	35,000	18,200	7,000	1,450	11,000	520	15,400	5,580	52,500	13,100
1976	44,000	21,200	7,600	1,740	12,000	640	17,800	6,900	55,000	14,000
1977	50,000	24,100	8,421	2,030	13,000	730	20,200	8,220	57,500	14,800
1978	57,000	24,762	9,242	2,320	14,000	920	0	9,340	60,000	15,700
1979	63,000	28,000	10,063	2,610	15,000	1,040	24,900	10,260	62,500	16,600
1980	69,200	30,400	10,884	2,900	17,000	1,150	27,200	11,180	65,500	17,400
1981	75,000	32,800	12,105	3,190	19,000	1,270	23,100	11,700	68,500	18,300
1982	81,300	34,800	13,326	3,480	21,000	1,380	22,843	12,320	71,500	19,100
1983	87,700	37,300	14,547	3,770	23,000	1,500	34,300	12,940	74,500	19,900
1984	35,000	39,600	15,768	4,060	25,000	1,610	36,700	13,560	78,000	20,700
1985	40,000	41,800	16,989	4,350	27,000	1,730	39,000	14,180	81,500	21,800
1986	42,000	43,600	18,210	4,640	29,000	1,840	41,400	14,800	85,000	23,200
1987	44,000	45,600	19,431	4,930	31,500	1,960	43,700	15,420	89,000	24,600
1988	46,000	48,000	20,652	5,220	34,000	2,070	46,000	16,040	93,000	26,000
1989	125,700	50,100	21,873	5,510	36,500	2,190	48,500	16,660	97,000	27,400
1990	132,100	52,000	23,100	5,800	38,100	2,300	50,800	17,300	101,500	28,800
1991	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1992	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1993	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1994	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1995	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1996	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1997	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1998	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1999	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2000	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2001	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2002	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2003	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2004	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2005	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2006	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2007	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2008	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2009	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2010	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2011	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2012	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2013	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2014	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2015	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2016	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2017	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2018	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2019	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2020	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2021	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2022	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2023	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2024	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2025	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2026	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2027	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2028	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2029	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2030	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2031	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2032	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2033	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2034	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2035	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
TOTAL	7,330,000	3,069,098	1,286,111	321,556	2,107,600	127,210	2,810,043	983,720	5,909,177	1,641,322

TABLE B-4

Annual Entitlements to Project Water (Continued)

(in acre-feet)

Calendar Year	SOUTHERN CALIFORNIA AREA				FEATHER RIVER AREA					
	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 Area Future Contractor	GRAND TOTAL
	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]
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	11,538
1968	0	0	0	3,700	0	300	250	550	0	191,500
1969	0	0	0	5,000	0	350	270	620	0	267,395
1970	0	0	0	5,700	0	400	300	700	0	322,600
1971	0	0	0	6,700	0	450	440	890	0	375,590
1972	0	154,772	0	209,423	0	500	470	970	0	741,759
1973	0	354,600	0	481,100	0	600	500	1,100	0	986,252
1974	0	454,900	0	597,920	0	700	530	1,230	0	1,182,200
1975	0	555,200	0	714,950	0	1,050	560	1,610	0	1,386,869
1976	0	655,600	0	836,480	0	1,400	590	1,990	0	1,508,387
1977	0	755,900	0	954,901	0	1,800	620	2,420	0	1,667,321
1978	0	856,300	0	1,049,584	0	1,200	650	1,850	0	1,818,034
1979	0	956,600	0	1,190,573	0	1,450	680	2,130	0	2,028,088
1980	6,800	1,057,000	1,000	1,317,614	0	1,100	710	1,810	0	2,214,770
1981	7,800	1,157,300	2,000	1,432,065	0	1,200	740	1,940	0	2,392,468
1982	8,800	1,257,600	3,000	1,550,449	0	1,200	770	1,970	0	2,574,545
1983	9,800	1,358,000	4,000	1,681,257	0	1,200	800	2,000	0	2,701,994
1984	10,800	1,458,300	5,000	1,744,098	1,600	1,200	830	3,630	0	2,884,337
1985	11,800	1,558,700	6,000	1,864,849	1,700	1,200	860	3,760	0	3,055,846
1986	12,900	1,659,300	8,000	1,983,890	2,100	1,200	890	4,190	0	3,292,290
1987	14,000	1,759,800	10,000	2,103,941	2,500	1,200	920	4,620	0	3,484,115
1988	15,100	1,860,400	13,000	2,225,482	2,900	1,200	960	5,060	0	3,688,335
1989	16,200	1,961,000	16,000	2,424,633	3,300	1,200	1,000	5,500	0	3,958,190
1990	17,300	2,011,500	20,000	2,500,600	3,800	1,200	1,040	6,040	0	4,108,516
1991	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,080	11,880	0	4,130,856
1992	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,120	11,920	0	4,138,816
1993	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,160	11,960	0	4,146,966
1994	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,200	12,000	0	4,154,201
1995	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,250	12,050	0	4,163,066
1996	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,300	12,100	0	4,169,311
1997	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,350	12,150	0	4,172,451
1998	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,400	12,200	0	4,173,606
1999	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,450	12,250	0	4,174,736
2000	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,510	12,310	0	4,175,966
2001	17,300	2,011,500	20,000	2,510,200	9,600	27,500	1,570	38,670	0	4,203,401
2002	17,300	2,011,500	20,000	2,510,200	9,600	27,500	1,630	38,730	0	4,204,441
2003	17,300	2,011,500	20,000	2,510,200	9,600	27,500	1,690	38,790	0	4,205,576
2004	17,300	2,011,500	20,000	2,510,200	9,600	27,500	1,750	38,850	0	4,206,686
2005	17,300	2,011,500	20,000	2,510,200	9,600	27,500	1,810	38,910	0	4,207,396
2006	17,300	2,011,500	20,000	2,510,200	9,600	27,500	1,880	38,980	0	4,207,966
2007	17,300	2,011,500	20,000	2,510,200	9,600	27,500	1,950	39,050	0	4,208,636
2008	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,020	39,120	0	4,209,406
2009	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,090	39,190	0	4,210,076
2010	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,160	39,260	0	4,210,746
2011	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,240	39,340	0	4,211,526
2012	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,320	39,420	0	4,212,206
2013	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,410	39,510	0	4,212,996
2014	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,500	39,600	0	4,213,786
2015	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,600	39,700	0	4,214,586
2016	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,215,286
2017	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,215,886
2018	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,216,486
2019	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,086
2020	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,686
2021	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2022	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2023	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2024	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2025	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2026	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2027	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2028	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2029	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2030	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2031	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2032	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2033	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2034	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2035	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
TOTAL	909,800	112,360,272	988,000	139,843,909	449,900	997,800	112,820	1,560,520	0	235,931,564

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Calendar Year	Grizzly Valley Pipeline PC FC&WCD	NORTH BAY AQUEDUCT Reach 1 SCWA	Reach 3A SCWA	Reach 3B NC (a FC&WCD	Total	SOUTH BAY AQUEDUCT Reach 1 ACWD	Reach 1 AC FC&WCD	Reach 2 AC FC&WCD	Reach 4 AC FC&WCD	Reach 5 ACWD	Reach 5 AC FC&WCD
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
1962	0	0	0	0	0	8,412	141	353	0	0	0
1963	0	0	0	0	0	10,914	814	917	0	0	0
1964	0	0	0	0	0	19,238	248	1,425	0	0	0
1965	0	0	0	0	0	15,280	637	1,830	138	0	0
1966	0	0	0	0	0	0	2,475	2,537	499	0	0
1967	0	0	0	0	0	0	1,527	2,391	862	0	0
1968	0	0	0	1,214	1,214	0	1,608	3,799	721	0	5
1969	0	0	0	2,687	2,687	0	1,165	3,459	1,851	0	160
1970	70	0	0	3,618	3,618	0	1,345	4,558	3,182	0	164
1971	64	0	0	2,521	2,521	0	546	1,908	2,403	0	160
1972	505	0	0	3,647	3,647	0	1,066	4,605	2,041	1,489	2,777
1973	679	0	0	3,792	3,792	0	430	1,123	1,193	0	229
1974	648	0	0	4,870	4,870	0	177	0	975	0	162
1975	405	0	0	6,840	6,840	0	137	1,783	1,864	0	120
1976	382	0	0	7,122	7,122	0	265	7,204	3,384	0	817
1977	303	0	0	8,226	8,226	0	210	4,491	2,213	0	524
1978	278	0	0	6,034	6,034	0	422	2,426	3,754	0	2,034
1979	329	0	0	6,561	6,561	0	197	4,283	5,567	0	3,937
1980	295	0	0	6,707	6,707	0	77	3,883	6,686	1,508	0
1981	355	0	0	9,001	9,001	0	1,250	4,648	5,273	5,752	1,157
1982	305	0	0	1,213	1,213	0	473	3,043	4,406	0	630
1983	262	0	0	2,287	2,287	0	179	2,712	1,714	0	50
1984	272	0	0	2,923	2,923	0	165	4,219	2,219	0	55
1985	254	0	0	4,039	4,039	0	213	5,199	2,060	0	63
1986	317	1,400	0	3,519	4,919	0	200	6,052	2,062	0	212
1987	452	1,550	0	7,693	9,243	0	218	7,538	2,372	0	285
1988	523	1	9,725	5,392	15,118	0	222	8,302	4,681	0	189
1989	486	10	17,246	3,819	21,075	0	222	8,051	6,562	0	418
1990	574	3,275	11,243	6,940	21,458	0	256	8,160	8,347	0	593
1991	390	3,266	3,003	1,207	7,476	0	162	3,676	3,269	0	359
1992	560	5,382	8,874	4,737	18,993	0	210	3,894	0	0	4,872
1993	1,160	9,600	16,530	8,490	34,620	0	414	7,800	6,697	0	4,106
1994	1,200	11,150	16,930	9,135	37,215	0	828	7,800	5,628	0	2,580
1995	1,250	16,900	17,340	9,780	44,020	0	828	7,800	5,959	0	2,585
1996	1,300	20,050	17,750	10,425	48,225	0	828	7,800	6,200	0	2,591
1997	1,350	20,292	17,965	11,065	49,322	0	828	7,800	6,711	0	2,610
1998	1,400	20,533	18,182	11,710	50,425	0	828	7,800	6,711	0	2,610
1999	1,450	20,772	18,393	12,330	51,495	0	828	7,800	6,711	0	2,610
2000	1,510	21,012	18,608	13,050	52,670	0	828	7,800	6,711	0	2,610
2001	1,570	21,012	18,608	13,665	53,285	0	828	7,800	6,711	0	2,610
2002	1,630	21,012	18,608	14,185	53,805	0	828	7,800	6,711	0	2,610
2003	1,690	21,012	18,608	14,800	54,420	0	828	7,800	6,711	0	2,610
2004	1,750	21,012	18,608	15,400	55,020	0	828	7,800	6,711	0	2,610
2005	1,810	22,012	19,488	16,000	57,500	0	828	7,800	6,711	0	2,610
2006	1,880	22,012	19,488	16,450	57,950	0	828	7,800	6,711	0	2,610
2007	1,950	22,012	19,488	17,000	58,500	0	828	7,800	6,711	0	2,610
2008	2,020	22,012	19,488	17,650	59,150	0	828	7,800	6,711	0	2,610
2009	2,090	22,012	19,488	18,200	59,700	0	828	7,800	6,711	0	2,610
2010	2,160	22,144	19,606	18,750	60,500	0	828	7,800	6,711	0	2,610
2011	2,240	22,144	19,606	19,400	61,150	0	828	7,800	6,711	0	2,610
2012	2,320	22,144	19,606	19,950	61,700	0	828	7,800	6,711	0	2,610
2013	2,410	22,144	19,606	20,600	62,350	0	828	7,800	6,711	0	2,610
2014	2,500	22,144	19,606	21,250	63,000	0	828	7,800	6,711	0	2,610
2015	2,600	22,276	19,724	21,900	63,900	0	828	7,800	6,711	0	2,610
2016	2,700	22,276	19,724	22,500	64,500	0	828	7,800	6,711	0	2,610
2017	2,700	22,276	19,724	23,100	65,100	0	828	7,800	6,711	0	2,610
2018	2,700	22,276	19,724	23,700	65,700	0	828	7,800	6,711	0	2,610
2019	2,700	22,276	19,724	24,300	66,300	0	828	7,800	6,711	0	2,610
2020	2,700	22,276	19,724	24,900	66,900	0	828	7,800	6,711	0	2,610
2021	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2022	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2023	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2024	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2025	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2026	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2027	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2028	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2029	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2030	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2031	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2032	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2033	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2034	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2035	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
TOTAL	103,948	927,817	875,895	961,294	2,765,006	53,844	52,447	453,869	366,511	8,749	133,624

a) For the period 1968 through 1987, deliveries are non-Project water pumped through an interim facility.

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor (Continued)

(in acre-feet)

Calendar Year	SOUTH BAY AQUEDUCT (b (continued)					CALIFORNIA AQUEDUCT						
						NORTH SAN JOAQUIN DIVISION			SAN LUIS DIVISION			
	Reach 6	Reach 7	Reach 8	Reach 9	Total	Reach 2A			Reach 3	Reach 4		
	AC FC&WCD	ACWD	ACWD	SCVWD		OFWD (c	TLBWSD	SCVWD	DRWD	KCWA(AG)	DRWD	TLBWSD
	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]
1962	0	0	0	0	8,906	0	0	0	0	0	0	0
1963	0	0	0	0	12,645	0	0	0	0	0	0	0
1964	0	0	0	0	20,911	0	0	0	0	0	0	0
1965	0	1,127	0	15,014	34,026	0	0	0	0	0	0	0
1966	0	14,864	0	34,538	54,913	0	0	0	0	0	0	0
1967	0	12,882	0	39,101	56,763	0	0	0	0	0	0	0
1968	0	24,817	0	70,105	101,055	3,084	0	0	0	0	0	0
1969	0	813	0	62,264	69,712	3,016	0	0	0	0	0	0
1970	0	0	0	80,311	89,560	5,911	0	0	0	0	0	0
1971	0	5,961	0	87,606	98,584	7,212	0	0	0	0	0	0
1972	0	26,182	0	100,266	138,426	8,166	0	0	0	0	0	0
1973	0	2,521	0	88,582	94,078	3,214	0	0	0	0	0	0
1974	0	0	4	88,000	89,318	3,471	0	0	0	0	0	0
1975	714	393	593	88,000	93,604	3,576	0	0	0	0	0	0
1976	5,461	13,774	7,526	88,000	126,431	4,112	0	0	0	0	0	0
1977	5,206	11,284	7,556	76,220	107,704	1,472	0	0	0	0	0	0
1978	2,348	854	5,009	95,727	112,574	3,906	0	0	0	0	0	0
1979	5,341	3,430	7,444	91,991	122,190	6,149	0	0	0	0	0	0
1980	6,144	2,824	6,702	88,000	115,824	5,700	0	0	0	0	0	0
1981	7,262	7,595	8,570	88,000	129,507	4,300	0	0	0	0	0	0
1982	4,571	1,776	4,540	87,261	106,700	3,838	0	0	0	0	0	0
1983	111	0	3,157	86,733	94,656	3,822	0	0	0	0	0	0
1984	126	0	3,338	88,000	98,122	5,700	0	0	0	0	0	0
1985	7,537	11,203	7,813	88,000	122,088	5,433	0	0	0	0	0	0
1986	2,083	5,311	7,068	88,000	110,988	5,107	0	0	0	0	0	0
1987	12,993	15,488	9,902	88,000	136,796	5,625	0	0	0	0	0	0
1988	12,436	24,259	9,205	87,961	147,255	4,412	0	0	0	0	0	0
1989	10,974	17,340	8,702	90,000	142,269	6,091	300	0	602	12,647	1,898	0
1990	15,678	22,149	9,554	91,800	156,537	2,922	0	200	0	0	0	1,500
1991	1,945	9,155	3,493	28,200	50,259	141	0	0	0	0	0	0
1992	9,009	16,452	4,850	48,000	87,287	2,709	0	0	0	0	0	0
1993	18,569	16,595	24,805	98,000	176,986	5,700	0	0	0	0	0	0
1994	23,164	11,011	30,989	100,000	182,000	5,700	0	0	0	0	0	0
1995	24,828	11,011	30,989	100,000	184,000	5,700	0	0	0	0	0	0
1996	26,581	11,011	30,989	100,000	186,000	5,700	0	0	0	0	0	0
1997	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
1998	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
1999	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2000	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2001	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2002	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2003	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2004	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2005	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2006	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2007	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2008	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2009	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2010	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2011	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2012	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2013	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2014	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2015	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2016	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2017	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2018	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2019	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2020	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2021	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2022	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2023	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2024	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2025	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2026	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2027	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2028	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2029	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2030	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2031	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2032	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2033	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2034	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2035	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
TOTAL	1,297,070	731,511	1,441,369	6,451,680	10,990,674	354,189	300	200	602	12,647	1,898	1,500

b) For the period June 1962 through November 1967, deliveries were supplied by non-Project water.

c) Includes 425 AF of 1988 advance entitlement and 141 AF of 1992 advance entitlement.

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor (Continued)

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	SAN LUIS DIVISION (cont.)			SOUTH SAN JOAQUIN DIVISION							
	Reach 5	Reach 6	Reach 7	Reach 8C				Reach 8D			
	KCWA(AG)	KCWA(AG)	KCWA(AG)	DRWD	TLBWSD	EWSID	CK	KCWA(AG)	DRWD	CK	TLBWSD
	[24]	[25]	[26]	[27]	[28]	[29]	[30]	[31]	[32]	[33]	[34]
1962	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	25,100	1,978	900	0	26,360	0	0
1969	0	0	0	0	7,081	56	100	0	31,375	0	0
1970	0	0	0	0	0	3,942	0	0	40,407	0	3,408
1971	0	0	0	0	80,906	5,990	3,700	0	41,053	0	41,579
1972	0	0	0	0	144,843	5,795	1,400	0	42,443	0	113,550
1973	0	0	0	0	26,317	3,000	1,500	1,500	22,057	0	24,147
1974	0	0	0	0	32,603	3,000	1,500	0	33,390	0	39,686
1975	0	0	0	0	41,536	3,000	1,600	0	40,555	0	44,722
1976	0	0	0	0	26,595	3,000	1,600	0	41,421	0	32,216
1977	0	0	0	0	12,984	738	1,530	0	11,153	0	5,097
1978	0	0	0	0	3,934	454	2,070	0	51,747	0	8,119
1979	0	0	0	0	74,758	1,739	2,000	0	38,544	0	80,363
1980	0	0	0	0	35,140	894	2,200	0	41,000	0	34,104
1981	0	0	0	0	50,888	5,859	2,300	0	41,000	0	32,550
1982	0	0	0	0	4,405	361	1,536	0	41,000	214	14,146
1983	0	0	0	0	1,001	0	3,550	0	42,900	0	5
1984	0	0	0	0	3,677	0	3,100	0	45,100	0	2,066
1985	0	0	0	0	68,638	5,197	3,400	0	46,251	0	41,153
1986	0	0	0	0	40,017	1,170	3,700	0	50,249	0	39,338
1987	0	0	0	0	30,359	2,525	4,000	0	46,288	0	62,725
1988	0	0	0	0	47,831	3,775	4,000	0	47,994	0	48,035
1989	18,831	8,260	5,262	2,391	63,703	3,000	4,000	0	52,158	0	63,947
1990	0	0	0	0	23,504	1,279	2,000	161	36,296	0	32,066
1991	0	0	0	0	1,697	221	0	0	927	0	483
1992	0	0	0	0	23,702	1,500	2,000	0	28,850	0	35,548
1993	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
1994	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
1995	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
1996	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
1997	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
1998	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
1999	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2000	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2001	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2002	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2003	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2004	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2005	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2006	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2007	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2008	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2009	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2010	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2011	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2012	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2013	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2014	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2015	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2016	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2017	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2018	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2019	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2020	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2021	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2022	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2023	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2024	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2025	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2026	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2027	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2028	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2029	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2030	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2031	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2032	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2033	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2034	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2035	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
TOTAL	18,831	8,260	5,262	2,391	2,909,419	187,473	225,686	1,661	3,421,618	214	3,856,353

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor (Continued)

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	SOUTH SAN JOAQUIN DIVISION (continued)									
	Reach 9			Reach 10A			Reach 11B		Reach 12E	
	KCWA(M&I)	KCWA(AG)	TLBWSD	KCWA(M&I)	KCWA(AG)	TLBWSD	KCWA(M&I)	KCWA(AG)	KCWA(M&I)	KCWA(AG)
	[35]	[36]	[37]	[38]	[39]	[40]	[41]	[42]	[43]	[44]
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	30,951	0	0	0	0	0	24,776	0	0
1969	0	24,489	0	0	0	2,842	0	64,682	0	0
1970	0	46,114	1,855	0	158	4,315	0	72,279	0	9,279
1971	0	58,356	0	0	9,973	0	0	63,773	0	28,056
1972	0	75,464	0	0	5,876	0	0	72,358	0	62,342
1973	0	54,583	0	0	22,948	0	0	67,544	0	13,082
1974	0	63,814	0	10,019	22,719	0	0	87,476	2,651	4,248
1975	0	50,021	0	2,791	72,121	0	0	85,675	0	10,787
1976	0	53,465	0	74	50,444	0	0	85,067	37,519	20,555
1977	0	24,668	0	201	34,451	0	3,981	29,603	20,280	1,737
1978	0	72,231	0	0	161,889	0	0	88,753	47,133	15,011
1979	0	74,524	0	285	153,245	0	484	108,379	50,740	61,567
1980	0	79,946	0	3,780	131,836	0	3,112	103,207	32,039	22,252
1981	0	76,508	0	341	133,500	0	494	104,395	59,917	58,470
1982	0	76,877	0	4,700	164,832	0	798	99,081	36,139	75,587
1983	2,217	84,573	0	0	146,493	0	2,069	94,117	0	10,950
1984	4,100	85,732	0	6,910	150,302	0	2,349	124,819	63,941	39,929
1985	0	67,696	0	6,495	153,473	0	10,666	118,646	69,839	84,117
1986	0	79,943	0	5,065	198,099	0	8,673	124,836	62,109	51,540
1987	0	97,732	0	900	226,521	0	13,074	111,877	95,297	86,223
1988	1,100	83,858	0	8,229	213,795	0	13,509	114,031	86,390	123,249
1989	0	91,134	0	21,038	251,979	0	9,986	127,058	83,965	146,544
1990	0	83,108	0	25,189	47,472	0	9,319	104,107	82,164	38,973
1991	10,683	601	0	1,142	6,820	0	2,315	118	8,842	303
1992	28	49,416	0	2,825	127,482	0	8,886	66,548	55,617	94,451
1993	0	98,832	0	5,650	276,604	0	15,000	133,096	109,650	158,888
1994	0	98,832	0	5,650	276,604	0	15,000	133,096	109,650	158,888
1995	0	98,832	0	5,650	276,604	0	15,000	133,096	109,650	158,888
1996	0	98,832	0	5,650	276,604	0	15,000	133,096	109,650	158,888
1997	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
1998	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
1999	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2000	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2001	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2002	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2003	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2004	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2005	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2006	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2007	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2008	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2009	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2010	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2011	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2012	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2013	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2014	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2015	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2016	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2017	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2018	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2019	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2020	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2021	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2022	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2023	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2024	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2025	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2026	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2027	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2028	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2029	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2030	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2031	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2032	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2033	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2034	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2035	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
TOTAL	18,128	5,537,932	1,855	223,984	13,149,911	7,157	929,715	7,708,890	5,755,782	8,464,736

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor (Continued)

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued) SOUTH SAN JOAQUIN DIVISION (continued)							
	Reach 13B		Reach 14A		Reach 14B		Reach 14C	
	KCWA(M&I)	KCWA(AG)	KCWA(M&I)	KCWA(AG)	KCWA (M&I)	KCWA (AG)	KCWA (M&I)	KCWA (AG)
	[45]	[46]	[47]	[48]	[49]	[50]	[51]	[52]
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	4,891	0	0	0	3	0	0
1971	0	0	0	23,844	0	49,929	0	24,187
1972	0	17,388	0	26,621	0	77,034	0	35,016
1973	0	9,297	0	15,328	0	47,040	0	19,043
1974	8,038	4,246	0	7,794	0	32,356	0	12,601
1975	8,536	7,059	0	10,306	0	27,736	0	12,783
1976	5,626	8,855	0	268	0	35,296	0	9,005
1977	0	5,024	0	8,299	0	13,539	0	3,757
1978	21,773	7,601	0	34,029	0	72,351	0	24,542
1979	5,663	17,766	3,012	27,356	0	59,413	0	22,372
1980	0	22,515	4,312	16,876	0	40,513	0	19,953
1981	7,844	14,037	4,511	13,007	8	42,753	7	18,729
1982	0	25,553	5,373	22,602	184	57,739	0	26,479
1983	0	3,491	1,168	20,302	0	57,922	0	26,613
1984	12,117	26,178	137	35,369	10	79,179	2	34,996
1985	0	67,711	206	33,103	0	72,855	0	31,758
1986	0	66,551	180	26,384	0	70,864	0	34,566
1987	5,609	40,374	610	30,098	9	67,710	9	31,019
1988	9,298	47,167	604	32,796	4	75,983	0	37,166
1989	5,504	57,114	721	29,292	7	82,201	5	37,800
1990	7,645	20,423	673	26,800	13	81,076	9	34,174
1991	0	0	1,070	0	3,467	0	1,231	0
1992	0	21,863	448	13,140	210	39,770	10	16,990
1993	0	52,100	820	26,280	60	79,540	20	33,980
1994	0	52,100	820	26,280	60	79,540	20	33,980
1995	0	52,100	820	26,280	60	79,540	20	33,980
1996	0	52,100	820	26,280	60	79,540	20	33,980
1997	0	35,500	800	35,075	0	80,000	0	44,000
1998	0	35,500	800	35,075	0	80,000	0	44,000
1999	0	35,500	800	35,075	0	80,000	0	44,000
2000	0	35,500	800	35,075	0	80,000	0	44,000
2001	0	35,500	800	35,075	0	80,000	0	44,000
2002	0	35,500	800	35,075	0	80,000	0	44,000
2003	0	35,500	800	35,075	0	80,000	0	44,000
2004	0	35,500	800	35,075	0	80,000	0	44,000
2005	0	35,500	800	35,075	0	80,000	0	44,000
2006	0	35,500	800	35,075	0	80,000	0	44,000
2007	0	35,500	800	35,075	0	80,000	0	44,000
2008	0	35,500	800	35,075	0	80,000	0	44,000
2009	0	35,500	800	35,075	0	80,000	0	44,000
2010	0	35,500	800	35,075	0	80,000	0	44,000
2011	0	35,500	800	35,075	0	80,000	0	44,000
2012	0	35,500	800	35,075	0	80,000	0	44,000
2013	0	35,500	800	35,075	0	80,000	0	44,000
2014	0	35,500	800	35,075	0	80,000	0	44,000
2015	0	35,500	800	35,075	0	80,000	0	44,000
2016	0	35,500	800	35,075	0	80,000	0	44,000
2017	0	35,500	800	35,075	0	80,000	0	44,000
2018	0	35,500	800	35,075	0	80,000	0	44,000
2019	0	35,500	800	35,075	0	80,000	0	44,000
2020	0	35,500	800	35,075	0	80,000	0	44,000
2021	0	35,500	800	35,075	0	80,000	0	44,000
2022	0	35,500	800	35,075	0	80,000	0	44,000
2023	0	35,500	800	35,075	0	80,000	0	44,000
2024	0	35,500	800	35,075	0	80,000	0	44,000
2025	0	35,500	800	35,075	0	80,000	0	44,000
2026	0	35,500	800	35,075	0	80,000	0	44,000
2027	0	35,500	800	35,075	0	80,000	0	44,000
2028	0	35,500	800	35,075	0	80,000	0	44,000
2029	0	35,500	800	35,075	0	80,000	0	44,000
2030	0	35,500	800	35,075	0	80,000	0	44,000
2031	0	35,500	800	35,075	0	80,000	0	44,000
2032	0	35,500	800	35,075	0	80,000	0	44,000
2033	0	35,500	800	35,075	0	80,000	0	44,000
2034	0	35,500	800	35,075	0	80,000	0	44,000
2035	0	35,500	800	35,075	0	80,000	0	44,000
TOTAL	97,655	2,088,004	57,505	1,926,659	4,152	4,621,422	1,353	2,365,469

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor (Continued)

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	SOUTH SAN JOAQUIN DIVISION (continued)					MOJAVE DIVISION				
	Reach 15A		Reach 16A			Reach 18A	Reach 19	Reach 20A		
	KCWA (M&I)	KCWA (AG)	KCWA (M&I)	KCWA (AG)	AVEKWA	AVEKWA	AVEKWA	PWD	MWA	AVEKWA
	[53]	[54]	[55]	[56]	[57]	[58]	[59]	[60]	[61]	[62]
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	3,552	0	0	0	0	0	0	0	0
1972	0	6,064	0	4,768	0	0	0	0	0	0
1973	0	19,916	0	1,961	0	0	0	0	0	0
1974	0	18,000	3,000	1,564	0	0	1,223	0	0	0
1975	0	35,420	3,200	9,867	0	0	7,622	0	0	420
1976	0	39,551	3,500	11,667	0	3,808	23,063	0	0	471
1977	0	6,158	3,420	685	0	1,231	8,927	0	0	773
1978	0	31,148	7,989	1,655	0	1,321	36,333	0	0	5,549
1979	0	38,602	2,813	15,808	0	2,098	49,910	0	0	7,555
1980	0	37,817	2,700	16,145	0	2,610	61,534	0	0	7,605
1981	0	39,033	2,636	18,156	0	2,340	65,690	0	0	10,333
1982	0	47,782	1,289	17,209	0	1,669	41,127	0	0	7,313
1983	0	37,426	1,400	17,907	0	43	26,377	0	0	6,253
1984	0	49,848	1,338	24,202	0	90	22,462	0	0	9,558
1985	0	44,078	1,309	16,820	0	8	23,440	1,510	0	11,613
1986	0	42,461	1,213	15,559	0	8	16,898	3,041	0	13,808
1987	0	34,748	1,665	10,170	0	0	15,958	2,389	0	15,493
1988	2	41,992	1,913	8,999	0	0	13,471	366	0	17,117
1989	2	43,239	2,668	8,649	0	0	18,007	381	0	23,481
1990	6	36,347	2,819	8,608	0	0	17,281	282	0	25,843
1991	1,892	200	2,480	143	2,000	0	728	84	1,391	4,282
1992	279	18,125	1,755	5,015	0	24	11,615	0	0	21,842
1993	50	36,250	3,350	10,030	0	144	24,096	0	0	36,904
1994	50	36,250	3,350	10,030	0	144	24,511	0	0	38,744
1995	50	36,250	3,350	10,030	0	144	24,991	0	0	40,674
1996	50	36,250	3,350	10,030	0	144	25,481	0	0	42,619
1997	0	45,075	2,200	17,850	0	144	25,976	0	0	44,574
1998	0	45,075	2,200	17,850	0	144	25,976	0	0	44,574
1999	0	45,075	2,200	17,850	0	144	25,976	0	0	44,574
2000	0	45,075	2,200	17,850	0	120	29,733	0	0	50,997
2001	0	45,075	2,200	17,850	0	120	29,733	0	0	50,997
2002	0	45,075	2,200	17,850	0	120	29,733	0	0	50,997
2003	0	45,075	2,200	17,850	0	120	29,733	0	0	50,997
2004	0	45,075	2,200	17,850	0	120	29,733	0	0	50,997
2005	0	45,075	2,200	17,850	0	144	35,934	0	0	61,619
2006	0	45,075	2,200	17,850	0	144	35,934	0	0	61,619
2007	0	45,075	2,200	17,850	0	144	35,934	0	0	61,619
2008	0	45,075	2,200	17,850	0	144	35,934	0	0	61,619
2009	0	45,075	2,200	17,850	0	144	35,934	0	0	61,619
2010	0	45,075	2,200	17,850	0	168	42,132	0	0	72,244
2011	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2012	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2013	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2014	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2015	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2016	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2017	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2018	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2019	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2020	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2021	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2022	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2023	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2024	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2025	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2026	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2027	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2028	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2029	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2030	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2031	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2032	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2033	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2034	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2035	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
TOTAL	2,381	2,574,432	148,307	951,827	2,000	21,946	2,080,965	8,053	1,391	2,955,271

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor (Continued)

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	MOJAVE DIVISION (continued)									
	Reach 20B		Reach 21		Reach 22A	Reach 22B				
	PWD	AVEKWA	LCID	PWD	AVEKWA	MWDSC(d	CVWD(d	AVEKWA(e	DWA(d	MWA
	[63]	[64]	[65]	[66]	[67]	[68]	[69]	[70]	[71]	[72]
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	0	0	338	0	0	0	0	0	0	55
1973	0	0	290	0	0	(14,800)	5,800	0	9,000	0
1974	0	0	400	0	0	(16,400)	6,400	0	10,000	0
1975	0	0	520	0	0	(18,000)	7,000	0	11,000	0
1976	0	416	589	0	0	(19,600)	7,600	0	12,000	0
1977	0	271	111	0	0	0	0	0	0	22
1978	0	934	208	0	0	(25,384)	10,084	0	15,300	0
1979	0	930	133	0	0	(25,063)	10,063	0	15,000	4,000
1980	0	655	191	0	3	(27,884)	10,884	0	17,000	4,000
1981	0	966	1,270	0	46	(31,105)	12,105	0	19,000	4,000
1982	0	8	0	0	174	(34,326)	13,326	0	21,000	10,500
1983	0	20	38	0	268	(37,547)	14,547	0	23,000	0
1984	0	2	1	0	550	(40,768)	15,768	0	25,000	0
1985	32	217	0	16	1,786	(43,989)	16,989	0	27,000	0
1986	45	0	163	10	1,735	(47,210)	18,210	0	29,000	0
1987	1,624	151	1,080	1,366	2,278	(50,931)	19,431	214	31,500	17
1988	1,261	281	419	143	3,210	(54,652)	20,652	0	34,000	9
1989	7,848	112	971	780	3,591	(58,373)	21,873	89	36,500	0
1990	8,292	84	1,747	34	3,988	(61,200)	23,100	10	38,100	0
1991	3,830	131	522	0	2,427	(18,360)	6,930	0	11,430	0
1992	6,600	1,051	1,143	0	2,958	(15,300)	5,775	0	9,525	0
1993	14,300	3,600	2,300	0	6,085	0	0	0	0	0
1994	15,060	4,345	2,300	0	6,265	0	0	0	0	0
1995	15,560	5,065	2,300	0	6,470	0	0	0	0	0
1996	17,280	5,800	2,300	0	6,680	0	0	0	0	0
1997	17,300	6,560	2,300	0	6,700	0	0	0	0	0
1998	17,300	6,560	2,300	0	6,700	0	0	0	0	0
1999	17,300	6,560	2,300	0	6,700	0	0	0	0	0
2000	17,300	7,510	2,300	0	7,640	0	0	0	0	0
2001	17,300	7,510	2,300	0	7,640	0	0	0	0	0
2002	17,300	7,510	2,300	0	7,640	0	0	0	0	0
2003	17,300	7,510	2,300	0	7,640	0	0	0	0	0
2004	17,300	7,510	2,300	0	7,640	0	0	0	0	0
2005	17,300	9,072	2,300	0	9,231	0	0	0	0	0
2006	17,300	9,072	2,300	0	9,231	0	0	0	0	0
2007	17,300	9,072	2,300	0	9,231	0	0	0	0	0
2008	17,300	9,072	2,300	0	9,231	0	0	0	0	0
2009	17,300	9,072	2,300	0	9,231	0	0	0	0	0
2010	17,300	10,634	2,300	0	10,822	0	0	0	0	0
2011	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2012	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2013	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2014	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2015	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2016	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2017	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2018	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2019	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2020	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2021	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2022	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2023	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2024	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2025	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2026	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2027	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2028	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2029	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2030	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2031	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2032	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2033	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2034	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2035	17,300	10,824	2,300	0	11,016	0	0	0	0	0
TOTAL	766,432	408,863	109,034	2,349	439,191	(640,892)	246,537	313	394,355	22,603

d) In accordance with the Exchange Agreement between the noted agencies, MWDSC 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 Water District for such costs from the Delta through Reach 22B. The adjustment in deliveries in Reach 22B provides for compliance with provisions for the repayment of costs under the agreement. In 1992 and after the exchange takes place in Reach 26A.

e) 1988 advance entitlement.

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor (Continued)

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	MOJAVE DIVISION (continued)			SANTA ANA DIVISION						
	Reach 23	Reach 24		Reach 26A						Reach 28G
	MWA	CLAWA	MWA	MWDSC(f	SBVMWD(g	SGVMWD	SGPWA	CVWD(f	DWA(f	MWDSC
	[73]	[74]	[75]	[76]	[77]	[78]	[79]	[80]	[81]	[82]
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	0	464	0	0	1,275	0	0	0	0	0
1973	0	389	0	444	32,426	0	0	0	0	18,942
1974	14	627	0	84,981	16,605	612	0	0	0	0
1975	0	825	0	169,960	13,865	5,450	0	0	0	0
1976	0	1,002	0	215,312	12,273	6,071	0	0	0	0
1977	58	1,109	0	64,823	24,833	8,996	0	0	0	0
1978	0	1,209	0	297,708	4,055	7,771	0	0	0	0
1979	0	1,260	0	260,903	18	290	0	0	0	0
1980	0	1,239	0	300,345	0	1,085	0	0	0	0
1981	0	1,485	0	395,678	16,021	3,619	0	0	0	0
1982	0	1,238	0	214,566	8,409	12,599	0	0	0	0
1983	0	911	0	175,288	5,994	734	0	0	0	0
1984	0	1,128	0	122,311	5,556	7,656	0	0	0	0
1985	0	1,422	0	147,599	7,390	5,028	0	0	0	0
1986	0	1,506	0	215,265	6,421	9,454	0	0	0	0
1987	0	1,849	0	175,012	8,751	10,630	0	0	0	0
1988	0	2,006	0	247,101	12,637	8,948	0	0	0	0
1989	200	2,170	0	267,844	20,782	12,839	0	21,873	36,500	0
1990	0	1,827	0	399,387	18,831	16,649	0	0	0	0
1991	0	852	2,032	107,182	3,661	5,399	0	0	0	0
1992	0	1,950	12,000	242,400	16,000	9,000	0	5,775	9,525	0
1993	0	2,150	36,000	546,900	35,000	18,000	0	23,100	38,100	0
1994	0	2,250	36,000	521,900	38,000	18,000	0	23,100	38,100	0
1995	0	2,400	50,800	496,900	41,000	18,000	0	23,100	38,100	0
1996	0	2,525	50,800	471,900	44,000	18,000	0	23,100	38,100	0
1997	0	2,600	50,800	471,900	47,502	18,000	5,570	23,100	38,100	0
1998	0	2,600	50,800	471,900	51,004	18,000	5,570	23,100	38,100	0
1999	0	2,600	50,800	471,900	55,000	18,000	5,570	23,100	38,100	0
2000	0	3,000	50,800	471,900	60,000	20,000	6,350	23,100	38,100	0
2001	0	3,000	50,800	471,900	60,000	20,000	6,350	23,100	38,100	0
2002	0	3,000	50,800	471,900	60,000	20,000	6,350	23,100	38,100	0
2003	0	3,000	50,800	471,900	60,000	20,000	6,350	23,100	38,100	0
2004	0	3,000	50,800	471,900	60,000	20,000	6,350	23,100	38,100	0
2005	0	3,825	50,800	471,900	90,000	21,300	8,450	23,100	38,100	0
2006	0	3,825	50,800	471,900	90,000	21,300	8,450	23,100	38,100	0
2007	0	3,825	50,800	471,900	90,000	21,300	8,450	23,100	38,100	0
2008	0	3,825	50,800	471,900	90,000	21,300	8,450	23,100	38,100	0
2009	0	3,825	50,800	471,900	90,000	21,300	8,450	23,100	38,100	0
2010	0	4,750	50,800	471,900	102,600	22,500	10,550	23,100	38,100	0
2011	0	4,750	50,800	471,900	102,600	22,500	10,550	23,100	38,100	0
2012	0	4,750	50,800	471,900	102,600	22,500	10,550	23,100	38,100	0
2013	0	4,750	50,800	471,900	102,600	22,500	10,550	23,100	38,100	0
2014	0	4,750	50,800	471,900	102,600	22,500	10,550	23,100	38,100	0
2015	0	5,300	50,800	471,900	102,600	23,800	13,550	23,100	38,100	0
2016	0	5,300	50,800	471,900	102,600	23,800	13,550	23,100	38,100	0
2017	0	5,300	50,800	471,900	102,600	23,800	13,550	23,100	38,100	0
2018	0	5,300	50,800	471,900	102,600	23,800	13,550	23,100	38,100	0
2019	0	5,300	50,800	471,900	102,600	23,800	13,550	23,100	38,100	0
2020	0	5,700	50,800	471,900	102,600	25,000	16,650	23,100	38,100	0
2021	0	5,700	50,800	471,900	102,600	25,000	17,300	23,100	38,100	0
2022	0	5,700	50,800	471,900	102,600	25,000	17,300	23,100	38,100	0
2023	0	5,700	50,800	471,900	102,600	25,000	17,300	23,100	38,100	0
2024	0	5,700	50,800	471,900	102,600	25,000	17,300	23,100	38,100	0
2025	0	5,800	50,800	471,900	102,600	26,300	17,300	23,100	38,100	0
2026	0	5,800	50,800	471,900	102,600	26,300	17,300	23,100	38,100	0
2027	0	5,800	50,800	471,900	102,600	26,300	17,300	23,100	38,100	0
2028	0	5,800	50,800	471,900	102,600	26,300	17,300	23,100	38,100	0
2029	0	5,800	50,800	471,900	102,600	26,300	17,300	23,100	38,100	0
2030	0	5,800	50,800	471,900	102,600	27,500	17,300	23,100	38,100	0
2031	0	5,800	50,800	471,900	102,600	27,500	17,300	23,100	38,100	0
2032	0	5,800	50,800	471,900	102,600	27,500	17,300	23,100	38,100	0
2033	0	5,800	50,800	471,900	102,600	27,500	17,300	23,100	38,100	0
2034	0	5,800	50,800	471,900	102,600	27,500	17,300	23,100	38,100	0
2035	0	5,800	50,800	471,900	102,600	28,800	17,300	23,100	38,100	0
TOTAL	272	220,268	2,168,832	24,545,809	3,964,909	1,119,630	487,360	1,020,948	1,684,325	18,942

f) In accordance with the Exchange Agreement between the noted agencies, MWDSC 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 Water District for such costs from the Delta through Reach 22B. The adjustment in deliveries in Reach 22B provides for compliance with provisions for the repayment of costs under the agreement. In 1992 and after the exchange takes place in Reach 26A.

g) Includes 1,650 AF recaptured from ground water storage in 1982, 10,000 AF in 1987, and 8,749 AF in 1988. This water was stored under DWR's Ground Water Demonstration Program.

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor (Continued)

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)							
	SANTA ANA DIVISION (continued)		WEST BRANCH					
	Reach 28H	Reach 28J	Reach 29F	Reach 29H	Reach 30			
	MWDSC	MWDSC	AVEKWA	VCFCD	MWDSC(h	VCFCD	CLWA	SBCFC&WCD
	[83]	[84]	[85]	[86]	[87]	[88]	[89]	[90]
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0
1972	0	0	53	0	71,938	0	0	0
1973	0	0	20	0	155,297	0	0	0
1974	0	0	36	0	209,136	0	0	0
1975	0	251	26	0	374,280	0	0	0
1976	55	2,000	24	0	420,684	0	0	0
1977	43	2,442	0	0	122,447	0	0	0
1978	48	64,054	0	0	171,139	0	0	0
1979	1,290	94,353	0	0	145,591	0	7	0
1980	3,013	91,532	0	0	164,721	0	1,210	0
1981	4,365	149,405	0	0	277,503	0	5,761	0
1982	3,961	155,629	0	0	351,362	0	9,516	0
1983	6,645	41,616	0	0	157,519	0	9,476	0
1984	106,781	5,270	0	0	260,624	0	11,477	0
1985	182,781	6,538	0	0	390,696	0	12,401	0
1986	131,439	30,071	0	0	379,275	0	13,928	0
1987	144,743	26,315	0	0	417,285	0	16,167	0
1988	199,641	22,209	0	0	488,265	0	18,904	0
1989	247,430	51,462	0	0	589,962	0	21,719	0
1990	257,796	36,060	0	4,836	764,380	0	22,139	0
1991	38,832	5,958	0	988	257,835	0	3,846	1,240
1992	198,450	17,400	0	2,500	525,550	0	16,680	0
1993	396,900	34,800	0	5,000	1,032,900	0	29,545	0
1994	396,900	34,800	0	5,000	1,057,900	0	32,286	0
1995	396,900	34,800	0	5,000	1,082,900	0	34,905	0
1996	396,900	34,800	0	5,000	1,107,900	0	37,531	0
1997	396,900	34,800	0	5,000	1,107,900	15,000	40,401	0
1998	396,900	34,800	0	5,000	1,107,900	15,000	40,401	0
1999	396,900	34,800	0	5,000	1,107,900	15,000	40,401	0
2000	396,900	34,800	0	5,000	1,107,900	15,000	48,796	0
2001	396,900	34,800	0	5,000	1,107,900	15,000	48,796	0
2002	396,900	34,800	0	5,000	1,107,900	15,000	48,796	0
2003	396,900	34,800	0	5,000	1,107,900	15,000	48,796	0
2004	396,900	34,800	0	5,000	1,107,900	15,000	48,796	0
2005	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2006	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2007	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2008	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2009	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2010	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2011	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2012	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2013	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2014	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2015	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2016	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2017	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2018	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2019	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2020	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2021	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2022	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2023	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2024	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2025	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2026	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2027	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2028	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2029	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2030	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2031	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2032	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2033	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2034	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2035	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
TOTAL	18,594,013	2,298,965	159	223,324	54,185,189	585,000	2,342,881	1,240

h) Deliveries exclude 6,171 AF of 1982 exchange water.

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor (Continued)

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)						TOTAL	GRAND TOTAL
	COASTAL BRANCH							
	Reach 31A		Reach 33A	Reach 34	Reach 35			
	KCWA (AG)	CLWA	SLOCFC&WCD	SLOCFC&WCD	SLOCFC&WCD	SBCFC&WCD		
	[91]	[92]	[93]	[94]	[95]	[96]	[97]	[98]
1962	0	0	0	0	0	0	0	8,906
1963	0	0	0	0	0	0	0	12,645
1964	0	0	0	0	0	0	0	20,911
1965	0	0	0	0	0	0	0	34,026
1966	0	0	0	0	0	0	0	54,913
1967	0	0	0	0	0	0	0	56,763
1968	71,657	7,382	0	0	0	0	192,188	294,457
1969	52,094	9,970	0	0	0	0	195,705	268,104
1970	71,910	11,739	0	0	0	0	276,211	369,459
1971	98,481	12,490	0	0	0	0	553,081	654,250
1972	107,850	13,905	0	0	0	0	895,006	1,037,584
1973	69,227	9,418	0	0	0	0	638,930	737,479
1974	68,474	9,700	0	0	0	0	783,984	878,820
1975	74,516	10,700	0	0	0	0	1,129,728	1,230,577
1976	78,358	11,700	0	0	0	0	1,245,662	1,379,597
1977	35,504	5,075	0	0	0	0	465,442	581,675
1978	81,242	11,362	0	0	0	0	1,339,268	1,458,154
1979	104,017	19,138	0	0	0	0	1,537,075	1,666,155
1980	97,497	13,882	0	0	0	0	1,407,163	1,529,989
1981	97,054	12,700	0	0	0	0	1,779,479	1,918,342
1982	83,076	12,700	0	0	0	0	1,641,571	1,749,789
1983	87,859	12,659	0	0	0	0	1,089,626	1,186,831
1984	119,098	12,741	0	0	0	0	1,486,406	1,587,723
1985	110,124	12,099	0	0	0	0	1,863,544	1,989,925
1986	118,298	13,301	0	0	0	0	1,882,290	1,998,514
1987	116,259	11,821	0	0	0	0	1,974,569	2,121,060
1988	109,435	11,534	0	0	0	0	2,213,089	2,375,985
1989	102,156	14,645	0	0	0	0	2,686,838	2,850,668
1990	103,362	6,440					2,398,121	2,576,690
			0	0	0	0		
1991	780	716	0	0	0	0	489,492	547,617
1992	56,600	6,350	0	0	0	0	1,782,580	1,889,420
1993	113,200	12,700	0	0	0	0	3,640,824	3,853,590
1994	113,200	12,700	0	0	0	0	3,650,605	3,871,020
1995	113,200	12,700	0	0	0	0	3,675,009	3,904,279
1996	113,200	12,700	10,000	5,000	10,000	45,486	3,756,346	3,991,871
1997	118,000	12,700	10,000	5,000	10,000	45,486	3,786,613	4,025,285
1998	118,000	12,700	10,000	5,000	10,000	45,486	3,790,115	4,029,940
1999	118,000	12,700	10,000	5,000	10,000	45,486	3,794,111	4,035,056
2000	118,000	5,404	10,000	5,000	10,000	45,486	3,815,436	4,057,616
2001	118,000	5,404	10,000	5,000	10,000	45,486	3,815,436	4,058,291
2002	118,000	5,404	10,000	5,000	10,000	45,486	3,815,436	4,058,871
2003	118,000	5,404	10,000	5,000	10,000	45,486	3,815,436	4,059,546
2004	118,000	5,404	10,000	5,000	10,000	45,486	3,815,436	4,060,206
2005	118,000	0	10,000	5,000	10,000	45,486	3,869,661	4,116,971
2006	118,000	0	10,000	5,000	10,000	45,486	3,869,661	4,117,491
2007	118,000	0	10,000	5,000	10,000	45,486	3,869,661	4,118,111
2008	118,000	0	10,000	5,000	10,000	45,486	3,869,661	4,118,831
2009	118,000	0	10,000	5,000	10,000	45,486	3,869,661	4,119,451
2010	118,000	0	10,000	5,000	10,000	45,486	3,906,486	4,157,146
2011	118,000	0	10,000	5,000	10,000	45,486	3,908,886	4,160,276
2012	118,000	0	10,000	5,000	10,000	45,486	3,908,886	4,160,906
2013	118,000	0	10,000	5,000	10,000	45,486	3,908,886	4,161,646
2014	118,000	0	10,000	5,000	10,000	45,486	3,908,886	4,162,386
2015	118,000	0	10,000	5,000	10,000	45,486	3,913,736	4,168,236
2016	118,000	0	10,000	5,000	10,000	45,486	3,913,736	4,168,936
2017	118,000	0	10,000	5,000	10,000	45,486	3,913,736	4,169,536
2018	118,000	0	10,000	5,000	10,000	45,486	3,913,736	4,170,136
2019	118,000	0	10,000	5,000	10,000	45,486	3,913,736	4,170,736
2020	118,000	0	10,000	5,000	10,000	45,486	3,918,436	4,176,036
2021	118,000	0	10,000	5,000	10,000	45,486	3,919,086	4,176,786
2022	118,000	0	10,000	5,000	10,000	45,486	3,919,086	4,176,786
2023	118,000	0	10,000	5,000	10,000	45,486	3,919,086	4,176,786
2024	118,000	0	10,000	5,000	10,000	45,486	3,919,086	4,176,786
2025	118,000	0	10,000	5,000	10,000	45,486	3,920,486	4,178,186
2026	118,000	0	10,000	5,000	10,000	45,486	3,920,486	4,178,186
2027	118,000	0	10,000	5,000	10,000	45,486	3,920,486	4,178,186
2028	118,000	0	10,000	5,000	10,000	45,486	3,920,486	4,178,186
2029	118,000	0	10,000	5,000	10,000	45,486	3,920,486	4,178,186
2030	118,000	0	10,000	5,000	10,000	45,486	3,921,686	4,179,386
2031	118,000	0	10,000	5,000	10,000	45,486	3,921,686	4,179,386
2032	118,000	0	10,000	5,000	10,000	45,486	3,921,686	4,179,386
2033	118,000	0	10,000	5,000	10,000	45,486	3,921,686	4,179,386
2034	118,000	0	10,000	5,000	10,000	45,486	3,921,686	4,179,386
2035	118,000	0	10,000	5,000	10,000	45,486	3,922,986	4,180,686
TOTAL	7,169,728	390,087	400,000	200,000	400,000	1,819,440	198,305,492	212,165,120

TABLE B-5B

Annual Water Quantities Delivered to Each Contractor

(in acre-feet)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA (b				CENTRAL COASTAL AREA		
	(a Napa County FC&WCD	Solano County WA	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	6,561	0	6,561	19,325	10,874	91,991	122,190	0	0	0
1980	6,707	0	6,707	16,790	11,034	88,000	115,824	0	0	0
1981	9,001	0	9,001	19,590	21,917	88,000	129,507	0	0	0
1982	1,213	0	1,213	13,123	6,316	87,261	106,700	0	0	0
1983	2,287	0	2,287	4,766	3,157	86,733	94,656	0	0	0
1984	2,923	0	2,923	6,784	3,338	88,000	98,122	0	0	0
1985	4,039	0	4,039	15,072	19,016	88,000	122,088	0	0	0
1986	3,519	1,400	4,919	10,609	12,379	88,000	110,988	0	0	0
1987	7,693	1,550	9,243	23,406	25,390	88,000	136,796	0	0	0
1988	5,392	9,726	15,118	25,830	33,464	87,961	147,255	0	0	0
1989	3,819	17,256	21,075	26,227	26,042	90,000	142,269	0	0	0
1990	6,940	14,518	21,458	33,034	31,703	92,000	156,737	0	0	0
1991	1,207	6,269	7,476	9,411	12,648	28,200	50,259	0	1,240	1,240
1992	4,737	14,256	18,993	17,985	21,302	48,000	87,287	0	0	0
1993	8,490	26,130	34,620	37,586	41,400	98,000	176,986	0	0	0
1994	9,135	28,080	37,215	40,000	42,000	100,000	182,000	0	0	0
1995	9,780	34,240	44,020	42,000	42,000	100,000	184,000	0	0	0
1996	10,425	37,800	48,225	44,000	42,000	100,000	186,000	25,000	45,486	70,486
1997	11,065	38,257	49,322	46,000	42,000	100,000	188,000	25,000	45,486	70,486
1998	11,710	38,715	50,425	46,000	42,000	100,000	188,000	25,000	45,486	70,486
1999	12,330	39,165	51,495	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2000	13,050	39,620	52,670	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2001	13,665	39,620	53,285	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2002	14,185	39,620	53,805	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2003	14,800	39,620	54,420	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2004	15,400	39,620	55,020	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2005	16,000	41,500	57,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2006	16,450	41,500	57,950	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2007	17,000	41,500	58,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2008	17,650	41,500	59,150	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2009	18,200	41,500	59,700	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2010	18,750	41,750	60,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2011	19,400	41,750	61,150	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2012	19,950	41,750	61,700	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2013	20,600	41,750	62,350	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2014	21,250	41,750	63,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2015	21,900	42,000	63,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2016	22,500	42,000	64,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2017	23,100	42,000	65,100	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2018	23,700	42,000	65,700	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2019	24,300	42,000	66,300	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2020	24,900	42,000	66,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2021	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2022	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2023	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2024	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2025	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2026	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2027	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2028	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2029	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2030	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2031	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2032	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2033	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2034	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2035	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
TOTAL	961,294	1,803,712	2,765,006	2,303,521	2,235,473	6,451,880	10,990,874	1,000,000	1,820,680	2,820,680

a) For the period 1968 through 1987, deliveries are non-Project water pumped through an interim facility.

b) For the period June 1962 through November 1967, deliveries were supplied by non-Project water.

TABLE B-5B

Annual Water Quantities Delivered to Each Contractor (Continued)

(in acre-feet)

Calendar Year	SAN JOAQUIN VALLEY AREA								
	Dudley Ridge Water District	Empire West Side Irrigation District	Kern County Water Agency			County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
			Municipal and Industrial	Agricultural	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	26,360	1,978	0	127,384	127,384	900	3,084	25,100	184,806
1969	31,375	56	0	141,265	141,265	100	3,016	9,923	185,735
1970	40,407	3,942	0	204,634	204,634	0	5,911	9,578	264,472
1971	41,053	5,990	0	360,151	360,151	3,700	7,212	122,485	540,591
1972	42,443	5,795	0	490,781	490,781	1,400	8,166	258,393	806,978
1973	22,057	3,000	0	341,469	341,469	1,500	3,214	50,464	421,704
1974	33,390	3,000	23,708	323,292	347,000	1,500	3,471	72,289	460,650
1975	40,555	3,000	14,529	396,291	410,820	1,600	3,576	86,258	545,809
1976	41,421	3,000	46,719	392,531	439,250	1,600	4,112	58,811	548,194
1977	11,153	738	27,882	163,425	191,307	1,530	1,472	18,081	224,281
1978	51,747	454	76,895	590,452	667,347	2,070	3,906	12,053	737,577
1979	38,544	1,739	62,997	683,049	746,046	2,000	6,149	155,121	949,599
1980	41,000	894	45,943	588,557	634,500	2,200	5,700	69,244	753,538
1981	41,000	5,859	75,758	615,642	691,400	2,300	4,300	83,438	828,297
1982	41,000	361	48,483	696,817	745,300	1,750	3,838	18,551	810,800
1983	42,900	0	6,854	587,653	594,507	3,550	3,822	1,006	645,785
1984	45,100	0	90,904	769,652	860,556	3,100	5,700	5,743	920,199
1985	46,251	5,197	88,515	800,381	888,896	3,400	5,433	109,791	1,058,968
1986	50,249	1,170	77,240	829,101	906,341	3,700	5,107	79,355	1,045,922
1987	46,288	2,525	117,173	852,731	969,904	4,000	5,625	93,084	1,121,426
1988	47,994	3,775	121,049	888,471	1,009,520	4,000	4,412	95,866	1,165,567
1989	57,049	3,000	123,896	1,022,166	1,146,062	4,000	6,091	127,950	1,344,152
1990	36,296	1,279	127,837	584,611	712,448	2,000	2,922	57,070	812,015
1991	927	221	33,122	8,965	42,087	0	141	2,180	45,556
1992	28,850	1,500	70,058	509,400	579,458	2,000	2,709	59,250	673,767
1993	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1994	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1995	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1996	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1997	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
1998	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
1999	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2000	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2001	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2002	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2003	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2004	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2005	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2006	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2007	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2008	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2009	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2010	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2011	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2012	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2013	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2014	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2015	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2016	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2017	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2018	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2019	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2020	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2021	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2022	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2023	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2024	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2025	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2026	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2027	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2028	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2029	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2030	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2031	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2032	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2033	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2034	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2035	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
TOTAL	3,426,509	187,473	7,238,962	56,605,671	63,844,633	225,900	354,189	6,776,584	74,815,288

TABLE B-5B

Annual Water Quantities Delivered to Each Contractor (Continued)

(in acre-feet)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley–East Kern Water Agency	Castaic Lake Water Agency(c	Coachella Valley 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	7,382	0	0	0	0	0	0	0	0
1969	0	9,970	0	0	0	0	0	0	0	0
1970	0	11,739	0	0	0	0	0	0	0	0
1971	0	12,490	0	0	0	0	0	0	0	0
1972	53	13,905	0	464	0	338	55	0	1,275	0
1973	20	9,418	5,800	389	9,000	290	0	0	32,426	0
1974	1,259	9,700	6,400	627	10,000	400	14	0	16,605	612
1975	8,068	10,700	7,000	825	11,000	520	0	0	13,865	5,450
1976	27,782	11,700	7,600	1,002	12,000	589	0	0	12,273	6,071
1977	11,202	5,075	0	1,109	0	111	80	0	24,833	8,996
1978	44,137	11,362	10,084	1,209	15,300	208	0	0	4,055	7,771
1979	60,493	19,145	10,063	1,260	15,000	133	4,000	0	18	290
1980	72,407	15,092	10,884	1,239	17,000	191	4,000	0	0	1,085
1981	79,375	18,461	12,105	1,485	19,000	1,270	4,000	0	16,021	3,619
1982	50,291	22,216	13,326	1,238	21,000	0	10,500	0	8,409	12,599
1983	32,961	22,135	14,547	911	23,000	38	0	0	5,994	734
1984	32,662	24,218	15,768	1,128	25,000	1	0	0	5,556	7,656
1985	37,064	24,500	16,989	1,422	27,000	0	0	1,558	7,390	5,028
1986	32,449	27,229	18,210	1,506	29,000	163	0	3,096	6,421	9,454
1987	34,094	27,988	19,431	1,849	31,500	1,080	17	5,379	8,751	10,630
1988	34,079	30,438	20,652	2,006	34,000	419	9	1,770	12,637	8,948
1989	45,280	36,364	21,873	2,170	36,500	971	200	9,009	20,782	12,839
1990	47,206	28,579	23,100	1,827	38,100	1,747	0	8,608	18,831	16,649
1991	9,568	4,562	6,930	852	11,430	522	3,423	3,914	3,661	5,399
1992	37,490	23,030	11,550	1,950	19,050	1,143	12,000	6,600	16,000	9,000
1993	70,829	42,245	23,100	2,150	38,100	2,300	36,000	14,300	35,000	18,000
1994	74,009	44,986	23,100	2,250	38,100	2,300	36,000	15,060	38,000	18,000
1995	77,344	47,605	23,100	2,400	38,100	2,300	50,800	15,560	41,000	18,000
1996	80,724	50,231	23,100	2,525	38,100	2,300	50,800	17,280	44,000	18,000
1997	83,954	53,101	23,100	2,600	38,100	2,300	50,800	17,300	47,502	18,000
1998	83,954	53,101	23,100	2,600	38,100	2,300	50,800	17,300	51,004	18,000
1999	83,954	53,101	23,100	2,600	38,100	2,300	50,800	17,300	55,000	18,000
2000	96,000	54,200	23,100	3,000	38,100	2,300	50,800	17,300	60,000	20,000
2001	96,000	54,200	23,100	3,000	38,100	2,300	50,800	17,300	60,000	20,000
2002	96,000	54,200	23,100	3,000	38,100	2,300	50,800	17,300	60,000	20,000
2003	96,000	54,200	23,100	3,000	38,100	2,300	50,800	17,300	60,000	20,000
2004	96,000	54,200	23,100	3,000	38,100	2,300	50,800	17,300	60,000	20,000
2005	116,000	54,200	23,100	3,825	38,100	2,300	50,800	17,300	90,000	21,300
2006	116,000	54,200	23,100	3,825	38,100	2,300	50,800	17,300	90,000	21,300
2007	116,000	54,200	23,100	3,825	38,100	2,300	50,800	17,300	90,000	21,300
2008	116,000	54,200	23,100	3,825	38,100	2,300	50,800	17,300	90,000	21,300
2009	116,000	54,200	23,100	3,825	38,100	2,300	50,800	17,300	90,000	21,300
2010	136,000	54,200	23,100	4,750	38,100	2,300	50,800	17,300	102,600	22,500
2011	138,400	54,200	23,100	4,750	38,100	2,300	50,800	17,300	102,600	22,500
2012	138,400	54,200	23,100	4,750	38,100	2,300	50,800	17,300	102,600	22,500
2013	138,400	54,200	23,100	4,750	38,100	2,300	50,800	17,300	102,600	22,500
2014	138,400	54,200	23,100	4,750	38,100	2,300	50,800	17,300	102,600	22,500
2015	138,400	54,200	23,100	5,300	38,100	2,300	50,800	17,300	102,600	23,800
2016	138,400	54,200	23,100	5,300	38,100	2,300	50,800	17,300	102,600	23,800
2017	138,400	54,200	23,100	5,300	38,100	2,300	50,800	17,300	102,600	23,800
2018	138,400	54,200	23,100	5,300	38,100	2,300	50,800	17,300	102,600	23,800
2019	138,400	54,200	23,100	5,300	38,100	2,300	50,800	17,300	102,600	23,800
2020	138,400	54,200	23,100	5,700	38,100	2,300	50,800	17,300	102,600	25,000
2021	138,400	54,200	23,100	5,700	38,100	2,300	50,800	17,300	102,600	25,000
2022	138,400	54,200	23,100	5,700	38,100	2,300	50,800	17,300	102,600	25,000
2023	138,400	54,200	23,100	5,700	38,100	2,300	50,800	17,300	102,600	25,000
2024	138,400	54,200	23,100	5,700	38,100	2,300	50,800	17,300	102,600	25,000
2025	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	26,300
2026	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	26,300
2027	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	26,300
2028	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	26,300
2029	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	26,300
2030	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	27,500
2031	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	27,500
2032	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	27,500
2033	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	27,500
2034	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	27,500
2035	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
TOTAL	5,908,708	2,732,968	1,245,612	220,268	2,042,180	109,034	2,193,098	776,834	3,964,909	1,119,630

c) Devil's Den Water District merged with Castaic Lake Water Agency effective January 1, 1992.

TABLE B-5B

Annual Water Quantities Delivered to Each Contractor (Continued)

(in acre-feet)

Calendar Year	SOUTHERN CALIFORNIA AREA (contd.)				FEATHER RIVER AREA					
	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 Area Future Contractor	GRAND TOTAL
	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]
1962	0	0	0	0	0	0	0	0	0	8,906
1963	0	0	0	0	0	0	0	0	0	12,645
1964	0	0	0	0	0	0	0	0	0	20,911
1965	0	0	0	0	0	0	0	0	0	34,026
1966	0	0	0	0	0	0	0	0	0	54,913
1967	0	0	0	0	0	0	0	0	0	56,763
1968	0	0	0	7,382	0	0	0	0	0	294,457
1969	0	0	0	9,970	0	0	0	0	0	268,104
1970	0	0	0	11,739	0	0	70	70	0	369,459
1971	0	0	0	12,490	0	192	64	256	0	654,442
1972	0	71,938	0	88,028	0	186	505	691	0	1,037,770
1973	0	159,883	0	217,226	0	53	679	732	0	737,532
1974	0	277,717	0	323,334	0	127	648	775	0	878,947
1975	0	526,491	0	583,919	0	253	405	658	0	1,230,830
1976	0	618,451	0	697,468	0	527	382	909	0	1,380,124
1977	0	189,755	0	241,161	0	706	303	1,009	0	582,381
1978	0	507,565	0	601,691	0	579	278	857	0	1,458,733
1979	0	477,074	0	587,476	0	302	329	631	0	1,666,457
1980	0	531,727	0	653,625	0	267	295	562	0	1,530,256
1981	0	795,846	0	951,182	0	221	355	576	0	1,918,563
1982	0	691,192	0	830,771	0	334	305	639	0	1,750,123
1983	0	343,521	0	443,841	0	325	262	587	0	1,187,156
1984	0	454,218	0	566,207	108	177	272	557	0	1,588,008
1985	0	683,625	0	804,576	62	308	254	624	0	1,990,295
1986	0	708,840	0	836,368	328	313	317	958	0	1,999,155
1987	0	712,424	0	853,143	88	459	452	999	0	2,121,607
1988	0	902,564	0	1,047,522	303	385	523	1,211	0	2,376,673
1989	0	1,156,698	0	1,342,686	403	300	486	1,189	0	2,851,371
1990	0	1,396,423	4,836	1,585,906	494	380	574	1,448	0	2,577,564
1991	0	391,447	988	442,696	118	328	390	836	0	548,063
1992	0	968,500	2,500	1,108,813	1,100	543	560	2,203	0	1,891,063
1993	0	2,011,500	5,000	2,298,524	2,400	1,101	1,160	4,661	0	3,857,091
1994	0	2,011,500	5,000	2,308,305	2,700	1,132	1,200	5,032	0	3,874,852
1995	0	2,011,500	5,000	2,332,709	2,900	1,158	1,250	5,308	0	3,908,337
1996	0	2,011,500	5,000	2,343,560	3,200	1,187	1,300	5,687	0	3,996,258
1997	5,570	2,011,500	20,000	2,373,827	3,700	1,200	1,350	6,250	0	4,030,185
1998	5,570	2,011,500	20,000	2,377,329	3,700	1,200	1,400	6,300	0	4,034,840
1999	5,570	2,011,500	20,000	2,381,325	3,700	1,200	1,450	6,350	0	4,039,956
2000	6,350	2,011,500	20,000	2,402,650	5,500	1,200	1,510	8,210	0	4,064,316
2001	6,350	2,011,500	20,000	2,402,650	5,500	27,500	1,570	34,570	0	4,091,291
2002	6,350	2,011,500	20,000	2,402,650	5,500	27,500	1,630	34,630	0	4,091,871
2003	6,350	2,011,500	20,000	2,402,650	5,500	27,500	1,690	34,690	0	4,092,546
2004	6,350	2,011,500	20,000	2,402,650	5,500	27,500	1,750	34,750	0	4,093,206
2005	8,450	2,011,500	20,000	2,456,875	7,500	27,500	1,810	36,810	0	4,151,971
2006	8,450	2,011,500	20,000	2,456,875	7,500	27,500	1,880	36,880	0	4,152,491
2007	8,450	2,011,500	20,000	2,456,875	7,500	27,500	1,950	36,950	0	4,153,111
2008	8,450	2,011,500	20,000	2,456,875	7,500	27,500	2,020	37,020	0	4,153,831
2009	8,450	2,011,500	20,000	2,456,875	7,500	27,500	2,090	37,090	0	4,154,451
2010	10,550	2,011,500	20,000	2,493,700	9,600	27,500	2,160	39,260	0	4,194,246
2011	10,550	2,011,500	20,000	2,496,100	9,600	27,500	2,240	39,340	0	4,197,376
2012	10,550	2,011,500	20,000	2,496,100	9,600	27,500	2,320	39,420	0	4,198,006
2013	10,550	2,011,500	20,000	2,496,100	9,600	27,500	2,410	39,510	0	4,198,746
2014	10,550	2,011,500	20,000	2,496,100	9,600	27,500	2,500	39,600	0	4,199,486
2015	13,550	2,011,500	20,000	2,500,950	9,600	27,500	2,600	39,700	0	4,205,336
2016	13,550	2,011,500	20,000	2,500,950	9,600	27,500	2,700	39,800	0	4,206,036
2017	13,550	2,011,500	20,000	2,500,950	9,600	27,500	2,700	39,800	0	4,206,636
2018	13,550	2,011,500	20,000	2,500,950	9,600	27,500	2,700	39,800	0	4,207,236
2019	13,550	2,011,500	20,000	2,500,950	9,600	27,500	2,700	39,800	0	4,207,836
2020	16,650	2,011,500	20,000	2,505,650	9,600	27,500	2,700	39,800	0	4,213,136
2021	17,300	2,011,500	20,000	2,506,300	9,600	27,500	2,700	39,800	0	4,213,886
2022	17,300	2,011,500	20,000	2,506,300	9,600	27,500	2,700	39,800	0	4,213,886
2023	17,300	2,011,500	20,000	2,506,300	9,600	27,500	2,700	39,800	0	4,213,886
2024	17,300	2,011,500	20,000	2,506,300	9,600	27,500	2,700	39,800	0	4,213,886
2025	17,300	2,011,500	20,000	2,507,700	9,600	27,500	2,700	39,800	0	4,215,286
2026	17,300	2,011,500	20,000	2,507,700	9,600	27,500	2,700	39,800	0	4,215,286
2027	17,300	2,011,500	20,000	2,507,700	9,600	27,500	2,700	39,800	0	4,215,286
2028	17,300	2,011,500	20,000	2,507,700	9,600	27,500	2,700	39,800	0	4,215,286
2029	17,300	2,011,500	20,000	2,507,700	9,600	27,500	2,700	39,800	0	4,215,286
2030	17,300	2,011,500	20,000	2,508,900	9,600	27,500	2,700	39,800	0	4,216,486
2031	17,300	2,011,500	20,000	2,508,900	9,600	27,500	2,700	39,800	0	4,216,486
2032	17,300	2,011,500	20,000	2,508,900	9,600	27,500	2,700	39,800	0	4,216,486
2033	17,300	2,011,500	20,000	2,508,900	9,600	27,500	2,700	39,800	0	4,216,486
2034	17,300	2,011,500	20,000	2,508,900	9,600	27,500	2,700	39,800	0	4,216,486
2035	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
TOTAL	487,360	99,060,399	808,324	120,669,324	339,904	979,143	103,948	1,422,995	0	213,484,167

TABLE B-6

Annual Water Quantities Conveyed Through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Calendar Year	NORTH BAY AQUEDUCT											
	Barker Slough Pumping Plant				Cordelia Pumping Plant Solano County WA				Cordelia Pumping Plant Napa County FC&WCD			
	Initial Fill Water	Operational Losses	Water Supply Delivery	Total	Initial Fill Water	Operational Losses	Water Supply Delivery	Total	Initial Fill Water	Operational Losses	Water Supply Delivery (a	Total
	[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	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	24	(10)	1,214	1,228
1969	0	0	0	0	0	0	0	0	0	2	2,687	2,689
1970	0	0	0	0	0	0	0	0	0	18	3,618	3,636
1971	0	0	0	0	0	0	0	0	0	4	2,521	2,525
1972	0	0	0	0	0	0	0	0	0	(10)	3,647	3,637
1973	0	0	0	0	0	0	0	0	0	1	3,792	3,793
1974	0	0	0	0	0	0	0	0	0	10	4,870	4,880
1975	0	0	0	0	0	0	0	0	0	10	6,840	6,850
1976	0	0	0	0	0	0	0	0	0	4	7,122	7,126
1977	0	0	0	0	0	0	0	0	0	2	8,226	8,228
1978	0	0	0	0	0	0	0	0	0	(6)	6,034	6,028
1979	0	0	0	0	0	0	0	0	0	1	6,561	6,562
1980	0	0	0	0	0	0	0	0	0	(3)	6,707	6,704
1981	0	0	0	0	0	0	0	0	0	8	9,001	9,009
1982	0	0	0	0	0	0	0	0	0	(8)	1,213	1,205
1983	0	0	0	0	0	0	0	0	0	(12)	2,287	2,275
1984	0	0	0	0	0	0	0	0	0	(15)	2,923	2,908
1985	0	0	0	0	0	0	0	0	0	13	4,039	4,052
1986	0	0	0	0	0	0	0	0	0	(4)	3,515	3,511
1987	0	0	0	0	0	0	0	0	0	0	7,693	7,693
1988	0	(1)	15,118	15,117	0	0	9,726	9,726	0	0	5,392	5,392
1989	0	(4)	21,075	21,071	0	0	17,246	17,246	0	(4)	3,819	3,815
1990	0	637	26,071	26,708	0	0	15,856	15,856	0	3	6,940	6,943
1991	0	654	7,476	8,130	0	0	3,003	3,003	0	(4)	1,207	1,203
1992	0	51	18,993	19,044	0	5	8,874	8,879	0	5	4,737	4,742
1993	0	51	34,620	34,671	0	5	16,530	16,535	0	5	8,490	8,495
1994	0	51	37,215	37,266	0	5	16,930	16,935	0	5	9,135	9,140
1995	0	51	44,020	44,071	0	5	17,340	17,345	0	5	9,780	9,785
1996	0	51	48,225	48,276	0	5	17,750	17,755	0	5	10,425	10,430
1997	0	51	49,322	49,373	0	5	17,965	17,970	0	5	11,065	11,070
1998	0	51	50,425	50,476	0	5	18,182	18,187	0	5	11,710	11,715
1999	0	51	51,495	51,546	0	5	18,393	18,398	0	5	12,330	12,335
2000	0	51	52,670	52,721	0	5	18,608	18,613	0	5	13,050	13,055
2001	0	51	53,285	53,336	0	5	18,608	18,613	0	5	13,665	13,670
2002	0	51	53,805	53,856	0	5	18,608	18,613	0	5	14,185	14,190
2003	0	51	54,420	54,471	0	5	18,608	18,613	0	5	14,800	14,805
2004	0	51	55,020	55,071	0	5	18,608	18,613	0	5	15,400	15,405
2005	0	51	57,500	57,551	0	5	19,488	19,493	0	5	16,000	16,005
2006	0	51	57,950	58,001	0	5	19,488	19,493	0	5	16,450	16,455
2007	0	51	58,500	58,551	0	5	19,488	19,493	0	5	17,000	17,005
2008	0	51	59,150	59,201	0	5	19,488	19,493	0	5	17,650	17,655
2009	0	51	59,700	59,751	0	5	19,488	19,493	0	5	18,200	18,205
2010	0	51	60,500	60,551	0	5	19,606	19,611	0	5	18,750	18,755
2011	0	51	61,150	61,201	0	5	19,606	19,611	0	5	19,400	19,405
2012	0	51	61,700	61,751	0	5	19,606	19,611	0	5	19,950	19,955
2013	0	51	62,350	62,401	0	5	19,606	19,611	0	5	20,600	20,605
2014	0	51	63,000	63,051	0	5	19,606	19,611	0	5	21,250	21,255
2015	0	51	63,900	63,951	0	5	19,724	19,729	0	5	21,900	21,905
2016	0	51	64,500	64,551	0	5	19,724	19,729	0	5	22,500	22,505
2017	0	51	65,100	65,151	0	5	19,724	19,729	0	5	23,100	23,105
2018	0	51	65,700	65,751	0	5	19,724	19,729	0	5	23,700	23,705
2019	0	51	66,300	66,351	0	5	19,724	19,729	0	5	24,300	24,305
2020	0	51	66,900	66,951	0	5	19,724	19,729	0	5	24,900	24,905
2021	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2022	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2023	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2024	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2025	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2026	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2027	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2028	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2029	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2030	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2031	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2032	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2033	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2034	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2035	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005

a) For the period 1968 through 1987, deliveries are non-SWP water pumped through an interim facility.

TABLE B-6

Annual Water Quantities Conveyed Through Each Pumping and Power Recovery Plant of Project Transportation Facilities (Continued)

(in acre-feet)

Calendar Year	SOUTH BAY AQUEDUCT — South Bay Pumping Plant						CALIFORNIA AQUEDUCT — North San Joaquin Division — Banks Pumping Plant							
							Transportation Water							
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply (b	Deliveries: Recreation	Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total	Conservation Water	Total
	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]
1961	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	9	272	0	8,906	0	9,187	0	0	0	0	0	0	0	0
1963	71	185	0	12,645	0	12,901	0	0	0	0	0	0	0	0
1964	171	152	0	20,911	0	21,234	0	0	0	0	0	0	0	0
1965	93	729	0	34,026	0	34,848	0	0	0	0	0	0	0	0
1966	0	1,746	0	54,913	0	56,659	0	0	0	0	0	0	0	0
1967	0	1,677	0	56,763	0	58,440	5,746	1,183	0	11,538	0	18,467	2,957	21,424
1968	0	1,847	0	101,055	0	102,902	11,079	74,464	0	293,243	0	378,786	531,275	910,061
1969	3,449	2,668	0	69,712	0	75,829	7,336	44,287	0	265,417	0	317,040	531,185	848,225
1970	16,279	1,086	(5,355)	89,560	0	101,570	23,947	20,767	(5,355)	365,771	0	405,130	(12,995)	392,135
1971	0	1,815	8,854	98,584	0	109,253	23,207	(10,754)	8,854	651,665	8	672,980	7,708	680,688
1972	0	3,557	2,273	138,426	0	144,256	145,066	9,057	(4,285)	1,033,432	6,489	1,189,759	48,300	1,238,059
1973	0	(33)	(1,510)	94,078	0	92,535	214,941	(4,951)	2,902	733,008	1,155	947,055	55,846	1,002,901
1974	0	1,287	(10,056)	89,318	0	80,549	247,894	(11,526)	(32,510)	873,302	2,118	1,079,278	54,683	1,133,961
1975	0	320	8,550	93,604	0	102,474	110,149	(8,092)	16,101	1,223,332	3,377	1,344,867	(102,625)	1,242,242
1976	0	2,431	1,391	126,431	141	130,394	67,834	5,443	(244,124)	1,372,093	1,745	1,202,991	(442,348)	760,643
1977	0	2,866	2,685	107,704	112	113,367	0	39,897	(157,543)	573,146	1,111	456,611	(13,507)	443,104
1978	0	2,165	(11,249)	112,574	126	103,616	67,457	(36,898)	35,129	1,451,842	1,177	1,518,707	752,075	2,270,782
1979	0	2,401	1,069	122,190	89	125,749	17,397	60,958	(32,307)	1,659,265	1,398	1,706,711	(112,053)	1,594,658
1980	0	1,758	(6,563)	115,824	123	111,142	3,159	58,484	(275,538)	1,529,187	2,131	1,317,423	186,601	1,504,024
1981	0	2,627	13,742	129,507	121	145,997	46,060	85,350	40,536	1,908,986	4,974	2,085,906	(931,878)	1,154,028
1982	0	2,344	(23,928)	107,439	129	85,984	5,979	61,556	99,897	1,743,145	4,646	1,915,223	347,983	2,263,206
1983	0	2,151	(22,886)	94,656	132	74,053	6,071	47,022	(310,477)	1,184,282	7,853	934,751	835,771	1,770,522
1984	0	2,088	8,442	98,122	158	108,810	38,649	97,143	(108,548)	1,587,936	5,874	1,621,054	21,875	1,642,929
1985	0	2,817	(1,607)	122,088	152	123,450	0	110,469	137,783	1,985,632	5,452	2,239,336	(110,569)	2,128,767
1986	0	2,217	319	110,988	130	113,654	0	82,958	37,865	1,993,278	3,865	2,117,966	205,399	2,323,365
1987	0	2,625	(584)	136,796	137	138,974	0	89,721	(19,167)	2,118,867	7,672	2,197,093	(458,725)	1,738,368
1988	0	40	0	147,255	142	147,437	0	96,687	(29,826)	2,367,231	4,889	2,438,981	(294,860)	2,144,121
1989	0	2,706	3,304	142,269	152	148,431	0	88,370	(62,267)	2,829,107	8,612	2,863,822	421,818	3,285,640
1990	0	894	1,041	156,537	168	158,640	0	136,842	(423,258)	2,554,658	9,262	2,277,504	(368,904)	1,908,600
1991	0	2,562	(4,532)	50,259	150	48,439	0	103,697	282,672	537,610	4,133	928,112	0	928,112
1992	0	230	104	87,287	400	88,021	0	51,275	36,188	1,869,867	8,210	1,965,540	93,581	2,059,121
1993	0	230	(2,380)	176,986	400	175,236	0	51,313	(24,876)	3,817,810	8,210	3,852,457	(78,787)	3,773,670
1994	0	230	0	182,000	400	182,630	0	51,487	(12,845)	3,832,605	8,210	3,879,457	(911)	3,878,546
1995	0	3,410	0	184,000	400	187,810	0	106,258	12,193	3,859,009	8,210	3,985,670	(14,742)	3,970,928
1996	0	3,365	0	186,000	400	189,765	0	106,448	(27,958)	3,942,346	8,210	4,029,046	81,514	4,110,560
1997	0	3,324	0	188,000	400	191,724	0	109,023	26,575	3,974,613	8,210	4,118,421	46,463	4,164,884
1998	0	3,324	0	188,000	400	191,724	0	109,121	(16,222)	3,978,115	8,210	4,079,224	26,357	4,105,581
1999	0	3,324	0	188,000	400	191,724	0	109,247	3,954	3,982,111	8,210	4,103,522	17,366	4,120,888
2000	0	3,324	0	188,000	400	191,724	0	109,218	(6,356)	4,003,436	8,210	4,114,508	(6,388)	4,108,120
2001	0	3,324	0	188,000	400	191,724	0	109,148	7,874	4,003,436	8,210	4,128,668	461	4,129,129
2002	0	3,324	0	188,000	400	191,724	0	109,195	(3,099)	4,003,436	8,210	4,117,742	12,913	4,130,655
2003	0	3,324	0	188,000	400	191,724	0	109,174	(12,919)	4,003,436	8,210	4,107,901	(2,621)	4,105,280
2004	0	3,324	0	188,000	400	191,724	0	109,253	9,281	4,003,436	8,210	4,130,180	13,654	4,143,834
2005	0	3,324	0	188,000	400	191,724	0	109,018	4,199	4,057,661	8,210	4,179,088	(22,530)	4,156,558
2006	0	3,324	0	188,000	400	191,724	0	109,036	(123)	4,057,661	8,210	4,174,784	5,414	4,180,198
2007	0	3,324	0	188,000	400	191,724	0	109,075	(1,698)	4,057,661	8,210	4,173,248	5,414	4,178,662
2008	0	3,324	0	188,000	400	191,724	0	109,067	2,466	4,057,661	8,210	4,177,404	10,677	4,188,081
2009	0	3,324	0	188,000	400	191,724	0	109,153	(2,956)	4,057,661	8,210	4,172,068	9,020	4,181,088
2010	0	3,324	0	188,000	400	191,724	0	109,152	3,896	4,094,486	8,210	4,215,744	(7,446)	4,208,298
2011	0	3,324	0	188,000	400	191,724	0	109,259	3,117	4,096,886	8,210	4,217,472	16,061	4,233,533
2012	0	3,324	0	188,000	400	191,724	0	109,272	(1,706)	4,096,886	8,210	4,212,662	5,885	4,218,547
2013	0	3,324	0	188,000	400	191,724	0	109,237	237	4,096,886	8,210	4,214,570	12,925	4,227,495
2014	0	3,324	0	188,000	400	191,724	0	109,122	(8,555)	4,096,886	8,210	4,205,663	(5,006)	4,200,657
2015	0	3,324	0	188,000	400	191,724	0	109,292	(5,770)	4,101,736	8,210	4,213,468	22,053	4,235,521
2016	0	3,324	0	188,000	400	191,724	0	109,349	4,288	4,101,736	8,210	4,223,583	4,561	4,228,144
2017	0	3,324	0	188,000	400	191,724	0	109,344	0	4,101,736	8,210	4,219,290	5,415	4,224,705
2018	0	3,324	0	188,000	400	191,724	0	109,343	(1,273)	4,101,736	8,210	4,218,016	(1,869)	4,216,147
2019	0	3,324	0	188,000	400	191,724	0	109,298	3,700	4,101,736	8,210	4,222,944	17,619	4,240,563
2020	0	3,324	0	188,000	400	191,724	0	109,265	770	4,106,436	8,210	4,224,681	(10,616)	4,214,065
2021	0	3,324	0	188,000	400	191,724	0	109,059	(1,520)	4,107,086	8,210	4,222,835	(5,514)	4,217,321
2022	0	3,324	0	188,000	400	191,724	0	109,129	934	4,107,086	8,210	4,225,359	14,301	4,239,660
2023	0	3,324	0	188,000	400	191,724	0	109,046	882	4,107,086	8,210	4,225,224	(5,849)	4,219,375
2024	0	3,324	0	188,000	400	191,724	0	109,148	(7,746)	4,107,086	8,210	4,216,698	16,546	4,233,244
2025	0	3,324	0	188,000	400	191,724	0	109,130	541	4,108,486	8,210	4,226,367	6,032	4,232,399
2026	0	3,324	0	188,000	400	191,724	0	109,144	(1,402)	4,108,486	8,210	4,224,438	9,322	4,233,760
2027	0	3,324	0	188,000	400	191,724	0	109,116	(248)	4,108,486	8,210	4,225,564	5,414	4,230,978
2028	0	3,324	0	188,000	400	191,724	0	109,118	(374)	4,108,486	8,210	4,225,440	5,414	4,230,854
2029	0	3,324	0	188,000	400	191,724	0	109,102	8,241	4,108,486	8,210	4,234,039	(3,626)	4,230,413
2030	0	3,324	0	188,000	400	191,724	0	109,456	(849)	4,109,686	8,210	4,226,503	3,825	4,230,328
2031	0	3,324	0	188,000	400	191,724	0	109,418	476	4,109,686	8,210	4,227,790	3,037	4,230,827
2032	0	3,324	0	188,000	400	191,724	0	109,450	(475)	4,109,686	8,210	4,226,871	7,790	4,234,661
2033	0	3,324	0	188,000	400	191,724	0	109,432	906	4,109,686	8,210	4,228,234	4,201	4,232,435
2034	0	3,324	0	188,000	400	191,724	0	109,231	1,187	4,109,686	8,210	4,228,314	10,557	4,238,871
2035	0	3,324	0	188,000	400	191,724	0	110,037	(992)	4,110,986	8,210	4,228,241	100,191	4,328,432

b) For the period June 1962 through November 1967, deliveries were supplied by non-SWP water.

TABLE B-6

Annual Water Quantities Conveyed Through Each Pumping and Power Recovery Plant of Project Transportation Facilities (Continued)

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	San Luis Division						South San Joaquin Division					
	Dos Amigos Pumping Plant						Buena Vista 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
	[27]	[28]	[29]	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]
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	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	11,079	25,126	0	189,104	0	225,309	0	0	0	0	0	0
1969	3,887	9,922	0	192,689	0	206,498	0	0	0	0	0	0
1970	7,668	1,901	0	270,300	0	279,869	4,779	1,012	0	3	0	5,794
1971	23,207	(12,030)	0	545,869	0	557,046	7,853	8,399	0	101,512	0	117,764
1972	145,066	(6,635)	(6,558)	886,840	6,481	1,025,194	100,274	20,044	(6,558)	223,626	6,481	343,867
1973	214,941	(6,778)	1,329	635,716	1,147	846,355	204,638	35,695	1,329	311,096	1,147	553,905
1974	247,894	(16,765)	(15,295)	780,513	2,108	998,455	237,554	19,672	(15,295)	388,949	2,108	632,988
1975	110,149	(12,144)	(693)	1,126,152	3,358	1,226,822	103,352	26,342	(693)	672,531	3,358	804,890
1976	67,834	(456)	(152,171)	1,241,550	1,581	1,158,338	61,122	29,428	(152,171)	785,055	1,581	725,015
1977	0	26,359	(116,219)	463,970	737	374,847	0	25,173	(116,219)	271,944	560	181,458
1978	67,457	1,905	79,308	1,335,362	680	1,484,712	65,027	17,751	121,904	762,043	674	967,399
1979	17,397	33,884	(51,299)	1,530,926	685	1,531,593	12,302	46,157	(51,299)	737,714	502	745,376
1980	3,159	34,391	(272,825)	1,407,663	1,514	1,173,902	0	49,025	(134,009)	778,059	1,262	694,337
1981	46,060	36,962	23,359	1,775,179	4,348	1,885,908	0	38,942	23,359	1,077,322	4,112	1,143,735
1982	5,979	57,146	116,086	1,631,868	4,205	1,815,284	0	29,059	117,174	990,863	4,045	1,141,141
1983	6,071	63,583	(101,155)	1,085,804	7,475	1,061,778	0	40,205	(101,155)	593,920	7,291	540,261
1984	38,649	109,263	(112,744)	1,484,114	5,391	1,524,673	0	38,487	(114,984)	781,955	5,244	710,702
1985	0	86,772	138,898	1,858,111	4,936	2,088,717	0	42,838	139,689	992,606	4,804	1,179,937
1986	0	49,378	37,546	1,877,183	3,426	1,967,533	0	45,343	37,546	1,014,294	3,285	1,100,468
1987	0	63,289	(23,086)	1,976,446	7,121	2,023,770	0	28,829	(22,959)	1,017,361	6,937	1,030,168
1988	0	64,333	(29,747)	2,215,564	4,490	2,254,640	0	30,067	(29,747)	1,244,184	4,360	1,248,864
1989	0	60,769	(67,943)	2,679,845	8,129	2,680,800	0	38,859	(65,515)	1,532,625	7,967	1,513,936
1990	0	115,074	(14,836)	2,394,999	8,922	2,504,159	0	46,865	(14,836)	1,769,991	8,879	1,810,899
1991	0	93,743	106,390	487,351	3,812	691,296	0	35,719	108,013	451,703	3,796	599,231
1992	0	37,984	36,084	1,779,871	7,120	1,861,059	0	16,300	36,084	1,198,205	7,010	1,257,599
1993	0	38,022	(22,496)	3,635,124	7,120	3,657,770	0	16,300	(22,496)	2,476,204	7,010	2,477,018
1994	0	38,196	(12,845)	3,644,905	7,120	3,677,376	0	16,300	(12,845)	2,485,985	7,010	2,496,450
1995	0	63,386	12,193	3,669,309	7,120	3,752,008	0	41,490	12,193	2,510,389	7,010	2,571,082
1996	0	63,277	(27,958)	3,750,646	7,120	3,793,085	0	41,381	(27,958)	2,521,240	7,010	2,541,673
1997	0	63,300	26,575	3,780,913	7,120	3,877,908	0	41,404	26,575	2,586,127	7,010	2,661,116
1998	0	63,209	(16,222)	3,784,415	7,120	3,838,522	0	41,313	(16,222)	2,589,629	7,010	2,621,730
1999	0	63,440	3,954	3,788,411	7,120	3,862,925	0	41,544	3,954	2,593,625	7,010	2,646,133
2000	0	63,384	(6,356)	3,809,736	7,120	3,873,884	0	41,488	(6,356)	2,622,246	7,010	2,664,388
2001	0	63,358	7,874	3,809,736	7,120	3,888,088	0	41,462	7,874	2,622,246	7,010	2,678,592
2002	0	63,391	(3,099)	3,809,736	7,120	3,877,148	0	41,495	(3,099)	2,622,246	7,010	2,667,652
2003	0	63,342	(12,919)	3,809,736	7,120	3,867,279	0	41,446	(12,919)	2,622,246	7,010	2,657,783
2004	0	63,392	9,281	3,809,736	7,120	3,889,529	0	41,496	9,281	2,622,246	7,010	2,680,033
2005	0	63,343	4,199	3,863,961	7,120	3,938,623	0	41,447	4,199	2,681,875	7,010	2,734,531
2006	0	63,360	(123)	3,863,961	7,120	3,934,318	0	41,464	(123)	2,681,875	7,010	2,730,226
2007	0	63,372	(1,698)	3,863,961	7,120	3,932,755	0	41,476	(1,698)	2,681,875	7,010	2,728,663
2008	0	63,365	2,466	3,863,961	7,120	3,936,912	0	41,469	2,466	2,681,875	7,010	2,732,820
2009	0	63,405	(2,956)	3,863,961	7,120	3,931,530	0	41,509	(2,956)	2,681,875	7,010	2,727,438
2010	0	63,375	3,896	3,900,786	7,120	3,975,177	0	41,479	3,896	2,718,700	7,010	2,771,085
2011	0	63,443	3,117	3,903,186	7,120	3,976,866	0	41,547	3,117	2,721,100	7,010	2,772,774
2012	0	63,434	(1,706)	3,903,186	7,120	3,972,034	0	41,538	(1,706)	2,721,100	7,010	2,767,942
2013	0	63,418	237	3,903,186	7,120	3,973,961	0	41,522	237	2,721,100	7,010	2,769,869
2014	0	63,424	(8,555)	3,903,186	7,120	3,965,175	0	41,528	(8,555)	2,721,100	7,010	2,761,083
2015	0	63,343	(5,770)	3,908,036	7,120	3,972,729	0	41,447	(5,770)	2,725,950	7,010	2,768,637
2016	0	63,412	4,288	3,908,036	7,120	3,982,856	0	41,516	4,288	2,725,950	7,010	2,778,764
2017	0	63,407	0	3,908,036	7,120	3,978,563	0	41,511	0	2,725,950	7,010	2,774,471
2018	0	63,406	(1,273)	3,908,036	7,120	3,977,289	0	41,510	(1,273)	2,725,950	7,010	2,773,197
2019	0	63,334	3,700	3,908,036	7,120	3,982,190	0	41,438	3,700	2,725,950	7,010	2,778,098
2020	0	63,350	770	3,912,736	7,120	3,983,976	0	41,454	770	2,730,650	7,010	2,779,884
2021	0	63,322	(1,520)	3,913,386	7,120	3,982,308	0	41,426	(1,520)	2,731,300	7,010	2,778,216
2022	0	63,341	934	3,913,386	7,120	3,984,781	0	41,445	934	2,731,300	7,010	2,780,689
2023	0	63,307	882	3,913,386	7,120	3,984,695	0	41,411	882	2,731,300	7,010	2,780,603
2024	0	63,349	(7,746)	3,913,386	7,120	3,976,109	0	41,453	(7,746)	2,731,300	7,010	2,772,017
2025	0	63,331	541	3,914,786	7,120	3,985,778	0	41,435	541	2,732,700	7,010	2,781,686
2026	0	63,335	(1,402)	3,914,786	7,120	3,983,839	0	41,439	(1,402)	2,732,700	7,010	2,779,747
2027	0	63,305	(248)	3,914,786	7,120	3,984,963	0	41,409	(248)	2,732,700	7,010	2,780,871
2028	0	63,309	(374)	3,914,786	7,120	3,984,841	0	41,413	(374)	2,732,700	7,010	2,780,749
2029	0	63,305	8,241	3,914,786	7,120	3,993,452	0	41,409	8,241	2,732,700	7,010	2,789,360
2030	0	63,345	(849)	3,915,986	7,120	3,985,602	0	41,449	(849)	2,733,900	7,010	2,781,510
2031	0	63,314	476	3,915,986	7,120	3,986,896	0	41,418	476	2,733,900	7,010	2,782,804
2032	0	63,346	(475)	3,915,986	7,120	3,985,977	0	41,450	(475)	2,733,900	7,010	2,781,885
2033	0	63,314	906	3,915,986	7,120	3,987,326	0	41,418	906	2,733,900	7,010	2,783,234
2034	0	63,347	1,187	3,915,986	7,120	3,987,640	0	41,451	1,187	2,733,900	7,010	2,783,548
2035	0	63,427	(992)	3,917,286	7,120	3,986,841	0	41,531	(992)	2,735,200	7,010	2,782,749

TABLE B-6

Annual Water Quantities Conveyed Through Each Pumping and Power Recovery Plant of Project Transportation Facilities (Continued)

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued) — South San Joaquin Division (continued) — Wheeler Ridge Pumping Plant						Chrisman 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
	[39]	[40]	[41]	[42]	[43]	[44]	[45]	[46]	[47]	[48]	[49]	[50]
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	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	198	2	0	0	0	200	0	0	0	0	0	0
1971	7,533	(112)	0	3,552	0	10,973	7,366	(159)	0	0	0	7,207
1972	100,274	12,765	(6,558)	84,955	6,481	197,917	100,274	13,160	(6,558)	78,891	6,481	192,248
1973	204,638	21,543	1,329	229,685	1,147	458,342	204,638	32,414	1,329	209,769	1,147	449,297
1974	237,554	11,843	(15,295)	336,198	2,108	572,408	237,554	17,655	(15,295)	318,198	2,108	560,220
1975	103,352	19,763	(693)	621,706	3,358	747,486	103,352	25,326	(693)	586,286	3,358	717,629
1976	61,122	18,552	(152,171)	740,486	1,581	669,570	61,122	21,468	(152,171)	700,935	1,581	632,935
1977	0	16,415	(116,219)	246,349	560	147,105	0	15,698	(116,219)	240,191	560	140,230
1978	65,027	28,820	121,904	631,121	674	847,546	65,027	26,705	121,904	599,973	674	814,283
1979	12,302	50,663	(51,299)	625,561	502	637,729	12,302	50,580	(51,299)	586,959	502	599,044
1980	0	48,825	(134,009)	696,405	1,262	612,483	0	58,085	(134,009)	658,588	1,262	583,926
1981	0	51,600	23,359	998,307	4,112	1,077,378	0	48,844	23,359	959,274	4,112	1,035,589
1982	0	44,353	117,332	878,486	4,045	1,044,216	0	33,541	117,277	830,704	4,045	985,567
1983	0	43,961	(101,155)	487,915	7,291	438,012	0	34,698	(101,155)	450,489	7,291	391,323
1984	0	45,999	(115,088)	632,262	5,244	568,417	0	33,132	(115,092)	582,414	5,244	505,698
1985	0	50,106	139,973	854,684	4,804	1,049,567	0	54,831	139,954	810,606	4,804	1,010,195
1986	0	47,369	37,546	882,300	3,285	970,500	0	50,047	37,546	839,839	3,285	930,717
1987	0	46,445	(23,255)	887,905	6,937	918,032	0	31,888	23,318	853,157	6,937	915,300
1988	0	45,078	(29,747)	1,097,631	4,360	1,117,322	0	31,038	(29,747)	1,055,637	4,360	1,061,288
1989	0	58,540	(65,702)	1,382,599	7,967	1,383,404	0	51,702	(65,645)	1,339,358	7,967	1,333,382
1990	0	66,868	(14,836)	1,627,246	8,879	1,688,157	0	56,663	(14,836)	1,590,893	8,879	1,641,599
1991	0	29,454	108,081	445,935	3,796	587,266	0	34,813	108,129	443,843	3,796	590,581
1992	0	12,670	36,084	1,127,637	7,010	1,183,401	0	12,420	36,084	1,109,233	7,010	1,164,747
1993	0	12,670	(22,496)	2,335,504	7,010	2,332,688	0	12,420	(22,496)	2,299,204	7,010	2,296,138
1994	0	12,670	(12,845)	2,345,285	7,010	2,352,120	0	12,420	(12,845)	2,308,985	7,010	2,315,570
1995	0	37,860	12,193	2,369,689	7,010	2,426,752	0	37,610	12,193	2,333,389	7,010	2,390,202
1996	0	37,751	(27,958)	2,380,540	7,010	2,397,343	0	37,501	(27,958)	2,344,240	7,010	2,360,793
1997	0	37,774	26,575	2,426,252	7,010	2,497,611	0	37,524	26,575	2,381,177	7,010	2,452,286
1998	0	37,683	(16,222)	2,429,754	7,010	2,458,225	0	37,433	(16,222)	2,384,679	7,010	2,412,900
1999	0	37,914	3,954	2,433,750	7,010	2,482,628	0	37,664	3,954	2,388,675	7,010	2,437,303
2000	0	37,858	(6,356)	2,462,371	7,010	2,500,883	0	37,608	(6,356)	2,417,296	7,010	2,455,558
2001	0	37,832	7,874	2,462,371	7,010	2,515,087	0	37,582	7,874	2,417,296	7,010	2,469,762
2002	0	37,865	(3,099)	2,462,371	7,010	2,504,147	0	37,615	(3,099)	2,417,296	7,010	2,458,822
2003	0	37,816	(12,919)	2,462,371	7,010	2,494,278	0	37,566	(12,919)	2,417,296	7,010	2,448,953
2004	0	37,866	9,281	2,462,371	7,010	2,516,528	0	37,616	9,281	2,417,296	7,010	2,471,203
2005	0	37,817	4,199	2,522,000	7,010	2,571,026	0	37,567	4,199	2,476,925	7,010	2,525,701
2006	0	37,834	(123)	2,522,000	7,010	2,566,721	0	37,584	(123)	2,476,925	7,010	2,521,396
2007	0	37,846	(1,698)	2,522,000	7,010	2,565,158	0	37,596	(1,698)	2,476,925	7,010	2,519,833
2008	0	37,839	2,466	2,522,000	7,010	2,569,315	0	37,589	2,466	2,476,925	7,010	2,523,990
2009	0	37,879	(2,956)	2,522,000	7,010	2,563,933	0	37,629	(2,956)	2,476,925	7,010	2,518,608
2010	0	37,849	3,896	2,558,825	7,010	2,607,580	0	37,599	3,896	2,513,750	7,010	2,562,255
2011	0	37,917	3,117	2,561,225	7,010	2,609,269	0	37,667	3,117	2,516,150	7,010	2,563,944
2012	0	37,908	(1,706)	2,561,225	7,010	2,604,437	0	37,658	(1,706)	2,516,150	7,010	2,559,112
2013	0	37,892	237	2,561,225	7,010	2,606,364	0	37,642	237	2,516,150	7,010	2,561,039
2014	0	37,898	(8,555)	2,561,225	7,010	2,597,578	0	37,648	(8,555)	2,516,150	7,010	2,552,253
2015	0	37,817	(5,770)	2,566,075	7,010	2,605,132	0	37,567	(5,770)	2,521,000	7,010	2,559,807
2016	0	37,886	4,288	2,566,075	7,010	2,615,259	0	37,636	4,288	2,521,000	7,010	2,569,934
2017	0	37,881	0	2,566,075	7,010	2,610,966	0	37,631	0	2,521,000	7,010	2,565,641
2018	0	37,880	(1,273)	2,566,075	7,010	2,609,692	0	37,630	(1,273)	2,521,000	7,010	2,564,367
2019	0	37,808	3,700	2,566,075	7,010	2,614,593	0	37,558	3,700	2,521,000	7,010	2,569,268
2020	0	37,824	770	2,570,775	7,010	2,616,379	0	37,574	770	2,525,700	7,010	2,571,054
2021	0	37,796	(1,520)	2,571,425	7,010	2,614,711	0	37,546	(1,520)	2,526,350	7,010	2,569,386
2022	0	37,815	934	2,571,425	7,010	2,617,184	0	37,565	934	2,526,350	7,010	2,571,859
2023	0	37,781	882	2,571,425	7,010	2,617,098	0	37,531	882	2,526,350	7,010	2,571,773
2024	0	37,823	(7,746)	2,571,425	7,010	2,608,512	0	37,573	(7,746)	2,526,350	7,010	2,563,187
2025	0	37,805	541	2,572,825	7,010	2,618,181	0	37,555	541	2,527,750	7,010	2,572,856
2026	0	37,809	(1,402)	2,572,825	7,010	2,616,242	0	37,559	(1,402)	2,527,750	7,010	2,570,917
2027	0	37,779	(248)	2,572,825	7,010	2,617,366	0	37,529	(248)	2,527,750	7,010	2,572,041
2028	0	37,783	(374)	2,572,825	7,010	2,617,244	0	37,533	(374)	2,527,750	7,010	2,571,919
2029	0	37,779	8,241	2,572,825	7,010	2,625,855	0	37,529	8,241	2,527,750	7,010	2,580,530
2030	0	37,819	(849)	2,574,025	7,010	2,618,005	0	37,569	(849)	2,528,950	7,010	2,572,680
2031	0	37,788	476	2,574,025	7,010	2,619,299	0	37,538	476	2,528,950	7,010	2,573,974
2032	0	37,820	(475)	2,574,025	7,010	2,618,380	0	37,570	(475)	2,528,950	7,010	2,573,055
2033	0	37,788	906	2,574,025	7,010	2,619,729	0	37,538	906	2,528,950	7,010	2,574,404
2034	0	37,821	1,187	2,574,025	7,010	2,620,043	0	37,571	1,187	2,528,950	7,010	2,574,718
2035	0	37,901	(992)	2,575,325	7,010	2,619,244	0	37,651	(992)	2,530,250	7,010	2,573,919

TABLE B-6

Annual Water Quantities Conveyed Through Each Pumping and Power Recovery Plant of Project Transportation Facilities (Continued)

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	Tehachapi Division						Mojave Divsion					
	Edmonston Pumping Plant						Alamo Powerplant					
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries		Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries		Total
				Water Supply	Recreation					Water Supply	Recreation	
	[51]	[52]	[53]	[54]	[55]	[56]	[57]	[58]	[59]	[60]	[61]	[62]
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	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	0	0	0	0	0	0	0	0	0	0	0	0
1971	5,446	8	0	0	0	5,454	0	0	0	0	0	0
1972	100,274	16,067	(6,558)	74,123	6,481	190,387	0	0	0	0	0	0
1973	204,638	34,051	1,329	207,808	1,147	448,973	0	0	0	0	0	0
1974	237,554	18,181	(15,295)	313,634	2,108	556,182	0	0	0	0	0	0
1975	103,352	20,183	(693)	573,219	3,358	699,419	0	0	0	0	0	0
1976	61,122	21,096	(152,171)	685,768	1,581	617,396	0	0	0	0	0	0
1977	0	18,424	(116,219)	236,086	560	138,851	0	0	0	0	0	0
1978	65,027	20,887	121,904	590,329	674	798,821	0	0	0	0	0	0
1979	12,302	46,332	(51,299)	568,338	502	576,175	0	0	0	0	0	0
1980	0	52,967	(134,009)	639,743	1,262	559,963	0	0	0	0	0	0
1981	0	40,602	23,359	938,482	4,112	1,006,555	0	0	0	0	0	0
1982	0	37,244	117,296	812,206	4,045	970,791	0	0	0	0	0	0
1983	0	40,690	(101,155)	431,182	7,291	378,008	0	0	0	0	0	0
1984	0	42,112	(115,214)	556,830	5,244	488,972	0	0	0	0	0	0
1985	0	45,265	139,988	792,477	4,804	982,534	0	0	0	0	0	0
1986	0	38,514	37,546	823,067	3,285	902,412	0	14,898	12,258	429,864	1,508	458,528
1987	0	28,213	(23,258)	841,322	6,937	853,214	0	11,365	(13,727)	407,870	1,239	406,747
1988	0	33,280	(29,747)	1,044,725	4,360	1,052,618	0	12,956	1,101	537,559	971	552,587
1989	0	41,730	(65,710)	1,328,041	7,967	1,312,028	0	42,055	(65,705)	716,360	1,407	694,117
1990	0	42,198	(14,836)	1,579,466	8,879	1,615,707	0	8,898	(6,089)	788,111	1,388	792,308
1991	0	35,058	108,136	441,220	3,796	588,210	0	17,768	35,610	177,311	394	231,083
1992	0	10,870	36,084	1,102,463	7,010	1,156,427	0	8,820	(2,070)	557,733	1,630	566,113
1993	0	10,870	(22,496)	2,285,824	7,010	2,281,208	0	8,820	(22,437)	1,218,379	1,630	1,206,392
1994	0	10,870	(12,845)	2,295,605	7,010	2,300,640	0	8,820	(11,891)	1,200,419	1,630	1,198,978
1995	0	36,060	12,193	2,320,009	7,010	2,375,272	0	20,968	19,058	1,197,204	1,630	1,238,860
1996	0	35,951	(27,958)	2,330,860	7,010	2,345,863	0	20,944	(15,778)	1,180,429	1,630	1,187,225
1997	0	35,974	26,575	2,361,127	7,010	2,430,686	0	20,803	1,578	1,192,826	1,630	1,216,837
1998	0	35,883	(16,222)	2,364,629	7,010	2,391,300	0	20,740	(3,691)	1,196,328	1,630	1,215,007
1999	0	36,114	3,954	2,368,625	7,010	2,415,703	0	20,948	(1,319)	1,200,324	1,630	1,221,583
2000	0	36,058	(6,356)	2,397,246	7,010	2,433,958	0	20,864	(694)	1,220,550	1,630	1,242,350
2001	0	36,032	7,874	2,397,246	7,010	2,448,162	0	20,849	3,221	1,220,550	1,630	1,246,250
2002	0	36,065	(3,099)	2,397,246	7,010	2,437,222	0	20,876	(2,011)	1,220,550	1,630	1,241,045
2003	0	36,016	(12,919)	2,397,246	7,010	2,427,353	0	20,820	(12,501)	1,220,550	1,630	1,230,499
2004	0	36,066	9,281	2,397,246	7,010	2,449,603	0	20,866	5,771	1,220,550	1,630	1,248,817
2005	0	36,017	4,199	2,456,875	7,010	2,504,101	0	20,810	5,544	1,274,775	1,630	1,302,759
2006	0	36,034	(123)	2,456,875	7,010	2,499,796	0	20,824	(497)	1,274,775	1,630	1,296,732
2007	0	36,046	(1,698)	2,456,875	7,010	2,498,233	0	20,835	(1,930)	1,274,775	1,630	1,295,310
2008	0	36,039	2,466	2,456,875	7,010	2,502,390	0	20,830	2,092	1,274,775	1,630	1,299,327
2009	0	36,079	(2,956)	2,456,875	7,010	2,497,008	0	20,861	(2,511)	1,274,775	1,630	1,294,755
2010	0	36,049	3,896	2,493,700	7,010	2,540,655	0	20,842	3,813	1,311,600	1,630	1,337,885
2011	0	36,117	3,117	2,496,100	7,010	2,542,344	0	20,893	2,753	1,314,000	1,630	1,339,276
2012	0	36,108	(1,706)	2,496,100	7,010	2,537,512	0	20,881	(1,706)	1,314,000	1,630	1,334,805
2013	0	36,092	237	2,496,100	7,010	2,539,439	0	20,869	610	1,314,000	1,630	1,337,109
2014	0	36,098	(8,555)	2,496,100	7,010	2,530,653	0	20,871	(9,122)	1,314,000	1,630	1,327,379
2015	0	36,017	(5,770)	2,500,950	7,010	2,538,207	0	20,815	(5,206)	1,318,850	1,630	1,336,089
2016	0	36,086	4,288	2,500,950	7,010	2,548,334	0	20,879	4,288	1,318,850	1,630	1,345,647
2017	0	36,081	0	2,500,950	7,010	2,544,041	0	20,874	0	1,318,850	1,630	1,341,354
2018	0	36,080	(1,273)	2,500,950	7,010	2,542,767	0	20,872	(2,022)	1,318,850	1,630	1,339,330
2019	0	36,008	3,700	2,500,950	7,010	2,547,668	0	20,809	5,546	1,318,850	1,630	1,346,835
2020	0	36,024	770	2,505,650	7,010	2,549,454	0	20,808	(275)	1,323,550	1,630	1,345,713
2021	0	35,996	(1,520)	2,506,300	7,010	2,547,786	0	20,785	(1,573)	1,324,200	1,630	1,345,042
2022	0	36,015	934	2,506,300	7,010	2,550,259	0	20,799	560	1,324,200	1,630	1,347,189
2023	0	35,981	882	2,506,300	7,010	2,550,173	0	20,770	881	1,324,200	1,630	1,347,481
2024	0	36,023	(7,746)	2,506,300	7,010	2,541,587	0	20,809	(7,372)	1,324,200	1,630	1,339,267
2025	0	36,005	541	2,507,700	7,010	2,551,256	0	20,803	139	1,325,600	1,630	1,348,172
2026	0	36,009	(1,402)	2,507,700	7,010	2,549,317	0	20,805	(1,402)	1,325,600	1,630	1,346,633
2027	0	35,979	(248)	2,507,700	7,010	2,550,441	0	20,777	(248)	1,325,600	1,630	1,347,759
2028	0	35,983	(374)	2,507,700	7,010	2,550,319	0	20,781	0	1,325,600	1,630	1,348,011
2029	0	35,979	8,241	2,507,700	7,010	2,558,930	0	20,775	8,268	1,325,600	1,630	1,356,273
2030	0	36,019	(849)	2,508,900	7,010	2,551,080	0	20,814	(591)	1,326,800	1,630	1,348,653
2031	0	35,988	476	2,508,900	7,010	2,552,374	0	20,782	477	1,326,800	1,630	1,349,689
2032	0	36,020	(475)	2,508,900	7,010	2,551,455	0	20,806	(475)	1,326,800	1,630	1,348,761
2033	0	35,988	906	2,508,900	7,010	2,552,804	0	20,782	1,281	1,326,800	1,630	1,350,493
2034	0	36,021	1,187	2,508,900	7,010	2,553,118	0	20,806	564	1,326,800	1,630	1,349,800
2035	0	36,101	(992)	2,510,200	7,010	2,552,319	0	20,901	4,905	1,328,100	1,630	1,355,536

TABLE B-6

Annual Water Quantities Conveyed Through Each Pumping and Power Recovery Plant of Project Transportation Facilities (Continued)

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued) — Mojave Division (continued) — Pearblossom Pumping Plant						Mojave Siphon 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
	[63]	[64]	[65]	[66]	[67]	[68]	[69]	[70]	[71]	[72]	[73]	[74]
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	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	0	0	0	0	0	0	0	0	0	0	0	0
1971	21	0	0	0	0	21	0	0	0	0	0	0
1972	35,243	5,282	(153)	1,794	0	42,166	0	0	0	0	0	0
1973	80,177	21,522	(2,700)	52,201	72	151,272	0	0	0	0	0	0
1974	76,694	10,847	(11,149)	102,839	44	179,275	0	0	0	0	0	0
1975	10,000	2,364	(8,397)	190,351	70	194,388	0	0	0	0	0	0
1976	4,168	7,040	(16,055)	236,713	152	232,018	0	0	0	0	0	0
1977	0	11,398	(17,534)	102,326	580	96,770	0	0	0	0	0	0
1978	19,922	5,696	69,130	374,845	498	470,091	0	0	0	0	0	0
1979	12,302	6,836	(32,518)	362,114	502	349,236	0	0	0	0	0	0
1980	0	16,200	6,159	401,214	781	424,354	0	0	0	0	0	0
1981	0	4,992	(36,278)	574,573	933	544,220	0	0	0	0	0	0
1982	0	5,251	55,232	401,037	1,919	463,439	0	0	0	0	0	0
1983	0	11,745	(26,847)	231,188	1,180	217,266	0	0	0	0	0	0
1984	0	18,228	23,230	252,066	1,494	295,018	0	0	0	0	0	0
1985	0	25,292	(2,815)	350,758	1,076	374,311	0	0	0	0	0	0
1986	0	31,039	12,258	394,156	1,508	438,961	0	0	0	0	0	0
1987	0	27,319	(14,928)	367,531	1,239	381,161	0	0	0	0	0	0
1988	0	23,469	1,101	501,291	971	526,832	0	0	0	0	0	0
1989	0	66,107	(62,895)	661,189	1,407	665,808	0	0	0	0	0	0
1990	0	32,672	(6,089)	730,560	1,388	758,531	0	0	0	0	0	0
1991	0	14,669	36,003	163,916	394	214,982	0	0	0	0	0	0
1992	0	3,470	(2,070)	512,500	1,430	515,330	0	0	(2,070)	512,500	1,430	511,860
1993	0	3,470	(22,437)	1,130,950	1,430	1,113,413	0	0	(22,437)	1,130,950	1,430	1,109,943
1994	0	3,470	(11,891)	1,109,050	1,430	1,102,059	0	0	(11,891)	1,109,050	1,430	1,098,589
1995	0	15,618	19,058	1,102,000	1,430	1,138,106	0	12,148	19,058	1,102,000	1,430	1,134,636
1996	0	15,594	(15,778)	1,080,125	1,430	1,081,371	0	12,124	(15,778)	1,080,125	1,430	1,077,901
1997	0	15,453	1,578	1,089,272	1,430	1,107,733	0	11,983	1,578	1,089,272	1,430	1,104,263
1998	0	15,390	(3,691)	1,092,774	1,430	1,105,903	0	11,920	(3,691)	1,092,774	1,430	1,102,433
1999	0	15,598	(1,319)	1,096,770	1,430	1,112,479	0	12,128	(1,319)	1,096,770	1,430	1,109,009
2000	0	15,514	(694)	1,104,950	1,430	1,121,200	0	12,044	(694)	1,104,950	1,430	1,117,730
2001	0	15,499	3,221	1,104,950	1,430	1,125,100	0	12,029	3,221	1,104,950	1,430	1,121,630
2002	0	15,526	(2,011)	1,104,950	1,430	1,119,895	0	12,056	(2,011)	1,104,950	1,430	1,116,425
2003	0	15,470	(12,501)	1,104,950	1,430	1,109,349	0	12,000	(12,501)	1,104,950	1,430	1,105,879
2004	0	15,516	5,771	1,104,950	1,430	1,127,667	0	12,046	5,771	1,104,950	1,430	1,124,197
2005	0	15,460	5,544	1,139,175	1,430	1,161,609	0	11,990	5,544	1,139,175	1,430	1,158,139
2006	0	15,474	(497)	1,139,175	1,430	1,155,582	0	12,004	(497)	1,139,175	1,430	1,152,112
2007	0	15,485	(1,930)	1,139,175	1,430	1,154,160	0	12,015	(1,930)	1,139,175	1,430	1,150,690
2008	0	15,480	2,092	1,139,175	1,430	1,158,177	0	12,010	2,092	1,139,175	1,430	1,154,707
2009	0	15,511	(2,511)	1,139,175	1,430	1,153,605	0	12,041	(2,511)	1,139,175	1,430	1,150,135
2010	0	15,492	3,813	1,156,000	1,430	1,176,735	0	12,022	3,813	1,156,000	1,430	1,173,265
2011	0	15,543	2,753	1,156,000	1,430	1,175,726	0	12,073	2,753	1,156,000	1,430	1,172,256
2012	0	15,531	(1,706)	1,156,000	1,430	1,171,255	0	12,061	(1,706)	1,156,000	1,430	1,167,785
2013	0	15,519	610	1,156,000	1,430	1,173,559	0	12,049	610	1,156,000	1,430	1,170,089
2014	0	15,521	(9,122)	1,156,000	1,430	1,163,829	0	12,051	(9,122)	1,156,000	1,430	1,160,359
2015	0	15,465	(5,206)	1,160,850	1,430	1,172,539	0	11,995	(5,206)	1,160,850	1,430	1,169,069
2016	0	15,529	4,288	1,160,850	1,430	1,182,097	0	12,059	4,288	1,160,850	1,430	1,178,627
2017	0	15,524	0	1,160,850	1,430	1,177,804	0	12,054	0	1,160,850	1,430	1,174,334
2018	0	15,522	(2,022)	1,160,850	1,430	1,175,780	0	12,052	(2,022)	1,160,850	1,430	1,172,310
2019	0	15,459	5,546	1,160,850	1,430	1,183,285	0	11,989	5,546	1,160,850	1,430	1,179,815
2020	0	15,458	(275)	1,165,550	1,430	1,182,163	0	11,988	(275)	1,165,550	1,430	1,178,693
2021	0	15,435	(1,573)	1,166,200	1,430	1,181,492	0	11,965	(1,573)	1,166,200	1,430	1,178,022
2022	0	15,449	560	1,166,200	1,430	1,183,639	0	11,979	560	1,166,200	1,430	1,180,169
2023	0	15,420	881	1,166,200	1,430	1,183,931	0	11,950	881	1,166,200	1,430	1,180,461
2024	0	15,459	(7,372)	1,166,200	1,430	1,175,717	0	11,989	(7,372)	1,166,200	1,430	1,172,247
2025	0	15,453	139	1,167,600	1,430	1,184,622	0	11,983	139	1,167,600	1,430	1,181,152
2026	0	15,455	(1,402)	1,167,600	1,430	1,183,083	0	11,985	(1,402)	1,167,600	1,430	1,179,613
2027	0	15,427	(248)	1,167,600	1,430	1,184,209	0	11,957	(248)	1,167,600	1,430	1,180,739
2028	0	15,431	0	1,167,600	1,430	1,184,461	0	11,961	0	1,167,600	1,430	1,180,991
2029	0	15,425	8,268	1,167,600	1,430	1,192,723	0	11,955	8,268	1,167,600	1,430	1,189,253
2030	0	15,464	(591)	1,168,800	1,430	1,185,103	0	11,994	(591)	1,168,800	1,430	1,181,633
2031	0	15,432	477	1,168,800	1,430	1,186,139	0	11,962	477	1,168,800	1,430	1,182,669
2032	0	15,456	(475)	1,168,800	1,430	1,185,211	0	11,986	(475)	1,168,800	1,430	1,181,741
2033	0	15,432	1,281	1,168,800	1,430	1,186,943	0	11,962	1,281	1,168,800	1,430	1,183,473
2034	0	15,456	564	1,168,800	1,430	1,186,250	0	11,986	564	1,168,800	1,430	1,182,780
2035	0	15,551	4,905	1,170,100	1,430	1,191,986	0	12,081	4,905	1,170,100	1,430	1,188,516

TABLE B-6

Annual Water Quantities Conveyed Through Each Pumping and Power Recovery Plant of Project Transportation Facilities (Continued)

(in acre-feet)

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			Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries		
				Water Supply	Recreation	Total				Water Supply	Recreation	Total
	[75]	[76]	[77]	[78]	[79]	[80]	[81]	[82]	[83]	[84]	[85]	[86]
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	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	0	0	0	0	0	0	0	0	0	0	0	0
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	5,620	(27,107)	356,854	485	348,154	0	25,355	(18,781)	145,598	0	152,172
1980	0	9,468	12,714	395,975	742	418,899	0	24,576	(140,168)	165,931	481	50,820
1981	0	8,401	(23,448)	569,088	807	554,848	0	15,254	59,637	283,264	3,179	361,334
1982	0	6,012	44,469	399,799	1,798	452,078	0	23,824	61,685	360,878	2,126	448,513
1983	0	8,597	5,188	230,277	1,078	245,140	0	23,601	(74,308)	166,995	6,111	122,399
1984	0	12,861	(850)	250,938	1,414	264,363	0	12,461	(138,146)	272,101	3,750	150,166
1985	0	14,325	(8,791)	349,336	956	355,826	0	28,257	142,219	403,097	3,728	577,301
1986	0	9,646	8,339	392,650	1,378	412,013	0	23,816	25,288	393,203	1,777	444,084
1987	0	7,919	(11,331)	365,451	1,118	363,157	0	18,952	(9,490)	433,452	5,698	448,612
1988	0	2,341	2,238	499,285	861	504,725	0	20,464	(30,848)	507,166	3,389	500,171
1989	0	18,439	(5,517)	658,730	1,301	672,953	0	27,423	(40,227)	611,681	6,560	605,437
1990	0	13,439	(4,622)	728,723	1,281	738,821	0	33,666	(8,747)	791,355	7,491	823,765
1991	0	10,840	18,426	161,032	340	190,638	0	17,249	72,523	263,909	3,402	357,083
1992	0	0	(1,621)	498,550	1,250	498,179	0	2,000	38,154	544,730	5,380	590,264
1993	0	0	(23,846)	1,092,800	1,250	1,070,204	0	2,000	(59)	1,067,445	5,380	1,074,766
1994	0	0	(10,302)	1,070,800	1,250	1,061,748	0	2,000	(954)	1,095,186	5,380	1,101,612
1995	0	8,411	23,023	1,048,800	1,250	1,081,484	0	15,042	(6,865)	1,122,805	5,380	1,136,362
1996	0	8,450	(1,976)	1,026,800	1,250	1,034,524	0	14,957	(12,180)	1,150,431	5,380	1,158,588
1997	0	8,418	(5,471)	1,035,872	1,250	1,040,069	0	15,121	24,997	1,168,301	5,380	1,213,799
1998	0	8,419	1,008	1,039,374	1,250	1,050,051	0	15,093	(12,531)	1,168,301	5,380	1,176,243
1999	0	8,462	4,213	1,043,370	1,250	1,057,295	0	15,116	5,273	1,168,301	5,380	1,194,070
2000	0	8,433	718	1,051,150	1,250	1,061,551	0	15,144	(5,662)	1,176,696	5,380	1,191,558
2001	0	8,394	2,321	1,051,150	1,250	1,063,115	0	15,133	4,653	1,176,696	5,380	1,201,862
2002	0	8,420	(2,040)	1,051,150	1,250	1,058,780	0	15,139	(1,088)	1,176,696	5,380	1,196,127
2003	0	8,407	(1,826)	1,051,150	1,250	1,058,981	0	15,146	(418)	1,176,696	5,380	1,196,804
2004	0	8,427	(5,073)	1,051,150	1,250	1,055,754	0	15,150	3,510	1,176,696	5,380	1,200,736
2005	0	8,410	3,917	1,084,550	1,250	1,098,127	0	15,157	(1,345)	1,182,100	5,380	1,201,292
2006	0	8,417	(249)	1,084,550	1,250	1,093,968	0	15,160	374	1,182,100	5,380	1,203,014
2007	0	8,429	273	1,084,550	1,250	1,094,502	0	15,161	232	1,182,100	5,380	1,202,873
2008	0	8,429	(2,498)	1,084,550	1,250	1,091,731	0	15,159	374	1,182,100	5,380	1,203,013
2009	0	8,419	6,300	1,084,550	1,250	1,100,519	0	15,168	(445)	1,182,100	5,380	1,202,203
2010	0	8,454	1,680	1,100,450	1,250	1,111,834	0	15,157	83	1,182,100	5,380	1,202,720
2011	0	8,454	(2,367)	1,100,450	1,250	1,107,787	0	15,174	364	1,182,100	5,380	1,203,018
2012	0	8,432	(482)	1,100,450	1,250	1,109,650	0	15,177	0	1,182,100	5,380	1,202,657
2013	0	8,429	815	1,100,450	1,250	1,110,944	0	15,173	(373)	1,182,100	5,380	1,202,280
2014	0	8,434	32	1,100,450	1,250	1,110,166	0	15,177	567	1,182,100	5,380	1,203,224
2015	0	8,424	(3,258)	1,104,750	1,250	1,111,166	0	15,152	(564)	1,182,100	5,380	1,202,068
2016	0	8,462	3,601	1,104,750	1,250	1,118,063	0	15,157	0	1,182,100	5,380	1,202,637
2017	0	8,460	0	1,104,750	1,250	1,114,460	0	15,157	0	1,182,100	5,380	1,202,637
2018	0	8,461	(1,256)	1,104,750	1,250	1,113,205	0	15,158	749	1,182,100	5,380	1,203,387
2019	0	8,413	(4,291)	1,104,750	1,250	1,110,122	0	15,149	(1,846)	1,182,100	5,380	1,200,783
2020	0	8,447	5,929	1,109,050	1,250	1,124,676	0	15,166	1,045	1,182,100	5,380	1,203,691
2021	0	8,428	(1,186)	1,109,700	1,250	1,118,192	0	15,161	53	1,182,100	5,380	1,202,694
2022	0	8,439	1,968	1,109,700	1,250	1,121,357	0	15,166	374	1,182,100	5,380	1,203,020
2023	0	8,419	(1,785)	1,109,700	1,250	1,117,584	0	15,161	1	1,182,100	5,380	1,202,642
2024	0	8,438	(4,234)	1,109,700	1,250	1,115,154	0	15,164	(374)	1,182,100	5,380	1,202,270
2025	0	8,416	758	1,111,000	1,250	1,121,424	0	15,152	402	1,182,100	5,380	1,203,034
2026	0	8,427	(1,578)	1,111,000	1,250	1,119,099	0	15,154	0	1,182,100	5,380	1,202,634
2027	0	8,403	(248)	1,111,000	1,250	1,120,405	0	15,152	0	1,182,100	5,380	1,202,632
2028	0	8,406	0	1,111,000	1,250	1,120,656	0	15,152	(374)	1,182,100	5,380	1,202,258
2029	0	8,411	2,874	1,111,000	1,250	1,123,535	0	15,154	(27)	1,182,100	5,380	1,202,607
2030	0	8,438	1,074	1,112,200	1,250	1,122,962	0	15,155	(258)	1,182,100	5,380	1,202,377
2031	0	8,419	476	1,112,200	1,250	1,122,345	0	15,156	(1)	1,182,100	5,380	1,202,635
2032	0	8,439	(475)	1,112,200	1,250	1,121,414	0	15,164	0	1,182,100	5,380	1,202,644
2033	0	8,417	(1,492)	1,112,200	1,250	1,120,375	0	15,156	(375)	1,182,100	5,380	1,202,261
2034	0	8,420	(561)	1,112,200	1,250	1,121,309	0	15,165	623	1,182,100	5,380	1,203,268
2035	0	8,421	(11,912)	1,113,500	1,250	1,111,259	0	15,150	(5,897)	1,182,100	5,380	1,196,733

TABLE B-6

Annual Water Quantities Conveyed Through Each Pumping and Power Recovery Plant of Project Transportation Facilities (Continued)

(in acre feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued) — West Branch, California Aqueduct (continued) — Warne Powerplant					
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total
	[87]	[88]	[89]	[90]	[91]	[92]
1961	0	0	0	0	0	0
1962	0	0	0	0	0	0
1963	0	0	0	0	0	0
1964	0	0	0	0	0	0
1965	0	0	0	0	0	0
1966	0	0	0	0	0	0
1967	0	0	0	0	0	0
1968	0	0	0	0	0	0
1969	0	0	0	0	0	0
1970	0	0	0	0	0	0
1971	0	0	0	0	0	0
1972	0	0	0	0	0	0
1973	0	0	0	0	0	0
1974	0	0	0	0	0	0
1975	0	0	0	0	0	0
1976	0	0	0	0	0	0
1977	0	0	0	0	0	0
1978	0	0	0	0	0	0
1979	0	0	0	0	0	0
1980	0	0	0	0	0	0
1981	0	0	0	0	0	0
1982	0	24,468	61,169	360,878	2,126	448,641
1983	0	20,780	(74,308)	166,995	6,111	119,578
1984	0	13,572	(139,219)	275,212	2,208	151,773
1985	0	29,286	141,492	403,097	874	574,749
1986	0	23,008	25,288	393,203	1,777	443,276
1987	0	22,871	(9,464)	433,452	5,698	452,557
1988	0	23,256	(31,453)	507,169	3,389	502,361
1989	0	27,131	(40,718)	611,681	6,560	604,654
1990	0	(34,208)	(8,747)	791,355	7,491	755,891
1991	0	18,373	71,847	263,909	3,402	357,531
1992	0	90	38,154	544,730	5,380	588,354
1993	0	90	(59)	1,067,445	5,380	1,072,856
1994	0	90	(954)	1,095,186	5,380	1,099,702
1995	0	13,132	(6,865)	1,122,805	5,380	1,134,452
1996	0	13,047	(12,180)	1,150,431	5,380	1,156,678
1997	0	13,211	24,997	1,168,301	5,380	1,211,889
1998	0	13,183	(12,531)	1,168,301	5,380	1,174,333
1999	0	13,206	5,273	1,168,301	5,380	1,192,160
2000	0	13,234	(5,662)	1,176,696	5,380	1,189,648
2001	0	13,223	4,653	1,176,696	5,380	1,199,952
2002	0	13,229	(1,088)	1,176,696	5,380	1,194,217
2003	0	13,236	(418)	1,176,696	5,380	1,194,894
2004	0	13,240	3,510	1,176,696	5,380	1,198,826
2005	0	13,247	(1,345)	1,182,100	5,380	1,199,382
2006	0	13,250	374	1,182,100	5,380	1,201,104
2007	0	13,251	232	1,182,100	5,380	1,200,963
2008	0	13,249	374	1,182,100	5,380	1,201,103
2009	0	13,258	(445)	1,182,100	5,380	1,200,293
2010	0	13,247	83	1,182,100	5,380	1,200,810
2011	0	13,264	364	1,182,100	5,380	1,201,108
2012	0	13,267	0	1,182,100	5,380	1,200,747
2013	0	13,263	(373)	1,182,100	5,380	1,200,370
2014	0	13,267	567	1,182,100	5,380	1,201,314
2015	0	13,242	(564)	1,182,100	5,380	1,200,158
2016	0	13,247	0	1,182,100	5,380	1,200,727
2017	0	13,247	0	1,182,100	5,380	1,200,727
2018	0	13,248	749	1,182,100	5,380	1,201,477
2019	0	13,239	(1,846)	1,182,100	5,380	1,198,873
2020	0	13,256	1,045	1,182,100	5,380	1,201,781
2021	0	13,251	53	1,182,100	5,380	1,200,784
2022	0	13,256	374	1,182,100	5,380	1,201,110
2023	0	13,251	1	1,182,100	5,380	1,200,732
2024	0	13,254	(374)	1,182,100	5,380	1,200,360
2025	0	13,242	402	1,182,100	5,380	1,201,124
2026	0	13,244	0	1,182,100	5,380	1,200,724
2027	0	13,242	0	1,182,100	5,380	1,200,722
2028	0	13,242	(374)	1,182,100	5,380	1,200,348
2029	0	13,244	(27)	1,182,100	5,380	1,200,697
2030	0	13,245	(258)	1,182,100	5,380	1,200,467
2031	0	13,246	(1)	1,182,100	5,380	1,200,725
2032	0	13,254	0	1,182,100	5,380	1,200,734
2033	0	13,246	(375)	1,182,100	5,380	1,200,351
2034	0	13,255	623	1,182,100	5,380	1,201,358
2035	0	13,240	(5,897)	1,182,100	5,380	1,194,823

Calendar Year	CALIFORNIA AQUEDUCT (continued) — West Branch, California Aqueduct (continued) — Castaic Powerplant					
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total
	[93]	[94]	[95]	[96]	[97]	[98]
1961	0	0	0	0	0	0
1962	0	0	0	0	0	0
1963	0	0	0	0	0	0
1964	0	0	0	0	0	0
1965	0	0	0	0	0	0
1966	0	0	0	0	0	0
1967	0	0	0	0	0	0
1968	0	0	0	0	0	0
1969	0	0	0	0	0	0
1970	0	0	0	0	0	0
1971	0	0	0	0	0	0
1972	57,364	1,788	(6,162)	71,938	6,481	131,409
1973	37,198	6,430	4,542	155,297	1,075	204,542
1974	82,364	1,772	(950)	209,136	541	292,863
1975	90,460	5,002	(1,534)	374,280	1,563	469,771
1976	55,990	(7,695)	(132,036)	420,684	1,429	338,372
1977	0	(1,485)	(102,532)	122,447	(20)	18,410
1978	45,105	(2,264)	129,523	171,139	176	343,679
1979	0	(2,339)	(20,400)	145,598	0	122,859
1980	0	991	(118,026)	165,931	481	49,377
1981	0	(44,416)	47,244	283,264	2,704	288,796
1982	0	(60,135)	59,069	360,878	1,187	360,999
1983	0	(33,418)	(46,904)	166,995	2,618	89,291
1984	0	(29,618)	(139,545)	275,212	2,201	108,250
1985	0	(4,622)	135,007	403,097	844	534,326
1986	0	(5,440)	25,120	393,203	1,777	414,660
1987	0	1,467	(6,069)	433,452	2,734	431,584
1988	0	12,653	(28,498)	507,169	1,359	492,683
1989	0	634	(40,214)	611,681	3,161	575,262
1990	0	(14,012)	(15,110)	786,519	3,419	760,816
1991	0	594	91,055	262,921	1,486	356,056
1992	0	0	17,435	542,230	2,330	561,995
1993	0	0	(59)	1,062,445	2,330	1,064,716
1994	0	0	(954)	1,090,186	2,330	1,091,562
1995	0	6,844	(11,767)	1,117,805	2,330	1,115,212
1996	0	6,762	(12,180)	1,145,431	2,330	1,142,343
1997	0	6,926	24,997	1,163,301	2,330	1,197,554
1998	0	6,898	(12,531)	1,163,301	2,330	1,159,998
1999	0	6,921	5,273	1,163,301	2,330	1,177,825
2000	0	6,949	(5,662)	1,171,696	2,330	1,175,313
2001	0	6,938	4,653	1,171,696	2,330	1,185,617
2002	0	6,944	(1,088)	1,171,696	2,330	1,179,882
2003	0	6,951	(418)	1,171,696	2,330	1,180,559
2004	0	6,955	3,510	1,171,696	2,330	1,184,491
2005	0	6,962	(1,345)	1,177,100	2,330	1,185,047
2006	0	6,965	374	1,177,100	2,330	1,186,769
2007	0	6,966	232	1,177,100	2,330	1,186,628
2008	0	6,964	374	1,177,100	2,330	1,186,768
2009	0	6,973	(445)	1,177,100	2,330	1,185,958
2010	0	6,962	83	1,177,100	2,330	1,186,475
2011	0	6,979	364	1,177,100	2,330	1,186,773
2012	0	6,982	0	1,177,100	2,330	1,186,412
2013	0	6,978	(373)	1,177,100	2,330	1,186,035
2014	0	6,982	567	1,177,100	2,330	1,186,979
2015	0	6,957	(564)	1,177,100	2,330	1,185,823
2016	0	6,962	0	1,177,100	2,330	1,186,392
2017	0	6,962	0	1,177,100	2,330	1,186,392
2018	0	6,963	749	1,177,100	2,330	1,187,142
2019	0	6,954	(1,846)	1,177,100	2,330	1,184,538
2020	0	6,971	1,045	1,177,100	2,330	1,187,446
2021	0	6,966	53	1,177,100	2,330	1,186,449
2022	0	6,971	374	1,177,100	2,330	1,186,775
2023	0	6,966	1	1,177,100	2,330	1,186,397
2024	0	6,969	(374)	1,177,100	2,330	1,186,025
2025	0	6,957	402	1,177,100	2,330	1,186,789
2026	0	6,959	0	1,177,100	2,330	1,186,389
2027	0	6,957	0	1,177,100	2,330	1,186,387
2028	0	6,957	(374)	1,177,100	2,330	1,186,013
2029	0	6,959	(27)	1,177,100	2,330	1,186,362
2030	0	6,960	(258)	1,177,100	2,330	1,186,132
2031	0	6,961	(1)	1,177,100	2,330	1,186,390
2032	0	6,969	0	1,177,100	2,330	1,186,399
2033	0	6,961	(375)	1,177,100	2,330	1,186,016
2034	0	6,970	623	1,177,100	2,330	1,187,023
2035	0	6,955	(5,897)	1,177,100	2,330	1,180,488

TABLE B-6

Annual Water Quantities Conveyed Through Each Pumping and Power Recovery Plant of Project Transportation Facilities (Continued)

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued) — Coastal Branch, California Aqueduct — Las Perillas and Badger Hill Pumping Plants — Initial Fill Water	Operational Losses	Water Supply Delivery	Total	Devil's Den, Bluestone, and Polonio Pass Pumping Plants and San Luis Obispo Powerplant — Operational Losses	Water Supply Delivery	Total
	[99]	[100]	[101]	[102]	[103]	[104]	[105]
1961	0	0	0	0	0	0	0
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	0	0	0	0	0
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	10,896	123,155	134,051	0	0	0
1980	0	9,449	111,379	120,828	0	0	0
1981	0	13,232	109,754	122,986	0	0	0
1982	0	7,984	95,776	103,760	0	0	0
1983	0	5,710	100,518	106,228	0	0	0
1984	0	5,740	126,387	132,127	0	0	0
1985	0	7,563	120,823	128,386	0	0	0
1986	0	8,562	131,599	140,161	0	0	0
1987	0	11,363	128,080	139,443	0	0	0
1988	0	0	120,969	120,969	0	0	0
1989	0	11,454	116,801	128,255	0	0	0
1990	0	13,022	109,802	122,824	0	0	0
1991	0	5,621	1,496	7,117	0	0	0
1992	0	590	62,950	63,540	0	0	0
1993	0	628	125,900	126,528	0	0	0
1994	0	802	125,900	126,702	0	0	0
1995	0	802	125,900	126,702	0	0	0
1996	0	802	196,386	197,188	212	70,486	70,698
1997	0	802	201,186	201,988	212	70,486	70,698
1998	0	802	201,186	201,988	212	70,486	70,698
1999	0	802	201,186	201,988	212	70,486	70,698
2000	0	802	193,890	194,692	212	70,486	70,698
2001	0	802	193,890	194,692	212	70,486	70,698
2002	0	802	193,890	194,692	212	70,486	70,698
2003	0	802	193,890	194,692	212	70,486	70,698
2004	0	802	193,890	194,692	212	70,486	70,698
2005	0	802	188,486	189,288	212	70,486	70,698
2006	0	802	188,486	189,288	212	70,486	70,698
2007	0	802	188,486	189,288	212	70,486	70,698
2008	0	802	188,486	189,288	212	70,486	70,698
2009	0	802	188,486	189,288	212	70,486	70,698
2010	0	802	188,486	189,288	212	70,486	70,698
2011	0	802	188,486	189,288	212	70,486	70,698
2012	0	802	188,486	189,288	212	70,486	70,698
2013	0	802	188,486	189,288	212	70,486	70,698
2014	0	802	188,486	189,288	212	70,486	70,698
2015	0	802	188,486	189,288	212	70,486	70,698
2016	0	802	188,486	189,288	212	70,486	70,698
2017	0	802	188,486	189,288	212	70,486	70,698
2018	0	802	188,486	189,288	212	70,486	70,698
2019	0	802	188,486	189,288	212	70,486	70,698
2020	0	802	188,486	189,288	212	70,486	70,698
2021	0	802	188,486	189,288	212	70,486	70,698
2022	0	802	188,486	189,288	212	70,486	70,698
2023	0	802	188,486	189,288	212	70,486	70,698
2024	0	802	188,486	189,288	212	70,486	70,698
2025	0	802	188,486	189,288	212	70,486	70,698
2026	0	802	188,486	189,288	212	70,486	70,698
2027	0	802	188,486	189,288	212	70,486	70,698
2028	0	802	188,486	189,288	212	70,486	70,698
2029	0	802	188,486	189,288	212	70,486	70,698
2030	0	802	188,486	189,288	212	70,486	70,698
2031	0	802	188,486	189,288	212	70,486	70,698
2032	0	802	188,486	189,288	212	70,486	70,698
2033	0	802	188,486	189,288	212	70,486	70,698
2034	0	802	188,486	189,288	212	70,486	70,698
2035	0	802	188,486	189,288	212	70,486	70,698

Table B-7 through Table B-34 follow.

TABLE B-7

Reconciliation of Capital Costs Allocated to Water Supply and Power Generation for Years 1952 Through 2035

(in thousands of dollars)

Item	Project Costs Allocated to Water Supply and Power Generation							Capital Costs Allocated to other Purposes	Total State Water Project Capital Cost
	Misc. Income Credited to Construc-tion (a	Allowance for Future Price Escalation (b	Costs of Construc-tion of Delivery Structures (c	Costs of Requested Excess Capacity and Future Enlargement (d	Capital Cost Component of Delta Water Charge (e (f (g	Capital Cost Component of Trans-portation Water Charge (h	Water Supply and Power Total		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
CONSERVATION FACILITIES									
Upper Feather Division									
Frenchman Dam & Lake	173	0	0	0	602	0	775	2886	3,661
Grizzly Valley Dam & Lake Davis	28	0	0	0	39	0	67	7,307	7,374
Antelope Dam & Lake	0	0	0	0	0	0	0	5,481	5,481
Abbey Bridge Dam & Reservoir	0	0	0	0	0	0	0	518	518
Dixie Refuge Dam & Reservoir	0	0	0	0	0	0	0	236	236
Total, Upper Feather Division	201	0	0	0	641	0	842	16,428	17,270
Oroville Division									
Multipurpose Facilities	2,178	23	165	0	371,494	0	373,860	88,415	462,275
Specific Power Facilities	358	9	0	0	114,584	0	114,951	1,114	116,065
Total, Oroville Division	2,536	32	165	0	486,078	0	488,811	89,529	578,340
California Aqueduct									
North San Joaquin Division	104	67	0	0	81,812	0	81,983	2,986	84,969
San Luis Division	937	21	0	0	112,116	0	113,074	4,647	117,721
Total, California Aqueduct	1,041	88	0	0	193,928	0	195,057	7,633	202,690
Delta Facilities	8,454	23,555	0	0	789,310	0	821,319	126,877	948,196
Planning and Preoperation	2,324	31,382	0	0	232,793	0	266,499	0	266,499
TOTAL, CONSERVATION FACILIITES	14,556	55,057	165	0	1,702,750	0	1,772,528	240,467	2,012,995
TRANSPORTATION FACILITIES									
Upper Feather Division									
Grizzly Valley Pipeline	0	0	0	0	0	341	341	0	341
North Bay Aqueduct	63	4	685	0	0	94,370	95,122	0	95,122
South Bay Aqueduct	1,323	165	1,465	0	0	56,680	59,633	21,951	81,584
California Aqueduct									
North San Joaquin Division	376	148	25	0	0	182,538	183,087	6,648	189,735
San Luis Division	83	19	0	0	0	134,172	134,274	7,212	141,486
South San Joaquin Division	239	23	3,275	2,065	0	276,401	282,003	16,855	298,858
Tehachapi Division	26	16	4	5,229	0	296,565	301,840	18,189	320,029
Mojave Division	438	10	554	0	0	347,526	348,528	15,004	363,532
Santa Ana Division	304	878	3,307	9,710	0	185,629	199,828	11,406	211,234
West Branch	35,565	30	2,895	37	0	467,832	506,359	33,644	540,003
Coastal Branch	107	20,738	100	0	0	381,404	402,349	0	402,349
Total, California Aqueduct	37,138	21,862	10,160	17,041	0	2,272,067	2,358,268	108,958	2,467,226
TOTAL TRANSPORTATION FACILITIES	38,524	22,031	12,310	17,041	0	2,423,458	2,513,364	130,909	2,644,273
EAST BRANCH ENLARGEMENT	0	0	0	0	0	449,224	449,224	0	449,224
SAN JOAQUIN DRAINAGE FACILITIES	0	0	0	0	0	0	0	63,951	63,951
OFF-AQUEDUCT POWER GENERATION FACILITIES	0	0	0	0	0	453,821	453,821	0	453,821
LAND PURCHASE-KERN WATER BANK	0	0	0	0	34,686	0	34,686	0	34,686
UNASSIGNED AND DAVIS-GRUNSKY	0	0	0	0	0	0	30,340	130,000	160,340
Subtotal	53,080	77,088	12,475	17,041	1,737,436	3,326,503	5,253,963	565,327	5,819,290
Less: 2006-2035 Costs	0	9,097	0	0	22,344	0	31,441	0	31,441
TOTAL THROUGH 2005	53,080	67,991	12,475	17,041	1,715,092	3,326,503	5,222,522	565,327	5,787,849

a) Miscellaneous project receipts 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 in this appendix are based on prices prevailing on December 31, 1991.
c) See Table B-8.
d) See Table B-9.
e) See Table B-13. A portion of these costs will be offset by power generation sales and credits.
f) The planning and preoperation costs of conservation facilities include $50,907,000 of planning costs financed from Systems Revenue and not included in Table 30.
g) The Delta Facilities include future cost estimates for planning, land acquisition and construction of the North and South Delta Facilities.
h) See Table B-10. San Luis Division includes $20,000,000 for land acquisition at Arroyo Pasajero.

TABLE B-8

Capital Costs of Requested Delivery Structures to Be Built by State

(in dollars)

Project Service Area and Water Supply Contractor	Calendar Year Capital Costs (a						
	1952–1989	1990	1991	1992	1993	1994	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
FEATHER RIVER AREA							
County of Butte	104,924	0	2,588	2,500	0	0	110,012
Plumas County Flood Control and Water Conservation District	0	0	0	11,000	0	0	11,000
Thermalito Irrigation District (b	43,939	0	0	0	0	0	43,939
Subtotal	148,863	0	2,588	13,500	0	0	164,951
NORTH BAY AREA							
Napa County Flood Control and Water Conservation District	13,590	0	0	16,000	0	0	29,590
Solano County Water Agency	635,850	15,936	983	2,500	0	0	655,269
Subtotal	649,440	15,936	983	18,500	0	0	684,859
SOUTH BAY AREA							
Alameda County Flood Control and Water Conservation District, Zone 7	224,357	0	1,482	1,500	0	0	227,339
Alameda County Water District	145,759	19,410	16,135	24,000	0	0	205,304
Santa Clara Valley Water District	0	0	421	3,000	0	0	3,421
San Francisco Water Department (b	163,425	579,282	280,613	5,500	0	0	1,028,820
Subtotal	533,541	598,692	298,651	34,000	0	0	1,464,884
SAN JOAQUIN VALLEY AREA							
Castaic Lake Water Agency	77,557	0	0	0	0	0	77,557
Dudley Ridge Water District	287,669	1,726	17	0	0	0	289,412
Empire West Side Irrigation District	6,358	0	0	0	0	0	6,358
Green Valley Water District (c	5,292	0	0	0	0	0	5,292
Kern County Water Agency	2,709,182	0	0	17,000	0	0	2,726,182
Oak Flat Water District	13,753	0	0	0	0	0	13,753
Tracy Golf and Country Club (c	1,028	0	0	0	0	0	1,028
Tulare Lake Basin Water Storage District	277,483	0	0	0	0	0	277,483
Veterans Administration Cemetery (b	0	3,194	148	0	0	0	3,342
Subtotal	3,378,322	4,920	165	17,000	0	0	3,400,407
SOUTHERN CALIFORNIA AREA							
Antelope Valley–East Kern Water Agency	359,248	12,388	2,102	500	0	0	374,238
Castaic Lake Water Agency	346,978	0	2,732	2,500	0	0	352,210
Coachella Valley Water District	14,206	0	0	0	0	0	14,206
Crestline–Lake Arrowhead Water Agency	12,097	0	0	0	0	0	12,097
Desert Water Agency	23,438	0	0	0	0	0	23,438
Littlerock Creek Irrigation District	23,732	0	0	0	0	0	23,732
Mojave Water Agency	70,343	129	644	5,000	0	0	76,116
Palmdale Water District	34,173	0	0	0	0	0	34,173
San Bernardino Valley Municipal Water District	792,672	(90)	0	0	0	0	792,582
San Gabriel Valley Municipal Water District	131,052	0	0	0	0	0	131,052
San Gorgonio Pass Water Agency	66,530	0	0	0	0	0	66,530
The Metropolitan Water District of Southern California	4,779,268	690	0	0	0	0	4,779,958
Ventura County Flood Control District	79,699	0	0	0	0	0	79,699
Subtotal	6,733,436	13,117	5,478	8,000	0	0	6,760,031
TOTAL	11,443,602	632,665	307,865	91,000	0	0	12,475,132

a) Approximate only, not to be construed as invoice amounts.
b) Not a SWP water supply contractor.
c) Not a SWP water supply contractor, but has contracted for water.

TABLE B-9

Capital Costs of Requested Excess Peaking Capacity

(in dollars unless otherwise indicated)

Calendar Year	Total Advance Payments and Credits for Excess Capacity	Total Incremental Costs for Excess Capacity	Over payment (+) or Under payment (–) (a	Annual Surplus Money Investment Fund Interest Rate (b		Net Over or Underpayment With Interest (c
				Jan–Jun	Jul–Dec	
	[1]	[2]	[3]	[4]	[5]	[6]
	THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA					
1965	0	158,000	(158,000)	3.968%	4.184%	(163,412)
1966	8,056,000	435,800	7,620,200	4.540%	5.057%	7,701,103
1967	9,094,963	1,878,270	7,216,693	4.815%	4.744%	15,524,533
1968	1,523,252	2,887,351	(1,364,099)	5.330%	5.540%	14,959,187
1969	8,310,651	3,059,310	5,251,341	5.946%	6.389%	21,369,973
1970	3,426,736	2,397,102	1,029,634	7.071%	7.125%	23,986,083
1971	1,086,045	1,146,648	(60,603)	5.154%	5.580%	25,238,017
1972	(4,244,807)	487,394	(4,732,201)	4.477%	4.977%	21,532,965
1973	(15,913,829)	25,041	(15,938,870)	6.023%	8.717%	6,014,116
1974	0	37,775	(37,775)	9.222%	10.351%	6,576,393
1975	0	2,085	(2,085)	7.089%	6.791%	7,038,515
1976	0	0	0	6.048%	6.021%	7,469,662
1977	0	0	0	5.788%	6.182%	7,923,403
1978	0	0	0	7.171%	8.096%	8,539,736
1979	0	0	0	8.979%	9.671%	9,354,605
1980	0	0	0	11.500%	11.500%	10,461,314
Total	11,339,011	12,514,776	(1,175,765)	–	–	10,461,314
	SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT					
1967	0	25,730	(25,730)	4.815%	4.744%	(26,611)
1968	184,422	44,053	140,369	5.330%	5.540%	117,587
1969	49,052	38,075	10,977	5.946%	6.389%	136,751
1970	44,911	17,959	26,952	7.071%	7.125%	175,186
1971	61,588	5,900	55,688	5.154%	5.580%	242,927
1972	(20,263)	6,835	(27,098)	4.477%	4.977%	226,230
1973	(180,465)	0	(180,465)	6.023%	8.717%	49,198
1974	0	0	0	9.222%	10.351%	54,130
1975	0	0	0	7.089%	6.791%	57,952
1976	0	0	0	6.048%	6.021%	61,501
1977	0	0	0	5.788%	6.182%	65,237
1978	0	0	0	7.171%	8.096%	70,312
1979	0	0	0	8.979%	9.671%	77,021
1980	0	0	0	11.500%	11.500%	86,133
Total	139,245	138,552	693	–	–	86,133
	ANTELOPE VALLEY–EAST KERN WATER AGENCY					
1968	85,495	1,645	83,850	5.330%	5.540%	86,962
1969	52,625	6,326	46,299	5.946%	6.389%	140,964
1970	101,648	15,076	86,572	7.071%	7.125%	243,222
1971	34,062	11,748	22,314	5.154%	5.580%	279,673
1972	(12,794)	2,018	(14,812)	4.477%	4.977%	277,552
1973	(205,354)	308	(205,662)	6.023%	8.717%	77,288
1974	0	96	(96)	9.222%	10.351%	84,933
1975	0	0	0	7.089%	6.791%	90,929
1976	0	190	(190)	6.048%	6.021%	96,300
1977	0	0	0	5.788%	6.182%	102,150
1978	0	0	0	7.171%	8.096%	110,096
1979	0	0	0	8.979%	9.671%	120,601
1980	0	0	0	11.500%	11.500%	134,869
Total	55,682	37,407	18,275	–	–	134,869

a) Overpayment or underpayment for each calendar year — column (1) minus column (2).
b) Interest rates shown are annual rates. Interest is credited daily at applicable rates on funds deposited in the State's Surplus Money Investment Fund.
c) Amounts shown are end-of-year balances. Interest on overpayments is credited at applicable Surplus Money Investment Fund Interest Rates shown in columns(4) and (5). *Interest on underpayments* is charged at the 1980 Project Interest Rate of 4.584 percent.

TABLE B-9

Capital Costs of Requested Excess Peaking Capacity (Continued)

(in dollars)

Reach Number	ANNUAL REQUIRED ADVANCE OF FUNDS — Incremental Costs and Advance Payments by Calendar Year													Reach Total
	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1981	
	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA														
Incremental Costs														
8C		1,000	1,000											2,000
8D		43,500	43,500											87,000
9		27,000	27,000	13,500										67,500
10A		29,700	29,700	14,800										74,200
11B	10,100	18,300	18,300	9,200										55,900
12D	1,800		19,300	25,800	12,900									59,800
12E	1,800		12,400	18,800	10,800									43,800
13B			12,600	37,800	31,600									82,000
14A	2,500	500	11,100	80,216	107,504	124,069	37,519	6,413	381	87				370,289
14B	1,200	1,800		19,100	19,100	12,800								54,000
14C	1,800	900		13,500	13,500	9,000								38,700
15A	700		14,000	66,947	133,357	128,099	54,821	5,327	946	2,076				406,273
16A	700		18,900	137,894	182,000	211,608	133,927	26,203	5,767	6,156				723,155
17E		51,500	444,600	537,247	860,024	998,985	699,281	193,286	17,947	29,456	2,085			3,834,411
17F	109,100	261,600	261,600	261,600	261,600	239,500								1,395,000
25			964,270	1,650,947	1,426,925	673,041	221,100	256,165						5,192,448
28J		304,612	13,706	296,668	65,966	230,169	1,209,586	2,017,134	235,900	4,900				4,378,641
Total	129,700	740,412	1,891,976	3,184,019	3,125,276	2,627,271	2,356,234	2,504,528	260,941	42,675	2,085			16,865,117
Current Adjustment														
8C through 25	1. Advance Payments Applied to Incremental Costs Amendment 2 (d													
	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)				(356,668)	12,514,776
	2. Interest Credits–Amendment 2 (e													
28J									(1,532,433)				(10,104,646)	(11,637,079)
	3. Advance Payments Applied to Incremental Costs Amendment 5 (f													
	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 (g													
										(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)	(14,233,829)	(12,210,525)			(10,461,314)	2,524,535
SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT														
Incremental Costs														
25			25,730	44,053	38,075	17,959	5,900	6,835						138,552
Total Unadjusted Incremental Costs for Past Payments														
			25,730	44,053	38,075	17,959	5,900	6,835						138,552
Current Adjustments														
1. Advance Payments Applied to Incremental Costs (d														
			0	184,422	49,052	44,911	61,588	(20,263)	(174,133)				(7,025)	138,552
2. Interest Credit														
									(6,332)				(79,108)	(85,440)
3. Net Required Advance of Funds														
			0	184,422	49,052	44,911	61,588	(20,263)	(180,465)				(h (86,133)	53,112
ANTELOPE VALLEY–EAST KERN WATER AGENCY														
Incremental Costs														
29A				1,645	6,326	13,376	10,048	2,018	308	96		190		34,007
29F						1,700	1,700							3,400
Total Unadjusted Incremental Costs for Past Payments														
				1,645	6,326	15,076	11,748	2,018	308	96		190		37,407
Current Adjustment														
1. Advance Payments Applied to Incremental Costs (d														
				85,495	52,625	101,648	34,062	(12,794)	(189,120)	0		0	(34,509)	37,407
2. Interest Credit														
									(16,234)				(100,360)	(116,594)
3. Net Required Advance of Funds														
				85,495	52,625	101,648	34,062	(12,794)	(205,354)	0		0	(h (134,869)	(79,187)

d) Actual payments are shown for 1965 through 1976 with 1981 adjusted to reflect overpayments and underpayments without interest for prior years.
e) Interest for overpayments and underpayments under provisions of Amendment 2 of the contract.
f) Actual payments are shown for 1965 through 1973 with 1974 adjusted to reflect overpayments and underpayments without interest for prior years.
g) Interest for overpayments and underpayments under provisions of Amendment 5 of the contract.
h) Amounts in excess of incremental costs, under the provisions of the contract, reduce the Transportation Charge capital cost component of the Agency's Statement of Charges for January 19[illegible]

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed Through Capital Cost Component of Transportation Charge

(in dollars)

Calendar Year	UPPER FEATHER DIVISION	NORTH BAY AQUEDUCT					SOUTH BAY AQUEDUCT			
		Reach 1	Reach 2	Reach 3A	Reach 3B	Total	Reach 1	Reach 2	Reach 4	Reach 5
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
1952	0	0	0	0	0	0	97	34	30	57
1953	0	0	0	0	0	0	477	166	144	297
1954	0	0	0	0	0	0	1,466	508	437	959
1955	0	0	0	0	0	0	1,944	674	560	1,266
1956	0	0	0	0	0	0	18,789	6,515	5,090	12,545
1957	0	13,290	3,391	0	9,953	26,634	45,090	15,639	12,285	33,218
1958	2	19,202	5,011	0	25,798	50,011	195,985	80,961	7,714	21,930
1959	14	7,517	2,118	0	17,653	27,288	496,140	148,516	24,945	17,118
1960	28	8,797	4,292	0	4,838	17,927	1,130,378	67,351	71,779	68,028
1961	10	1,551	10,318	0	2,526	14,395	3,273,247	180,596	307,885	74,398
1962	32	217	(1,751)	0	414	(1,120)	1,548,884	203,535	695,446	35,102
1963	51	2,510	(1,063)	0	983	2,430	480,716	69,182	2,284,291	206,587
1964	7,791	39,879	12,046	0	21,934	73,859	2,549,118	15,903	181,900	264,410
1965	3,139	72,793	17,900	0	170,361	261,054	807,505	153,454	85,425	447,830
1966	(48)	59,615	12,972	0	438,949	511,536	898,074	149,529	142,096	1,690,200
1967	47	47,257	11,597	0	1,551,023	1,609,877	607,614	50,423	293,304	3,496,284
1968	51,573	70,586	19,560	0	831,158	921,304	965,119	19,543	89,300	2,931,101
1969	234,232	63,650	23,628	0	46,428	133,706	455,173	9,618	3,860	896,727
1970	16,227	59,090	42,733	0	9,415	111,238	52,481	3,380	10,517	154,358
1971	27,204	20,819	31,516	0	8,480	60,815	24,505	4,645	5,035	20,395
1972	9	15,538	12,952	0	10,058	38,548	26,918	825	2,945	26,090
1973	25	18,488	29,018	0	39,878	87,384	24,468	4,010	6,016	12,708
1974	45	67,352	29,978	0	134,332	231,662	17,108	1,192	1,765	65,587
1975	21	62,855	73,112	0	45,091	181,058	57,619	561	1,165	7,291
1976	51	52,419	75,611	218	13,168	141,416	104,242	2,846	8,915	12,701
1977	28	53,274	65,662	2,240	23,138	144,314	176,062	3,625	3,225	16,158
1978	38	61,936	57,158	2,955	28,987	151,036	264,581	4,494	3,668	14,028
1979	23	316,620	91,367	3,953	62,240	474,180	111,106	17,151	8,515	31,725
1980	26	422,804	111,600	19,910	96,125	650,439	368,942	17,708	8,249	38,045
1981	34	430,990	147,295	(10,753)	43,149	610,681	(145,507)	3,589	6,520	12,431
1982	11	934,809	357,720	(7,166)	132,141	1,417,504	(58,468)	17,110	4,427	36,037
1983	19	1,091,090	1,076,627	2,627	517,214	2,687,558	419,518	73,118	34,721	71,032
1984	26	1,875,950	2,317,661	3,282	1,068,350	5,265,243	506,811	36,354	9,609	92,842
1985	29	2,248,491	7,849,886	27,815	3,415,897	13,542,089	29,711	2,168	4,018	26,752
1986	31	16,420,259	10,020,277	1,309,608	1,819,382	29,569,526	86,057	14,745	17,176	14,007
1987	32	11,877,320	7,214,307	1,628,477	1,671,275	22,391,379	130,195	16,285	29,310	33,908
1988	56	3,352,548	1,681,406	1,006,730	686,961	6,727,645	286,930	35,266	51,173	24,056
1989	64	1,061,297	953,773	242,832	377,943	2,635,845	151,552	18,930	39,611	13,353
1990	88	499,798	541,623	184,751	74,834	1,301,006	171,223	28,065	90,413	36,226
1991	84	83,183	22,427	24,499	72,533	202,642	122,388	16,088	26,427	13,322
1992	0	113,000	12,000	0	81,000	206,000	333,000	26,000	23,000	21,420
1993	0	564,000	2,000	0	324,000	890,000	1,718,000	72,000	78,000	55,188
1994	0	946,000	1,000	0	21,000	968,000	2,395,000	41,000	43,000	31,500
1995	0	23,000	1,000	0	2,000	26,000	145,000	4,000	3,000	4,032
1996	0	3,000	1,000	0	2,000	6,000	5,000	4,000	2,000	3,780
1997	0	1,000	0	0	1,000	2,000	3,000	2,000	1,000	2,016
1998	0	0	0	0	0	0	1,000	0	0	252
1999	0	0	0	0	0	0	1,000	0	0	252
2000	0	0	0	0	0	0	0	0	0	0
TOTAL	341,042	43,083,794	32,940,728	4,441,978	13,903,609	94,370,109	21,005,258	1,643,302	4,729,911	11,089,549

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed Through Capital Cost Component of Transportation Charge (Continued)

(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
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]
1952	8	66	72	132	496	4,012	3,279	1,499	8,790
1953	38	327	336	640	2,425	10,559	8,589	3,964	23,112
1954	123	1,005	1,003	1,954	7,455	13,796	11,163	5,179	30,138
1955	160	1,293	1,149	2,454	9,500	7,370	5,952	2,760	16,082
1956	1,559	11,959	11,043	28,372	95,872	9,880	5,020	2,398	17,298
1957	3,659	28,675	27,385	563,114	729,065	11,953	5,456	2,612	20,021
1958	2,243	17,872	17,385	560,904	904,994	18,585	17,191	7,994	43,770
1959	357	3,200	3,568	149,874	843,718	123,170	100,306	45,510	268,986
1960	1,102	2,944	4,498	359,749	1,705,829	191,408	102,136	48,968	342,512
1961	4,726	18,325	22,765	(1,367)	3,880,575	153,765	195,947	42,843	392,555
1962	17,295	160,939	178,242	209,042	3,048,485	612,258	491,225	168,218	1,271,701
1963	265,414	1,250,386	939,832	129,902	5,626,310	1,993,284	1,525,734	684,095	4,203,113
1964	100,603	1,716,371	2,327,770	2,947,522	10,103,597	4,674,280	2,369,858	700,074	7,744,212
1965	42,345	368,476	637,266	1,921,844	4,464,145	5,877,189	6,873,699	2,975,719	15,726,607
1966	17,663	34,915	140,350	777,887	3,850,714	8,553,362	14,112,820	5,677,099	28,343,281
1967	(41,567)	137,856	147,183	379,764	5,070,861	9,678,607	10,672,113	6,646,739	26,997,459
1968	84,553	2,130	68,057	253,152	4,412,955	6,392,664	891,681	1,303,186	8,587,531
1969	4,279	11,572	162,300	32,000	1,575,529	3,542,767	792,259	443,924	4,778,950
1970	2,487	6,820	20,086	(15,718)	234,411	2,236,607	149,692	115,578	2,501,877
1971	4,350	6,923	17,750	39,084	122,687	98,138	215,512	69,410	383,060
1972	1,084	203	4,800	32,199	95,064	159,608	43,721	7,744	211,073
1973	288	989	7,449	9,693	65,621	105,581	25,496	22,418	153,495
1974	527	6,020	30,628	11,433	134,260	177,700	16,627	45,707	240,034
1975	126	679	1,086	3,464	71,991	239,144	14,680	169,676	423,500
1976	701	3,529	8,362	26,186	167,482	641,860	45,533	65,943	753,336
1977	270	1,310	8,651	24,938	234,239	274,381	20,283	22,568	317,232
1978	231	1,204	1,631	17,123	306,960	801,265	36,221	9,714	847,200
1979	1,367	1,721	2,134	7,322	181,041	1,051,792	59,695	26,106	1,137,593
1980	1,321	1,718	2,182	7,102	445,267	4,173,603	96,760	38,789	4,309,152
1981	308	1,461	1,397	5,070	(114,731)	(503,289)	1,487,444	191,320	1,175,475
1982	670	1,286	1,352	3,701	6,115	665,079	38,356	19,274	722,709
1983	377	5,233	7,446	21,341	632,786	679,003	77,066	250,189	1,006,258
1984	269	1,853	1,667	13,299	662,704	1,557,914	41,349	48,477	1,647,740
1985	376	1,547	2,028	6,158	72,758	666,253	22,058	63,633	751,944
1986	1,121	2,750	3,320	12,270	151,446	401,075	63,935	35,458	500,468
1987	1,555	3,163	3,681	23,116	241,213	816,208	92,997	43,219	952,424
1988	5,743	6,706	7,631	32,978	450,483	2,926,671	(127,570)	(59,896)	2,739,205
1989	3,266	4,523	5,483	16,236	252,954	7,022,185	358,139	174,734	7,555,058
1990	5,852	20,443	37,252	83,976	473,450	13,358,091	109,076	2,394,494	15,861,661
1991	2,869	5,764	8,251	21,643	216,752	13,610,479	123,070	74,609	13,808,158
1992	4,000	5,000	7,000	20,000	439,420	10,265,383	123,976	53,323	10,442,682
1993	17,000	13,000	19,000	64,000	2,036,188	5,259,667	448,582	196,629	5,904,878
1994	9,000	7,000	11,000	34,000	2,571,500	7,398,594	243,954	106,646	7,749,194
1995	0	1,000	2,000	3,000	162,032	1,299,753	9,998	3,999	1,313,750
1996	0	1,000	2,000	3,000	20,780	277,947	8,665	3,333	289,945
1997	0	0	1,000	1,000	10,016	6,665	3,999	1,333	11,997
1998	0	0	0	0	1,252	3,999	667	667	5,333
1999	0	0	0	0	1,252	3,999	667	667	5,333
2000	0	0	0	0	0	0	0	0	0
TOTAL	569,718	3,881,156	4,916,471	8,844,553	56,679,918	117,544,264	42,035,076	22,958,542	182,537,882

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed Through Capital Cost Component of Transportation Charge (Continued)

(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
	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]
1952	2,492	3,549	3,987	1,010	1,390	12,428	13	727	1,109
1953	6,999	10,144	10,986	2,834	3,869	34,832	45	2,671	4,185
1954	8,704	12,545	13,693	3,520	4,766	43,228	50	2,719	4,026
1955	4,273	6,055	6,813	1,728	2,325	21,194	19	888	1,100
1956	3,295	5,600	5,857	1,445	3,556	19,753	98	3,850	4,376
1957	3,543	6,115	6,357	1,565	3,998	21,578	234	10,604	13,209
1958	11,927	19,393	22,037	5,509	7,512	66,378	375	19,033	25,073
1959	21,979	37,358	39,689	9,813	19,679	128,518	436	20,578	25,697
1960	207,025	45,419	41,044	12,074	37,633	343,195	1,673	44,565	25,290
1961	184,443	292,639	170,559	38,338	70,068	756,047	3,949	75,726	30,852
1962	495,836	549,984	252,698	22,397	26,967	1,347,882	6,131	159,481	62,375
1963	2,772,189	2,034,351	2,498,712	66,353	30,647	7,402,252	5,861	161,252	81,343
1964	4,348,311	4,932,301	1,053,227	161,422	251,461	10,746,722	4,014	90,622	117,907
1965	3,860,997	5,688,252	2,869,931	1,072,111	667,768	14,159,059	15,049	491,042	564,036
1966	2,312,372	8,527,843	5,765,798	4,230,221	7,708,334	28,544,568	201,274	5,197,322	2,539,278
1967	(44,527)	2,062,305	6,942,522	222,885	6,675,398	15,858,583	212,285	4,982,844	3,363,650
1968	119,884	395,689	973,956	179,917	461,031	2,130,477	64,234	611,192	940,074
1969	(6,065)	126,946	98,492	107,486	160,668	487,527	58,960	116,146	85,130
1970	32,387	(20,243)	105,385	(827,457)	1,215,966	506,038	23,011	106,810	84,116
1971	99,945	230,624	305,227	26,995	341,010	1,003,801	8,813	33,099	23,088
1972	15,990	90,852	17,053	14,621	281,343	419,859	10,818	13,349	16,603
1973	6,753	103,707	41,549	13,810	41,427	207,246	5,145	11,089	13,249
1974	6,618	117,165	55,978	16,199	71,796	267,756	5,434	24,433	16,567
1975	18,921	107,275	23,671	8,797	152,574	311,238	5,424	15,960	12,966
1976	17,485	79,554	13,041	5,138	41,687	156,905	19,931	76,280	62,164
1977	35,707	84,669	9,412	4,028	9,655	143,471	21,096	70,005	97,952
1978	8,539	428,395	7,006	3,536	6,994	454,470	7,584	40,453	17,395
1979	(35,394)	543,225	19,463	9,485	(242,253)	294,526	10,474	6,181	6,227
1980	66,622	3,450,695	191,307	75,209	185,384	3,969,217	2,158	17,492	17,706
1981	29,063	(2,245,599)	(40,600)	(14,268)	855,592	(1,415,812)	1,145	9,667	9,527
1982	95,242	(1,640,670)	14,989	7,561	3,491,470	1,968,592	1,678	4,945	4,208
1983	89,560	110,587	24,680	11,308	1,813,429	2,049,564	7,532	10,483	9,149
1984	37,494	121,228	33,130	16,419	3,063,804	3,272,075	26,489	10,111	6,267
1985	66,589	101,182	24,800	11,499	594,560	798,630	6,891	8,583	6,720
1986	76,978	207,936	53,084	20,202	1,392,372	1,750,572	8,909	25,062	20,549
1987	24,143	193,592	46,402	18,969	1,175,343	1,458,449	13,124	20,314	57,441
1988	(139,200)	327,569	(391,296)	(135,234)	1,376,043	1,037,882	9,938	(119,416)	(61,290)
1989	48,098	676,628	239,688	84,248	769,096	1,817,758	7,107	98,625	282,959
1990	35,181	382,668	84,127	33,141	693,007	1,228,124	7,532	45,942	2,012,661
1991	4,918,088	248,933	87,356	33,135	667,850	5,955,362	6,721	47,357	34,273
1992	74,750	400,775	85,813	30,176	53,751	645,265	18,860	64,124	42,435
1993	270,789	1,497,484	297,045	106,559	191,429	2,363,306	71,668	237,636	153,709
1994	146,677	810,980	160,310	57,523	103,730	1,279,220	39,606	129,191	83,927
1995	5,641	19,803	9,430	3,772	4,715	43,361	943	3,772	3,772
1996	4,936	14,145	8,487	2,829	4,715	35,112	0	3,772	2,829
1997	2,116	6,601	3,772	943	1,886	15,318	0	1,886	943
1998	705	2,829	943	0	943	5,420	0	0	0
1999	705	2,829	943	0	943	5,420	0	0	0
2000	0	0	0	0	0	0	0	0	0
TOTAL	20,374,805		22,308,553		34,497,331		922,731		10,926,822
		31,211,906		5,779,771		114,172,366		13,008,467	

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed Through Capital Cost Component of Transportation Charge (Continued)

(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
	[29]	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]
1952	695	1,279	1,980	995	1,663	794	212	212	1,911
1953	2,569	4,790	7,480	3,745	6,236	2,599	733	741	7,016
1954	2,821	4,855	7,565	3,792	6,319	2,880	810	817	7,073
1955	1,097	1,557	2,404	1,211	2,025	1,183	325	327	2,253
1956	4,428	6,223	9,233	4,737	8,054	7,026	1,638	1,584	9,939
1957	13,269	18,772	29,082	14,615	24,411	15,651	3,834	3,864	26,871
1958	25,086	48,191	78,564	39,087	61,715	33,726	12,330	11,813	49,499
1959	25,787	67,246	107,781	53,836	86,478	64,824	22,102	21,828	70,838
1960	47,492	66,317	77,936	39,867	63,517	84,363	23,260	22,305	73,305
1961	68,505	46,073	88,274	51,457	28,015	242,753	91,290	65,565	150,205
1962	57,705	56,056	69,189	44,851	49,179	208,180	61,489	47,608	133,653
1963	52,585	91,914	173,985	86,405	67,733	425,626	104,436	77,970	102,072
1964	124,014	333,621	291,013	174,469	86,271	1,093,795	684,005	485,033	571,173
1965	622,257	1,053,029	1,524,848	1,044,851	196,487	3,385,205	1,655,024	1,436,258	476,830
1966	2,800,056	3,709,779	673,429	466,228	418,141	4,916,319	974,862	724,354	1,829,852
1967	3,652,342	4,636,627	1,881,333	1,244,265	1,238,428	2,788,299	525,653	400,183	1,721,304
1968	1,025,969	1,323,302	4,726,074	3,145,775	8,343,706	10,210,266	1,330,361	1,405,117	7,522,015
1969	145,111	229,185	706,272	529,080	3,704,065	15,112,041	1,223,457	1,134,395	9,523,012
1970	74,366	85,151	70,725	72,798	320,797	11,031,255	987,213	738,955	8,836,897
1971	15,595	45,006	43,988	42,624	339,078	2,925,191	193,255	36,514	3,275,227
1972	19,736	32,657	43,939	24,748	81,937	1,388,348	101,784	20,165	1,003,380
1973	14,283	16,448	9,980	16,320	25,090	680,834	19,584	13,469	798,805
1974	22,111	14,951	19,555	32,240	29,582	524,504	30,735	16,333	778,696
1975	15,865	13,479	10,793	13,678	25,827	269,197	25,164	21,048	370,265
1976	76,202	54,217	37,464	59,842	105,332	507,519	59,753	42,776	434,574
1977	75,628	52,919	22,826	54,444	81,293	301,515	49,972	30,152	235,514
1978	48,754	16,469	(2,816)	27,331	43,126	348,674	(653)	1,500	297,817
1979	241	6,906	13,401	14,229	25,411	293,786	9,846	7,856	245,590
1980	18,165	18,813	15,608	27,498	34,190	1,676,267	29,169	23,023	1,719,775
1981	10,290	15,324	28,246	21,872	25,503	(1,074,746)	28,974	34,604	(1,142,519)
1982	4,998	4,720	6,062	5,698	13,728	(765,128)	7,425	28,895	(824,559)
1983	11,779	8,644	13,203	11,327	33,879	405,749	15,572	23,066	101,962
1984	7,532	29,138	93,958	52,372	22,731	59,528	80,334	66,263	64,129
1985	7,985	6,247	4,730	7,000	7,987	(57,058)	8,523	5,030	47,797
1986	22,370	16,758	16,323	25,208	20,512	141,953	26,225	14,089	155,193
1987	18,243	14,663	13,426	21,576	16,354	110,532	22,127	9,496	236,505
1988	(159,576)	(73,942)	(151,345)	(52,073)	(119,730)	151,142	(75,516)	(75,073)	137,062
1989	75,126	68,546	66,291	125,532	79,712	2,802,469	123,958	40,953	2,977,702
1990	33,580	26,974	24,848	42,801	38,863	397,283	40,629	18,376	359,040
1991	34,021	28,131	25,865	44,566	38,713	200,321	43,103	16,999	169,916
1992	53,751	32,062	19,803	32,062	31,119	279,128	44,321	31,119	236,693
1993	198,030	116,932	65,067	113,160	111,274	1,059,932	165,025	115,046	908,109
1994	107,502	63,181	35,834	61,295	60,352	575,230	90,528	62,238	493,189
1995	3,772	2,829	2,829	2,829	2,829	12,259	2,829	1,886	9,430
1996	3,772	1,886	2,829	1,886	2,829	8,487	2,829	1,886	6,601
1997	1,886	943	943	943	943	4,715	943	943	3,772
1998	0	0	0	0	0	1,886	0	0	1,886
1999	0	0	0	0	0	1,886	0	0	1,886
2000	0	0	0	0	0	0	0	0	0
TOTAL	9,487,795	12,418,868	11,010,817	7,853,072	15,891,704	62,858,188	8,849,472	7,187,581	44,219,155

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed Through Capital Cost Component of Transportation Charge (Continued)

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	SOUTH SAN JOAQUIN (contd.)		TEHACHAPI DIVISION			MOJAVE DIVISION			
	Reach 16A	Subtotal	Reach 17E	Reach 17F	Subtotal	Reach 18A	Reach 19	Reach 19C	Reach 20A
	[38]	[39]	[40]	[41]	[42]	[43]	[44]	[45]	[46]
1952	4,440	16,030	9,703	4,072	13,775	4,090	1,520	0	2,561
1953	16,513	59,323	31,337	13,284	44,621	12,610	4,685	0	7,246
1954	16,601	60,328	46,243	20,010	66,253	16,642	6,184	0	9,506
1955	5,223	19,612	25,880	11,362	37,242	5,612	2,086	0	2,529
1956	21,754	82,940	47,487	17,609	65,096	6,038	2,244	0	2,440
1957	62,657	237,073	119,673	49,130	168,803	22,348	8,304	0	9,035
1958	133,083	537,575	164,056	72,091	236,147	37,917	14,166	123	15,391
1959	205,748	773,179	151,389	57,883	209,272	38,620	23,450	1,102	23,605
1960	204,788	774,678	203,222	45,323	248,545	21,356	26,093	5,318	40,523
1961	206,305	1,148,969	387,819	85,558	473,377	35,664	32,281	2,262	34,918
1962	171,396	1,127,293	353,119	82,610	435,729	68,508	266,284	1,841	10,323
1963	481,941	1,913,123	1,191,633	124,757	1,316,390	37,379	435,881	4,137	39,706
1964	1,778,952	5,834,889	1,866,000	775,005	2,641,005	95,693	706,369	8,564	43,342
1965	1,268,176	13,733,092	2,574,824	2,284,869	4,859,693	121,060	716,092	9,156	108,519
1966	2,896,274	27,347,168	5,537,412	9,323,517	14,860,929	366,116	1,644,699	13,373	159,282
1967	3,442,021	30,089,234	26,239,390	12,398,708	38,638,098	1,312,022	903,880	24,103	645,078
1968	7,578,498	48,226,583	33,363,479	7,416,464	40,779,943	136,804	7,109,653	71,388	1,889,601
1969	13,136,056	45,702,910	40,368,425	6,883,206	47,251,631	213,805	2,465,641	7,423	5,939,151
1970	13,890,751	36,322,845	35,446,706	6,786,231	42,232,937	2,211,077	1,210,665	6,217	3,652,478
1971	7,903,937	14,885,415	20,141,395	6,835,303	26,976,698	1,496,843	284,738	6,994	1,074,759
1972	3,025,555	5,783,019	10,002,935	34,791	10,037,726	129,417	409,903	3,620	471,963
1973	1,472,313	3,096,609	3,090,140	36,207	3,126,347	23,931	75,638	2,539	88,416
1974	1,031,843	2,546,984	4,798,348	152,494	4,950,842	28,399	205,581	2,703	138,673
1975	489,545	1,289,211	2,144,178	411,404	2,555,582	44,774	70,652	5,066	68,157
1976	618,049	2,154,103	1,124,357	174,629	1,298,986	121,043	84,593	6,786	59,967
1977	580,209	1,673,525	655,047	31,512	686,559	261,400	133,767	7,521	117,878
1978	582,775	1,428,409	1,900,843	27,956	1,928,799	553,014	57,150	5,872	51,615
1979	542,554	1,182,702	2,099,385	61,381	2,160,766	626,615	339,536	10,831	37,085
1980	3,772,498	7,372,362	17,433,610	6,046	17,439,656	1,130,429	1,073,430	3,604	308,188
1981	(2,526,431)	(4,558,544)	(3,849,053)	6,903	(3,842,150)	1,218,813	845,669	4,498	48,603
1982	(1,881,096)	(3,388,426)	11,315,758	5,317	11,321,075	6,965,321	741,321	3,920	30,521
1983	145,222	797,567	8,827,373	7,322	8,834,695	10,908,338	61,202	2,596	37,390
1984	121,548	640,400	3,222,288	31,701	3,253,989	8,340,371	309,489	3,124	17,504
1985	71,876	132,311	1,910,128	10,029	1,920,157	5,263,495	141,294	3,885	(10,847)
1986	188,626	681,777	1,388,862	33,801	1,422,663	2,049,169	1,339,709	4,261	2,157,751
1987	205,957	759,758	690,433	14,161	704,594	1,351,758	814,382	4,684	(714,688)
1988	253,263	(336,556)	1,399,724	(49,699)	1,350,025	847,702	(95,814)	13,091	(512,664)
1989	5,992,746	12,741,726	595,181	65,919	661,100	383,437	220,300	50,623	1,774,949
1990	548,084	3,596,613	762,591	24,432	787,023	148,045	(363,946)	34,424	(544,717)
1991	582,498	1,272,484	593,016	29,357	622,373	155,812	(132,223)	79,792	(217,986)
1992	360,226	1,245,703	526,194	10,373	536,567	1,957,668	68,839	0	82,984
1993	1,378,666	4,694,254	2,035,937	33,948	2,069,885	939,228	114,103	0	128,248
1994	749,685	2,551,758	1,108,968	17,917	1,126,885	20,746	63,181	0	71,668
1995	15,088	65,067	20,746	943	21,689	943	3,772	0	2,829
1996	10,373	49,979	13,202	943	14,145	943	2,829	0	2,829
1997	5,658	24,518	8,487	943	9,430	943	1,886	0	1,886
1998	1,886	5,658	4,715	0	4,715	943	943	0	0
1999	1,886	5,658	4,715	0	4,715	943	943	0	0
2000	0	0	0	0	0	0	0	0	0
TOTAL	71,766,216	276,400,888	242,097,300	54,467,722	296,565,022	49,733,844	22,453,044	415,441	17,408,195

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed Through Capital Cost Component of Transportation Charge (Continued)

(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
	[47]	[48]	[49]	[50]	[51]	[52]	[53]	[54]	[55]
1952	892	5,788	35	2,013	2,074	2,413	21,386	3,334	5,599
1953	3,402	17,846	71	5,752	6,886	7,438	65,936	10,275	17,264
1954	4,548	23,558	369	8,560	7,849	9,820	87,036	13,566	22,790
1955	2,213	7,947	178	2,754	2,725	3,313	29,357	4,575	7,687
1956	2,655	8,542	216	2,905	2,961	3,561	31,562	4,917	8,264
1957	9,826	31,616	800	10,757	10,962	13,177	116,825	18,205	30,586
1958	16,752	53,569	1,397	18,717	18,578	22,627	199,237	31,001	52,019
1959	18,604	56,724	1,844	25,421	20,372	45,646	255,388	39,325	58,137
1960	37,179	43,893	11,029	136,751	17,152	109,816	449,110	65,655	93,700
1961	37,102	21,532	14,517	215,859	9,546	373,473	777,154	26,979	56,734
1962	10,730	8,197	4,186	164,168	4,336	279,421	817,994	9,964	36,235
1963	40,865	26,670	17,081	237,695	7,228	358,503	1,205,145	31,013	112,271
1964	71,116	33,912	22,793	262,996	6,863	244,003	1,495,651	69,669	202,642
1965	343,506	91,095	65,689	827,655	11,836	621,566	2,916,174	279,237	206,356
1966	1,311,628	160,388	178,538	1,746,245	31,078	1,018,628	6,629,975	415,066	364,004
1967	1,718,942	498,257	367,961	3,146,128	62,135	2,331,106	11,009,612	3,184,296	638,539
1968	2,291,691	1,141,929	1,145,768	4,588,850	102,207	2,600,293	21,078,184	8,264,126	1,268,194
1969	5,626,284	2,358,737	1,515,147	7,750,478	260,659	11,131,406	37,268,731	6,807,783	1,768,456
1970	5,304,372	3,232,911	2,081,810	23,451,612	1,240,798	16,885,193	59,277,133	2,169,051	7,229,429
1971	1,091,123	825,070	432,464	16,772,680	1,922,115	5,385,721	29,292,507	1,135,248	9,811,736
1972	635,507	484,772	324,865	3,788,894	48,049	788,479	7,085,469	1,095,740	5,528,987
1973	83,840	63,774	36,179	1,623,274	24,333	4,225,877	6,247,801	136,994	1,810,729
1974	118,639	103,545	54,198	5,699,605	130,567	766,562	7,248,472	68,180	1,922,999
1975	169,294	167,240	19,453	4,793,580	19,467	373,783	5,731,466	166,653	3,787,797
1976	102,909	44,896	24,732	3,103,916	84,188	204,705	3,837,735	475,176	1,494,750
1977	120,160	71,389	49,445	1,654,122	60,112	232,230	2,708,024	76,255	776,085
1978	68,838	32,855	18,183	677,448	36,484	210,198	1,711,657	57,463	131,076
1979	36,225	18,948	10,675	560,506	10,634	103,615	1,754,670	29,960	80,482
1980	284,545	133,526	121,171	2,239,224	60,229	559,963	5,914,309	31,462	181,638
1981	32,194	13,211	6,458	(774,874)	138,908	203,929	1,737,409	5,861	68,934
1982	74,087	10,928	12,990	395,842	344,170	73,079	8,652,179	8,887	139,927
1983	55,818	23,930	9,098	424,785	2,029,895	51,334	13,604,386	4,155	514,813
1984	35,377	845,422	6,052	(84,369)	1,290,740	34,762	10,798,472	3,850	220,448
1985	(314,617)	(577,792)	1,944,902	425,693	965,508	49,530	7,891,051	5,265	17,064
1986	(2,229,180)	(1,550,894)	3,260,298	(2,069,892)	232,240	52,078	3,245,540	9,928	114,790
1987	(1,684,404)	(1,529,380)	65,162	(1,686,937)	148,973	93,979	(3,136,471)	4,954	34,887
1988	(525,531)	(508,115)	351,698	8,550,926	560,396	198,308	8,879,997	7,387	159,100
1989	1,878,445	2,187,941	538,245	4,523,552	1,501,734	445,342	13,504,568	8,583	(2,266,957)
1990	(367,808)	(524,341)	(96,445)	4,269,858	1,372,707	346,674	4,274,451	174,549	(1,732,261)
1991	(129,685)	(198,174)	(42,158)	10,840,602	3,632,806	97,128	14,085,914	203,694	(1,413,587)
1992	66,010	80,155	30,176	7,019,692	14,277,963	103,730	23,687,217	6,601	11,316
1993	110,331	119,761	77,326	1,934,093	12,615,454	406,433	16,444,977	2,677,177	(107,502)
1994	60,352	66,010	42,435	876,990	6,225,686	221,605	7,648,673	11,895,002	422,464
1995	2,829	1,886	943	19,803	846,814	3,772	883,591	9,478,093	7,544
1996	1,886	1,886	943	14,145	943	2,829	29,233	943	4,715
1997	943	943	943	8,487	0	1,886	17,917	0	2,829
1998	0	0	0	3,772	0	943	6,601	0	1,886
1999	0	0	0	3,772	0	943	6,601	0	1,886
2000	0	0	0	0	0	0	0	0	0
TOTAL	16,630,434	8,232,503	12,729,860	118,214,505	50,407,360	51,300,820	347,526,006	49,216,097	33,907,481

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed Through Capital Cost Component of Transportation Charge (Continued)

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	SANTA ANA DIVISION (continued)				WEST BRANCH				
	Reach 28G a)	Reach 28H	Reach 28J	Subtotal	Reach 29A	Reach 29F	Reach 29G	Reach 29H	Reach 29J
	[56]	[57]	[58]	[59]	[60]	[61]	[62]	[63]	[64]
1952	4,785	4,055	3,020	20,793	2,924	136	175	459	553
1953	15,580	11,511	9,476	64,106	9,093	344	237	1,754	1,683
1954	18,015	18,100	12,160	84,631	7,389	1,201	2,229	2,350	4,162
1955	6,052	6,081	4,151	28,546	1,019	585	1,086	1,147	2,029
1956	6,496	6,525	4,480	30,682	490	698	1,297	1,366	2,420
1957	24,044	24,156	16,585	113,576	1,809	2,583	4,792	5,057	8,952
1958	40,844	41,033	28,470	193,367	3,256	4,516	8,714	8,878	15,847
1959	45,746	45,946	44,331	233,485	7,953	9,150	19,414	18,243	35,583
1960	58,102	58,548	118,969	395,974	21,753	14,990	34,447	29,764	69,752
1961	32,226	34,382	674,787	825,108	22,442	12,775	21,559	20,086	39,761
1962	21,383	20,530	47,484	135,596	40,237	28,729	86,938	58,215	108,962
1963	43,884	41,698	1,506,440	1,735,306	91,959	69,162	163,347	110,015	211,592
1964	89,710	45,762	98,569	506,352	150,670	86,420	207,977	143,340	291,404
1965	96,956	76,899	146,095	805,543	361,811	77,914	403,115	127,430	589,638
1966	170,878	308,756	589,107	1,847,811	489,512	203,497	1,233,640	348,918	3,231,797
1967	233,968	283,126	987,832	5,327,761	1,589,715	882,096	1,117,243	891,607	31,088,491
1968	871,337	266,295	780,587	11,450,539	3,899,363	300,921	396,190	1,104,832	36,157,768
1969	1,117,873	1,444,654	756,442	11,895,208	6,592,580	336,480	693,348	1,184,454	9,655,871
1970	1,843,621	1,013,468	2,829,523	15,085,092	7,986,733	6,089,401	2,624,747	3,002,968	8,463,475
1971	16,095,702	6,401,303	12,111,623	45,555,612	4,247,037	3,768,699	1,120,231	8,244,651	5,844,024
1972	1,537,880	11,960,791	21,542,747	41,666,145	1,871,831	426,932	985,512	18,787,722	(23,015,734)
1973	209,664	247,769	3,673,344	6,078,500	775,824	168,064	399,856	9,408,706	1,821,206
1974	162,178	101,638	1,980,991	4,235,986	560,657	168,878	169,717	3,901,261	(3,454,239)
1975	157,365	124,399	1,626,274	5,862,488	353,670	421,176	925,693	664,113	609,891
1976	178,287	118,748	1,497,465	3,764,426	396,809	650,417	1,274,484	706,244	650,209
1977	127,106	89,036	323,091	1,391,573	419,901	3,018,637	2,152,961	196,012	1,135,148
1978	147,112	153,867	347,482	837,000	1,427,190	2,219,135	6,694,615	57,817	149,932
1979	29,723	19,225	225,947	385,337	940,013	2,168,382	19,813,742	597,858	331,313
1980	137,833	154,821	1,077,900	1,583,654	1,276,793	4,108,143	24,537,814	550,337	204,751
1981	28,804	22,647	61,323	187,569	(711,933)	2,699,859	19,806,507	94,795	28,838
1982	13,697	57,386	37,860	257,757	(488,222)	348,325	17,953,359	188,981	40,158
1983	16,051	88,515	(269,781)	353,753	85,883	179,938	7,081,245	215,277	21,801
1984	14,461	12,258	49,544	300,561	71,301	68,930	2,870,253	335,941	17,284
1985	17,008	10,954	49,394	99,685	134,003	24,204	2,124,995	95,971	21,231
1986	31,591	25,059	86,862	268,230	134,675	62,315	274,916	142,077	36,194
1987	17,946	8,651	48,965	115,403	22,418	454,828	719,579	194,455	28,225
1988	42,053	21,254	91,333	321,127	429,443	107,112	1,656,649	204,589	96,463
1989	33,082	15,548	63,399	(2,146,345)	247,143	421,115	595,248	264,143	106,136
1990	31,264	15,478	60,854	(1,450,116)	175,526	268,148	321,971	820,206	64,115
1991	146,680	19,183	71,193	(972,837)	179,556	57,552	354,157	1,100,543	68,957
1992	32,062	16,974	166,911	233,864	256,496	44,321	476,215	5,963,532	32,062
1993	118,818	60,352	796,835	3,545,680	1,002,409	168,797	4,378,349	1,442,790	119,761
1994	66,010	33,948	433,780	12,851,204	545,997	92,414	5,540,125	368,713	66,010
1995	2,829	2,829	6,601	9,497,896	8,487	1,886	3,772	5,658	1,886
1996	1,886	1,886	3,772	13,202	4,715	1,886	3,772	2,829	1,886
1997	943	943	1,886	6,601	3,772	943	2,829	1,886	943
1998	0	0	943	2,829	1,886	0	1,886	943	0
1999	0	0	943	2,829	1,886	0	1,886	943	0
2000	0	0	0	0	0	0	0	0	0
TOTAL	24,140,535	23,536,987	54,827,989	185,629,089	35,655,874	30,222,634	129,262,833	61,619,876	75,008,191

a) Includes excess capacity costs (not shown in Table B-9) allocated to MWDSC in the following years and repaid under Article 24(c) of its contract: 1970 – $362,000; 1971 – $6,198,000; 1972 – $139,000.

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed Through Capital Cost Component of Transportation Charge (Continued)

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								GRAND TOTAL
	WEST BRANCH (continued)		COASTAL BRANCH						
	Reach 30	Subtotal	Reach 31A	Reach 33A	Reach 34	Reach 35	Subtotal	Total	
	[65]	[66]	[67]	[68]	[69]	[70]	[71]	[72]	[73]
1952	1,408	5,655	0	0	0	0	0	98,857	99,353
1953	4,346	17,457	0	0	0	0	0	309,387	311,812
1954	5,743	23,074	0	0	0	0	0	394,688	402,143
1955	1,943	7,809	0	0	0	0	0	159,842	169,342
1956	2,077	8,348	0	0	0	0	0	255,679	351,551
1957	7,684	30,877	0	0	0	0	0	708,753	1,464,452
1958	13,931	55,142	0	0	0	0	0	1,331,616	2,286,623
1959	44,384	134,727	28,046	49,114	7,441	8,236	92,837	2,096,392	2,967,412
1960	84,703	255,409	34,404	70,450	8,507	14,265	127,626	2,937,049	4,660,833
1961	123,330	239,953	13,801	17,868	1,501	3,931	37,101	4,650,264	8,545,244
1962	348,366	671,447	10,121	7,798	524	1,689	20,132	5,827,774	8,875,171
1963	521,491	1,167,566	20,470	14,299	880	2,943	38,592	18,981,487	24,610,278
1964	1,372,464	2,232,275	315,418	26,963	1,687	5,639	349,707	31,550,813	41,736,060
1965	3,383,950	4,943,858	747,023	36,178	2,118	7,060	792,379	57,936,405	62,664,743
1966	9,364,753	14,872,117	2,258,915	35,864	1,736	5,764	2,302,279	124,748,128	129,110,330
1967	17,618,827	53,187,979	6,310,419	38,331	1,891	6,213	6,356,854	187,465,580	194,146,365
1968	15,736,691	57,595,765	2,707,580	30,784	1,324	4,369	2,744,057	192,593,079	197,978,911
1969	16,228,175	34,690,908	423,797	26,549	907	2,905	454,158	182,530,023	184,473,490
1970	22,330,328	50,497,652	269,194	24,368	851	2,787	297,200	206,720,774	207,082,650
1971	16,890,503	40,115,145	164,446	32,230	1,315	3,804	201,795	158,414,033	158,624,739
1972	3,818,001	2,874,264	131,332	17,601	522	1,660	151,115	68,228,670	68,362,291
1973	13,426,222	25,999,878	182,493	16,154	542	1,758	200,947	45,110,823	45,263,853
1974	2,988,318	4,334,592	190,866	18,799	463	1,405	211,533	24,036,199	24,402,166
1975	1,808,235	4,782,778	64,582	36,012	2,255	6,656	109,505	21,065,768	21,318,838
1976	1,253,067	4,931,230	198,266	68,898	5,088	14,988	287,240	17,183,961	17,492,910
1977	345,023	7,267,682	918,473	81,305	1,834	5,387	1,006,999	15,195,065	15,573,646
1978	763,445	11,312,134	52,994	83,300	1,302	3,852	141,448	18,661,117	19,119,151
1979	282,145	24,133,453	38,182	108,951	1,505	4,433	153,071	31,202,118	31,857,362
1980	2,055,206	32,733,044	189,070	342,118	1,059	3,113	535,360	73,856,754	74,952,486
1981	275,379	22,193,445	19,809	(209,650)	1,284	3,778	(184,779)	15,292,613	15,788,597
1982	338,464	18,381,065	(28,714)	(162,459)	472	1,381	(189,320)	37,725,631	39,149,261
1983	556,120	8,140,264	75,848	14,183	684	2,006	92,721	34,879,208	38,199,571
1984	1,118,950	4,482,659	28,489	11,705	601	1,761	42,556	24,438,452	30,366,425
1985	276,457	2,676,861	31,439	21,425	1,483	4,361	58,708	14,329,347	27,944,223
1986	213,567	863,744	82,589	155,421	13,503	39,830	291,343	9,024,337	38,745,340
1987	162,858	1,582,363	58,550	979,700	87,514	258,214	1,383,978	3,820,498	26,453,122
1988	222,793	2,717,049	181,209	1,058,496	94,571	279,029	1,613,305	18,322,034	25,500,218
1989	164,409	1,798,194	109,624	822,459	73,400	216,563	1,222,046	37,154,105	40,042,968
1990	119,667	1,769,633	132,038	993,290	89,100	262,901	1,477,329	27,544,718	29,319,262
1991	189,492	1,950,257	135,548	1,521,036	118,185	348,537	2,123,306	38,845,017	39,264,495
1992	239,522	7,012,148	222,000	7,105,531	640,670	761,031	8,729,232	52,532,678	53,178,098
1993	852,472	7,964,578	817,000	37,167,700	3,994,347	3,652,040	45,631,087	88,618,645	91,544,833
1994	468,671	7,081,930	427,000	105,360,603	7,083,731	3,854,101	116,725,435	157,014,299	160,553,799
1995	16,031	37,720	9,000	88,725,082	20,632,141	20,350,739	129,716,962	141,580,036	141,768,068
1996	13,202	28,290	7,000	27,794,900	12,534,600	14,335,500	54,672,000	55,131,906	55,158,686
1997	7,544	17,917	3,000	1,091,900	73,600	215,500	1,384,000	1,487,698	1,499,714
1998	943	5,658	1,000	0	0	0	1,000	37,214	38,466
1999	943	5,658	1,000	0	0	0	1,000	37,214	38,466
2000	0	0	0	0	0	0	0	0	0
TOTAL	136,062,243	467,831,651	17,583,321	273,635,256	45,485,138	44,700,129	381,403,844	2,252,066,748	2,403,457,817

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed Through Minimum OMP&R Component of Transportation Charge

(in dollars)

Calendar Year	UPPER FEATHER DIVISION	NORTH BAY AQUEDUCT					SOUTH BAY AQUEDUCT			
		Reach 1	Reach 2	Reach 3A	Reach 3B	Total	Reach 1	Reach 2	Reach 4	Reach 5
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	37,396	5,522	0	0
1963	0	0	0	0	0	0	147,719	20,639	0	0
1964	0	0	0	0	0	0	149,750	15,574	19,405	0
1965	0	0	0	0	0	0	259,939	45,718	46,485	0
1966	0	0	0	0	0	0	270,890	23,799	63,921	0
1967	0	0	0	0	0	0	438,050	32,798	108,127	0
1968	0	0	0	0	130	130	410,919	44,277	66,973	706
1969	0	0	0	0	80,875	80,875	487,377	48,339	75,644	706
1970	0	0	0	0	94,872	94,872	381,734	44,852	64,833	71,376
1971	54	0	0	0	45,579	45,579	357,850	25,666	50,344	38,735
1972	40	0	0	0	37,895	37,895	347,941	30,606	56,800	100,106
1973	1	0	0	0	32,993	32,993	386,897	36,172	58,288	28,810
1974	143	0	0	0	46,498	46,498	456,381	57,081	83,120	61,623
1975	1,069	0	0	0	37,707	37,707	624,989	46,111	81,361	36,682
1976	139	0	0	0	60,786	60,786	614,362	47,862	123,838	91,096
1977	892	0	0	0	78,400	78,400	511,065	48,926	104,280	102,083
1978	39	0	0	0	56,318	56,318	671,195	125,224	176,855	50,289
1979	3,235	0	0	0	73,852	73,852	650,826	76,849	212,826	91,380
1980	416	0	0	0	81,770	81,770	1,128,863	212,974	242,118	110,792
1981	3,847	0	0	0	100,786	100,786	882,792	130,138	167,134	204,803
1982	10,956	0	0	0	194,251	194,251	1,170,235	143,563	252,422	118,318
1983	(422)	0	0	0	80,624	80,624	1,267,994	85,183	377,387	152,866
1984	643	0	0	0	138,735	138,735	1,994,397	113,792	340,334	33,898
1985	2,599	0	0	0	259,299	259,299	2,043,182	207,490	427,965	246,554
1986	2,595	0	0	0	229,141	229,141	1,830,559	285,924	305,198	159,090
1987	2,595	0	0	0	309,944	309,944	2,118,360	163,729	400,591	283,485
1988	2,600	(3)	271	(17)	333,505	333,756	2,045,279	186,859	303,444	370,466
1989	2,672	549,772	217,880	234,703	395,646	1,398,001	2,132,981	164,661	322,729	491,720
1990	2,687	563,364	269,843	101,172	410,507	1,344,886	2,189,012	256,201	360,413	566,055
1991	2,730	660,444	312,018	179,702	436,550	1,588,714	2,490,900	256,237	332,659	464,776
1992	2,774	679,724	180,337	313,903	324,067	1,498,031	3,129,062	818,368	509,195	401,244
1993	2,912	715,329	191,230	331,709	342,871	1,581,139	3,430,818	408,150	557,410	384,987
1994	3,058	735,506	193,496	337,352	282,725	1,549,079	3,139,344	401,075	563,423	372,719
1995	3,058	714,493	198,675	348,177	289,973	1,551,318	3,060,105	376,276	549,703	394,040
1996	3,058	703,241	192,345	343,425	288,310	1,527,321	2,949,412	364,573	536,465	393,605
1997	3,058	729,051	192,803	344,246	305,197	1,571,297	3,041,077	370,169	542,125	407,037
1998	3,058	738,594	191,991	343,114	288,733	1,562,432	3,034,383	366,642	538,204	397,962
1999	3,058	706,568	193,086	345,066	289,512	1,534,232	2,960,130	366,025	538,679	397,295
2000	3,058	708,374	193,097	346,008	289,997	1,537,476	2,961,691	366,183	539,120	399,520
2001	3,058	708,408	193,097	346,026	290,007	1,537,538	2,961,720	366,185	539,128	399,559
2002	3,058	708,619	193,099	346,136	290,063	1,537,917	2,961,901	366,204	539,179	399,817
2003	3,058	708,795	193,100	346,228	290,111	1,538,234	2,962,053	366,219	539,223	400,040
2004	3,058	709,132	193,102	346,404	290,202	1,538,840	2,962,344	366,249	539,304	400,449
2005	3,058	711,505	193,117	347,644	290,842	1,543,108	2,964,394	366,456	539,884	403,367
2006	3,058	711,523	193,117	347,652	290,846	1,543,138	2,964,408	366,457	539,887	403,385
2007	3,058	711,686	193,118	347,738	290,890	1,543,432	2,964,549	366,471	539,927	403,587
2008	3,058	711,878	193,120	347,838	290,941	1,543,777	2,964,715	366,488	539,973	403,821
2009	3,058	712,026	193,121	347,915	290,981	1,544,043	2,964,843	366,500	540,009	404,004
2010	3,058	712,451	193,124	348,137	291,096	1,544,808	2,965,210	366,538	540,113	404,524
2011	3,058	713,668	193,131	348,772	291,424	1,546,995	2,966,260	366,643	540,409	406,018
2012	3,058	713,767	193,132	348,824	291,451	1,547,174	2,966,346	366,652	540,433	406,141
2013	3,058	713,993	193,134	348,942	291,512	1,547,581	2,966,541	366,672	540,488	406,417
2014	3,058	714,162	193,135	349,030	291,557	1,547,884	2,966,686	366,687	540,530	406,628
2015	3,058	714,176	193,136	349,036	291,562	1,547,910	2,966,696	366,687	540,532	406,639
2016	3,058	714,191	193,136	349,045	291,567	1,547,939	2,966,711	366,688	540,536	406,659
2017	3,058	714,907	193,141	349,418	291,760	1,549,226	2,967,329	366,751	540,711	407,539
2018	3,058	714,903	193,141	349,416	291,759	1,549,219	2,967,326	366,750	540,710	407,536
2019	3,058	714,929	193,142	349,430	291,768	1,549,269	2,967,347	366,753	540,716	407,564
2020	3,058	714,641	193,140	349,279	291,691	1,548,751	2,967,098	366,728	540,646	407,213
2021	3,058	714,642	193,141	349,280	291,691	1,548,754	2,967,098	366,727	540,646	407,214
2022	3,058	714,650	193,141	349,284	291,693	1,548,768	2,967,106	366,728	540,648	407,220
2023	3,058	714,656	193,141	349,286	291,694	1,548,777	2,967,110	366,729	540,650	407,231
2024	3,058	714,628	193,140	349,272	291,688	1,548,728	2,967,088	366,727	540,643	407,194
2025	3,058	714,665	193,141	349,291	291,696	1,548,793	2,967,117	366,730	540,651	407,239
2026	3,058	714,585	193,140	349,250	291,677	1,548,652	2,967,049	366,723	540,632	407,140
2027	3,058	714,589	193,140	349,252	291,678	1,548,659	2,967,053	366,723	540,633	407,147
2028	3,058	714,589	193,140	349,252	291,678	1,548,659	2,967,053	366,723	540,633	407,146
2029	3,058	714,601	193,140	349,258	291,681	1,548,680	2,967,063	366,724	540,636	407,162
2030	3,058	714,565	193,140	349,240	291,670	1,548,615	2,967,031	366,721	540,627	407,118
2031	3,058	714,574	193,140	349,244	291,673	1,548,631	2,967,041	366,722	540,629	407,129
2032	3,058	714,567	193,140	349,240	291,670	1,548,617	2,967,033	366,722	540,628	407,120
2033	3,058	714,571	193,140	349,242	291,672	1,548,625	2,967,038	366,722	540,628	407,124
2034	3,058	714,599	193,140	349,257	291,680	1,548,676	2,967,061	366,724	540,635	407,158
2035	3,058	714,608	193,140	349,262	291,683	1,548,693	2,967,069	366,724	540,635	407,156
TOTAL	173,652	33,172,906	9,286,659	15,770,380	16,515,302	74,745,247	160,016,343	19,651,874	29,011,710	21,623,229

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed Through Minimum OMP&R Component of Transportation Charge (Continued)

(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
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]
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	1,001,998	228,359	103,116	1,333,473
1969	3,944	5,975	8,795	38,566	669,346	933,116	301,596	188,194	1,422,906
1970	2,464	(1,991)	6,870	28,210	598,348	971,602	306,198	151,539	1,429,339
1971	3,116	9,394	9,895	31,068	526,068	1,103,021	254,786	113,694	1,471,501
1972	5,125	10,247	12,054	44,699	607,578	1,107,855	230,906	110,109	1,448,870
1973	4,178	7,500	4,890	43,816	570,551	1,150,864	221,445	100,221	1,472,530
1974	7,812	7,564	5,523	48,054	727,158	1,272,034	231,383	117,156	1,620,573
1975	18,120	14,683	18,325	68,377	908,648	1,434,736	455,110	201,075	2,090,921
1976	10,873	5,557	19,920	49,921	963,429	1,519,801	217,348	453,400	2,190,549
1977	(240)	2,228	8,391	89,579	866,312	1,917,994	292,380	196,564	2,406,938
1978	(1,404)	16,766	(5,313)	104,078	1,137,690	1,860,456	306,503	188,214	2,355,173
1979	1,269	29,294	7,351	106,835	1,176,630	1,848,109	231,339	145,205	2,224,653
1980	3,621	24,270	17,404	110,852	1,850,894	2,365,408	472,660	247,608	3,085,676
1981	4,038	20,110	17,587	98,150	1,524,752	2,651,889	435,443	154,250	3,241,582
1982	2,282	23,145	22,313	204,963	1,937,241	3,228,048	607,940	247,699	4,083,687
1983	(2,017)	49,269	46,270	218,460	2,195,412	4,272,121	810,288	275,538	5,357,947
1984	4,449	44,017	23,563	455,046	3,009,496	4,746,443	810,709	291,632	5,848,784
1985	13,097	74,565	57,920	238,071	3,308,844	5,583,559	812,035	278,306	6,673,900
1986	11,614	31,084	46,864	363,372	3,033,705	5,761,868	996,096	391,590	7,149,554
1987	15,273	25,182	37,949	416,375	3,460,944	5,538,798	999,093	380,644	6,918,535
1988	29,664	40,425	48,622	337,280	3,362,039	5,366,823	853,502	375,482	6,595,807
1989	9,885	48,106	111,128	186,061	3,467,271	5,545,146	877,876	904,174	7,327,196
1990	31,068	63,726	117,113	253,012	3,836,600	6,775,238	1,106,776	894,385	8,776,399
1991	42,582	96,903	96,007	266,161	4,046,225	6,721,841	1,210,813	714,281	8,646,935
1992	119,121	82,704	92,310	372,999	5,525,003	9,479,887	1,541,177	546,184	11,567,248
1993	97,115	83,625	86,184	394,477	5,442,766	9,243,560	1,626,172	576,084	11,445,816
1994	95,739	82,042	77,569	419,602	5,151,513	9,395,500	1,656,097	566,135	11,617,732
1995	69,187	66,803	79,151	386,489	4,981,754	9,309,883	1,675,514	556,021	11,541,418
1996	66,777	60,893	73,556	376,182	4,821,463	9,050,988	1,648,733	541,882	11,241,603
1997	68,931	62,312	74,806	380,432	4,946,889	9,171,923	1,674,816	553,766	11,400,505
1998	68,085	61,605	73,745	378,221	4,918,847	9,237,887	1,658,407	546,708	11,443,002
1999	67,034	61,122	73,838	377,628	4,841,751	9,081,777	1,654,399	543,414	11,279,590
2000	67,034	61,122	73,838	377,628	4,846,136	9,089,626	1,658,731	544,738	11,293,095
2001	67,034	61,122	73,838	377,628	4,846,214	9,089,771	1,658,790	544,755	11,293,316
2002	67,034	61,122	73,838	377,628	4,846,723	9,090,682	1,659,292	544,909	11,294,883
2003	67,034	61,122	73,838	377,628	4,847,157	9,091,453	1,659,740	545,045	11,296,238
2004	67,034	61,122	73,838	377,628	4,847,968	9,092,913	1,660,505	545,280	11,298,698
2005	67,034	61,122	73,838	377,628	4,853,723	9,103,223	1,666,163	547,010	11,316,396
2006	67,034	61,122	73,838	377,628	4,853,759	9,103,299	1,666,181	547,015	11,316,495
2007	67,034	61,122	73,838	377,628	4,854,156	9,104,007	1,666,572	547,134	11,317,713
2008	67,034	61,122	73,838	377,628	4,854,619	9,104,836	1,667,018	547,271	11,319,125
2009	67,034	61,122	73,838	377,628	4,854,978	9,105,481	1,667,380	547,381	11,320,242
2010	67,034	61,122	73,838	377,628	4,856,007	9,107,328	1,668,367	547,683	11,323,378
2011	67,034	61,122	73,838	377,628	4,858,952	9,112,612	1,671,247	548,564	11,332,423
2012	67,034	61,122	73,838	377,628	4,859,194	9,113,042	1,671,501	548,641	11,333,184
2013	67,034	61,122	73,838	377,628	4,859,740	9,114,023	1,672,031	548,804	11,334,858
2014	67,034	61,122	73,838	377,628	4,860,153	9,114,755	1,672,461	548,935	11,336,151
2015	67,034	61,122	73,838	377,628	4,860,176	9,114,809	1,672,455	548,933	11,336,197
2016	67,034	61,122	73,838	377,628	4,860,216	9,114,876	1,672,500	548,947	11,336,323
2017	67,034	61,122	73,838	377,628	4,861,952	9,117,983	1,674,212	549,471	11,341,666
2018	67,034	61,122	73,838	377,628	4,861,944	9,117,970	1,674,213	549,471	11,341,654
2019	67,034	61,122	73,838	377,628	4,862,002	9,118,077	1,674,245	549,480	11,341,802
2020	67,034	61,122	73,838	377,628	4,861,307	9,116,825	1,673,585	549,279	11,339,689
2021	67,034	61,122	73,838	377,628	4,861,307	9,116,829	1,673,584	549,279	11,339,692
2022	67,034	61,122	73,838	377,628	4,861,324	9,116,863	1,673,578	549,277	11,339,718
2023	67,034	61,122	73,838	377,628	4,861,342	9,116,888	1,673,613	549,288	11,339,789
2024	67,034	61,122	73,838	377,628	4,861,274	9,116,770	1,673,535	549,264	11,339,569
2025	67,034	61,122	73,838	377,628	4,861,359	9,116,925	1,673,622	549,289	11,339,836
2026	67,034	61,122	73,838	377,628	4,861,166	9,116,578	1,673,429	549,231	11,339,238
2027	67,034	61,122	73,838	377,628	4,861,178	9,116,597	1,673,442	549,235	11,339,274
2028	67,034	61,122	73,838	377,628	4,861,177	9,116,596	1,673,442	549,235	11,339,273
2029	67,034	61,122	73,838	377,628	4,861,207	9,116,651	1,673,472	549,244	11,339,367
2030	67,034	61,122	73,838	377,628	4,861,119	9,116,494	1,673,386	549,218	11,339,098
2031	67,034	61,122	73,838	377,628	4,861,143	9,116,533	1,673,407	549,224	11,339,164
2032	67,034	61,122	73,838	377,628	4,861,125	9,116,503	1,673,387	549,218	11,339,108
2033	67,034	61,122	73,838	377,628	4,861,134	9,116,521	1,673,398	549,221	11,339,140
2034	67,034	61,122	73,838	377,628	4,861,200	9,116,642	1,673,460	549,240	11,339,342
2035	67,034	61,122	73,838	377,628	4,861,206	9,116,675	1,673,385	549,218	11,339,278
TOTAL	3,299,188	3,441,954	4,063,683	20,594,786	261,702,767	476,637,829	86,535,228	31,391,697	594,564,754

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed Through Minimum OMP&R Component of Transportation Charge (Continued)

(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
	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]
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	120,038	428,308	130,105	44,591	104,033	827,075	0	0	0
1969	90,033	460,907	184,467	35,696	235,322	1,006,425	22,013	134,760	86,103
1970	89,547	484,300	226,002	66,070	192,582	1,058,501	26,207	156,981	128,273
1971	99,917	541,574	175,592	64,193	158,170	1,039,446	32,312	190,753	118,372
1972	116,708	647,979	174,519	73,670	154,783	1,167,659	35,031	187,242	130,396
1973	116,791	611,705	158,145	58,344	153,955	1,098,940	51,150	225,747	127,530
1974	120,309	671,455	150,835	63,905	150,230	1,156,734	34,752	199,127	131,298
1975	133,593	839,285	178,974	81,478	157,586	1,390,916	78,523	250,377	159,006
1976	54,938	883,956	220,832	90,305	174,835	1,424,866	39,348	133,933	123,424
1977	73,331	1,114,465	270,734	98,132	196,311	1,752,973	38,086	121,348	178,078
1978	45,867	898,992	203,261	106,938	203,079	1,458,137	45,552	178,805	129,928
1979	223,973	842,508	144,055	99,670	180,734	1,490,940	69,973	150,679	129,756
1980	243,507	1,176,613	222,942	127,625	281,860	2,052,547	57,726	274,848	185,155
1981	266,803	1,067,040	192,615	90,380	1,612,042	3,228,880	80,130	198,386	144,310
1982	282,217	1,254,500	212,263	115,985	1,452,762	3,317,727	60,239	272,545	236,343
1983	216,120	1,957,214	342,945	132,602	2,157,053	4,805,934	49,883	386,922	225,128
1984	241,123	2,192,872	335,638	164,023	2,111,619	5,045,275	42,188	459,531	301,638
1985	322,850	2,901,166	362,219	177,068	1,606,509	5,369,812	64,915	549,817	255,945
1986	431,603	2,957,502	479,256	253,725	613,579	4,735,665	93,913	504,422	612,801
1987	395,830	3,099,092	430,194	237,340	458,038	4,620,494	115,996	435,737	458,491
1988	395,580	2,970,953	473,454	236,247	656,072	4,732,306	98,616	394,657	429,460
1989	273,747	3,160,978	402,353	332,216	649,702	4,818,996	85,730	398,945	398,028
1990	429,911	4,012,470	527,614	443,373	714,395	6,127,763	112,562	448,104	524,158
1991	270,598	4,399,886	646,007	714,200	826,059	6,856,750	116,361	522,104	533,124
1992	686,980	3,740,385	762,699	383,231	472,065	6,045,360	213,853	750,221	613,677
1993	667,884	3,710,248	774,348	400,752	507,478	6,060,710	229,937	753,166	619,420
1994	568,273	3,552,888	760,891	385,335	503,098	5,770,485	226,178	750,610	618,349
1995	570,456	3,563,369	750,858	354,456	474,629	5,713,768	197,401	769,996	636,023
1996	564,886	3,484,852	741,857	342,108	465,016	5,598,719	192,351	745,012	613,225
1997	588,069	3,573,809	762,055	352,242	478,409	5,754,584	197,486	758,884	622,888
1998	568,151	3,507,150	748,155	345,690	469,849	5,638,995	194,767	749,881	616,428
1999	568,601	3,499,473	745,191	343,565	466,980	5,623,810	193,102	748,189	615,867
2000	573,192	3,510,113	749,718	345,010	468,804	5,646,837	193,149	750,570	618,097
2001	573,257	3,510,297	749,781	345,030	468,830	5,647,195	193,149	750,605	618,129
2002	573,786	3,511,536	750,310	345,199	469,043	5,649,874	193,155	750,883	618,389
2003	574,264	3,512,592	750,775	345,347	469,230	5,652,208	193,160	751,128	618,619
2004	575,073	3,514,549	751,581	345,604	469,555	5,656,362	193,168	751,550	619,016
2005	581,072	3,528,501	757,489	347,489	471,936	5,686,487	193,229	754,660	621,926
2006	581,090	3,528,595	757,516	347,498	471,946	5,686,645	193,229	754,674	621,939
2007	581,505	3,529,558	757,927	347,629	472,112	5,688,731	193,234	754,891	622,142
2008	581,977	3,530,675	758,396	347,778	472,301	5,691,127	193,238	755,136	622,372
2009	582,361	3,531,551	758,774	347,900	472,452	5,693,038	193,242	755,335	622,559
2010	583,407	3,534,029	759,800	348,227	472,866	5,698,329	193,253	755,876	623,064
2011	586,460	3,541,180	762,823	349,192	474,085	5,713,740	193,284	757,467	624,554
2012	586,729	3,541,772	763,084	349,275	474,189	5,715,049	193,287	757,603	624,683
2013	587,290	3,543,094	763,641	349,452	474,413	5,717,890	193,293	757,897	624,957
2014	587,747	3,544,101	764,086	349,595	474,593	5,720,122	193,297	758,131	625,177
2015	587,738	3,544,156	764,089	349,595	474,594	5,720,172	193,297	758,132	625,177
2016	587,787	3,544,249	764,129	349,607	474,610	5,720,382	193,298	758,153	625,197
2017	589,602	3,548,464	765,922	350,180	475,333	5,729,501	193,317	759,096	626,081
2018	589,603	3,548,448	765,921	350,180	475,332	5,729,484	193,317	759,096	626,081
2019	589,638	3,548,579	765,961	350,192	475,350	5,729,720	193,317	759,117	626,101
2020	588,938	3,546,896	765,261	349,968	475,067	5,726,130	193,310	758,749	625,755
2021	588,937	3,546,898	765,262	349,969	475,067	5,726,133	193,310	758,750	625,754
2022	588,932	3,546,934	765,263	349,970	475,067	5,726,166	193,310	758,750	625,755
2023	588,969	3,546,978	765,293	349,979	475,079	5,726,298	193,310	758,766	625,770
2024	588,886	3,546,814	765,220	349,955	475,049	5,725,924	193,310	758,727	625,734
2025	588,977	3,547,023	765,304	349,983	475,084	5,726,371	193,310	758,772	625,777
2026	588,773	3,546,551	765,104	349,919	475,003	5,725,350	193,309	758,667	625,678
2027	588,788	3,546,579	765,118	349,923	475,009	5,725,417	193,309	758,674	625,685
2028	588,788	3,546,579	765,117	349,922	475,008	5,725,414	193,309	758,673	625,685
2029	588,819	3,546,651	765,145	349,932	475,019	5,725,566	193,309	758,688	625,698
2030	588,726	3,546,438	765,058	349,903	474,985	5,725,110	193,307	758,642	625,654
2031	588,750	3,546,493	765,080	349,911	474,993	5,725,227	193,309	758,654	625,665
2032	588,728	3,546,450	765,061	349,904	474,985	5,725,128	193,307	758,643	625,655
2033	588,742	3,546,473	765,071	349,908	474,989	5,725,183	193,308	758,649	625,661
2034	588,803	3,546,635	765,136	349,928	475,016	5,725,518	193,309	758,684	625,693
2035	588,726	3,546,643	765,091	349,914	474,998	5,725,372	193,308	758,658	625,671
TOTAL	30,913,094	195,600,968	40,315,382	19,374,122	36,090,826	322,294,392	10,054,138	40,050,875	33,168,172

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed Through Minimum OMP&R Component of Transportation Charge (Continued)

(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
	[29]	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]
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	83,706	59,077	0	0	0	0	0	0	0
1970	118,046	85,758	94,171	123,374	152,424	0	0	0	0
1971	129,811	80,282	95,075	91,389	167,142	691,791	151,979	111,623	529,723
1972	117,625	84,287	98,647	115,592	146,096	877,535	124,831	101,479	609,058
1973	117,706	92,257	74,238	114,843	221,385	961,855	120,106	99,429	692,748
1974	141,658	98,103	74,914	193,523	141,540	898,272	143,866	115,649	853,098
1975	207,908	124,105	61,799	117,194	108,154	1,156,757	180,614	119,889	988,045
1976	139,134	69,715	33,655	147,908	134,063	1,124,051	177,086	114,133	1,037,799
1977	194,086	108,644	91,547	175,039	137,975	1,397,006	203,837	119,467	1,339,196
1978	168,634	106,702	72,585	170,578	151,120	1,254,043	139,662	132,224	1,265,813
1979	175,107	85,942	56,331	174,147	150,029	1,490,461	201,935	260,981	1,216,126
1980	284,207	120,896	123,120	167,249	164,749	1,988,704	189,132	238,607	1,437,678
1981	200,063	77,045	33,427	113,285	171,793	1,735,435	163,812	161,099	1,793,300
1982	268,306	160,136	144,320	226,910	226,762	1,813,322	197,532	16,221	1,954,964
1983	311,656	137,601	125,887	205,605	219,448	2,436,547	201,616	183,819	2,565,914
1984	397,452	164,634	109,653	188,142	246,132	3,290,060	329,485	204,319	3,190,114
1985	347,490	253,344	207,378	238,283	361,576	3,460,845	236,677	179,748	3,423,139
1986	440,848	267,653	261,663	363,421	350,970	3,759,582	320,838	360,048	3,548,973
1987	502,173	341,658	335,590	476,764	331,018	3,714,926	460,644	239,289	4,081,494
1988	543,436	299,524	233,811	386,875	324,031	3,466,332	409,648	308,541	3,783,188
1989	732,513	272,080	214,920	593,175	380,701	3,499,727	340,855	220,879	3,744,135
1990	661,812	370,011	235,858	490,889	675,049	4,020,124	446,234	213,542	4,388,380
1991	744,859	382,692	288,849	445,423	494,595	4,111,633	483,028	298,819	4,061,671
1992	652,398	471,319	411,756	636,465	670,996	4,664,934	556,218	385,373	4,617,216
1993	683,343	469,712	426,022	653,928	701,375	5,074,638	587,387	408,541	5,003,774
1994	685,421	463,657	424,165	660,095	698,548	5,013,879	588,561	404,741	4,898,698
1995	670,586	476,138	438,777	676,563	718,720	4,946,681	604,827	416,174	4,829,332
1996	632,173	460,132	424,348	657,726	690,195	4,552,721	576,855	397,741	4,417,080
1997	645,232	467,438	429,675	664,969	698,174	4,620,827	586,562	404,722	4,474,859
1998	637,609	462,350	425,980	659,596	692,238	4,577,297	580,253	400,121	4,437,271
1999	634,910	462,075	426,243	660,447	693,101	4,570,368	579,581	399,644	4,432,909
2000	637,303	463,395	428,381	661,825	695,051	4,578,630	581,801	401,269	4,437,723
2001	637,337	463,414	428,411	661,845	695,079	4,578,773	581,834	401,292	4,437,810
2002	637,616	463,568	428,660	662,005	695,306	4,579,737	582,094	401,484	4,438,369
2003	637,862	463,704	428,880	662,147	695,506	4,580,555	582,319	401,648	4,438,843
2004	638,288	463,939	429,260	662,392	695,854	4,582,077	582,719	401,939	4,439,736
2005	641,412	465,659	432,050	664,190	698,398	4,592,911	585,619	404,062	4,446,053
2006	641,426	465,668	432,063	664,199	698,411	4,592,984	585,637	404,074	4,446,099
2007	641,644	465,788	432,256	664,323	698,587	4,593,734	585,837	404,221	4,446,535
2008	641,892	465,925	432,476	664,466	698,788	4,594,601	586,068	404,392	4,447,041
2009	642,092	466,036	432,656	664,581	698,952	4,595,282	586,253	404,527	4,447,438
2010	642,633	466,334	433,140	664,893	699,393	4,597,205	586,759	404,896	4,448,566
2011	644,232	467,215	434,567	665,814	700,696	4,602,763	588,247	405,985	4,451,805
2012	644,371	467,291	434,690	665,893	700,809	4,603,220	588,374	406,078	4,452,071
2013	644,666	467,453	434,953	666,062	701,049	4,604,249	588,649	406,279	4,452,671
2014	644,901	467,583	435,164	666,198	701,241	4,605,030	588,865	406,437	4,453,122
2015	644,902	467,583	435,164	666,198	701,242	4,605,074	588,868	406,441	4,453,153
2016	644,923	467,596	435,183	666,211	701,258	4,605,144	588,888	406,454	4,453,195
2017	645,871	468,119	436,030	666,756	702,031	4,608,417	589,769	407,099	4,455,099
2018	645,870	468,118	436,030	666,756	702,031	4,608,405	589,766	407,098	4,455,091
2019	645,892	468,130	436,048	666,769	702,048	4,608,508	589,790	407,115	4,455,155
2020	645,522	467,926	435,718	666,555	701,747	4,607,198	589,442	406,860	4,454,391
2021	645,521	467,925	435,717	666,555	701,747	4,607,203	589,442	406,860	4,454,392
2022	645,522	467,926	435,718	666,556	701,747	4,607,231	589,446	406,863	4,454,413
2023	645,539	467,935	435,733	666,565	701,759	4,607,263	589,458	406,871	4,454,429
2024	645,499	467,914	435,698	666,543	701,728	4,607,139	589,424	406,846	4,454,358
2025	645,545	467,937	435,738	666,568	701,764	4,607,300	589,466	406,876	4,454,450
2026	645,439	467,879	435,644	666,508	701,679	4,606,935	589,368	406,806	4,454,239
2027	645,446	467,883	435,650	666,512	701,684	4,606,956	589,374	406,809	4,454,250
2028	645,446	467,883	435,650	666,512	701,684	4,606,955	589,374	406,809	4,454,250
2029	645,460	467,891	435,663	666,521	701,697	4,607,010	589,386	406,819	4,454,284
2030	645,413	467,867	435,622	666,494	701,658	4,606,847	589,345	406,789	4,454,186
2031	645,425	467,873	435,632	666,501	701,667	4,606,887	589,356	406,797	4,454,212
2032	645,414	467,867	435,623	666,494	701,659	4,606,856	589,346	406,789	4,454,192
2033	645,421	467,870	435,628	666,498	701,663	4,606,874	589,352	406,794	4,454,203
2034	645,456	467,888	435,658	666,518	701,692	4,606,999	589,383	406,816	4,454,277
2035	645,432	467,877	435,637	666,504	701,673	4,607,013	589,373	406,810	4,454,297
TOTAL	35,442,541	24,383,826	22,101,195	34,547,324	36,229,077	250,800,318	31,042,152	21,618,866	243,840,093

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed Through Minimum OMP&R Component of Transportation Charge (Continued)

(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
	[38]	[39]	[40]	[41]	[42]	[43]	[44]	[45]	[46]
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	385,659	0	0	0	0	0	0	0
1970	0	885,234	0	0	0	0	0	0	0
1971	10,291	2,400,543	3,471	0	3,471	0	0	0	0
1972	1,106,884	3,734,703	1,424,782	28,127	1,452,909	36,699	135,675	0	130,711
1973	1,243,941	4,142,935	1,777,260	49,949	1,827,209	36,207	146,739	0	161,838
1974	1,343,972	4,369,772	2,298,091	16,259	2,314,350	30,525	90,404	0	115,571
1975	1,537,862	5,090,233	2,403,430	35,193	2,438,623	40,588	122,584	0	137,684
1976	1,727,428	5,001,677	2,776,194	126,653	2,902,847	118,610	201,215	0	182,927
1977	1,961,081	6,065,390	3,845,464	83,936	3,929,400	93,565	226,906	0	180,884
1978	1,922,950	5,738,596	2,954,313	42,637	2,996,950	91,815	200,759	0	215,673
1979	1,798,566	5,960,033	3,539,402	45,997	3,585,399	99,670	307,386	0	261,205
1980	2,231,541	7,463,612	4,749,456	54,806	4,804,262	116,487	446,175	0	290,719
1981	2,747,447	7,619,532	5,469,468	64,911	5,534,379	316,687	585,392	0	325,404
1982	2,992,033	8,569,633	6,403,866	56,774	6,460,640	451,289	644,752	0	279,511
1983	4,323,746	11,373,772	14,193,623	97,375	14,290,998	346,332	568,367	0	371,723
1984	5,027,709	13,951,057	18,168,453	77,114	18,245,567	267,114	563,910	0	412,195
1985	5,678,943	15,258,100	17,586,201	137,883	17,724,084	298,697	473,941	0	449,612
1986	5,729,601	16,614,733	19,006,774	109,906	19,116,680	701,938	350,137	0	347,125
1987	5,618,583	17,112,363	17,102,674	98,164	17,200,838	1,254,572	555,632	0	815,735
1988	5,196,336	15,874,455	17,367,096	137,025	17,504,121	1,241,213	570,598	0	595,486
1989	5,441,085	16,322,773	17,630,765	88,772	17,719,537	1,074,993	307,449	0	393,874
1990	6,422,221	19,008,944	19,697,939	100,176	19,798,115	1,318,864	254,890	0	490,328
1991	5,174,172	17,657,330	17,623,532	140,469	17,764,001	1,433,924	721,628	0	968,489
1992	7,031,422	21,675,848	21,042,714	191,007	21,233,721	1,828,589	891,588	0	1,017,268
1993	7,213,592	22,824,835	23,409,509	362,526	23,772,035	1,692,067	920,158	0	1,038,769
1994	7,100,318	22,533,220	21,916,024	412,090	22,328,114	1,645,221	903,962	0	1,031,474
1995	6,969,464	22,350,682	20,712,551	351,433	21,063,984	1,695,572	941,180	0	1,036,493
1996	6,541,608	20,901,167	19,355,801	341,634	19,697,435	1,588,836	892,052	0	966,785
1997	6,633,313	21,205,029	19,592,732	345,008	19,937,740	1,636,437	906,616	0	980,584
1998	6,575,959	21,009,750	19,441,874	344,500	19,786,374	1,587,836	899,315	0	973,000
1999	6,564,723	20,981,159	19,394,906	343,162	19,738,068	1,596,586	902,677	0	975,136
2000	6,576,888	21,024,082	19,408,792	343,676	19,752,468	1,600,391	921,092	0	986,967
2001	6,577,099	21,024,777	19,409,053	343,684	19,752,737	1,600,461	921,411	0	987,170
2002	6,578,521	21,029,787	19,410,666	343,745	19,754,411	1,600,903	923,568	0	988,559
2003	6,579,727	21,034,098	19,412,025	343,797	19,755,822	1,601,279	925,411	0	989,743
2004	6,581,969	21,041,907	19,414,615	343,891	19,758,506	1,601,984	928,783	0	991,907
2005	6,597,919	21,098,088	19,432,858	344,564	19,777,422	1,606,979	952,912	0	1,007,409
2006	6,598,033	21,098,436	19,432,993	344,570	19,777,563	1,607,018	953,091	0	1,007,524
2007	6,599,135	21,102,327	19,434,249	344,616	19,778,865	1,607,361	954,763	0	1,008,599
2008	6,600,416	21,106,811	19,435,715	344,671	19,780,386	1,607,763	956,695	0	1,009,838
2009	6,601,421	21,110,374	19,436,853	344,714	19,781,567	1,608,079	958,226	0	1,010,825
2010	6,604,247	21,120,259	19,440,123	344,830	19,784,953	1,608,970	962,506	0	1,013,575
2011	6,612,438	21,149,067	19,449,476	345,179	19,794,655	1,611,533	974,930	0	1,021,557
2012	6,613,115	21,151,485	19,450,238	345,207	19,795,445	1,611,745	975,952	0	1,022,212
2013	6,614,629	21,156,807	19,451,972	345,270	19,797,242	1,612,219	978,249	0	1,023,688
2014	6,615,779	21,160,925	19,453,266	345,321	19,798,587	1,612,574	979,997	0	1,024,813
2015	6,615,848	21,161,079	19,453,364	345,323	19,798,687	1,612,598	980,080	0	1,024,864
2016	6,615,949	21,161,449	19,453,485	345,327	19,798,812	1,612,631	980,214	0	1,024,950
2017	6,620,773	21,178,458	19,458,982	345,531	19,804,513	1,614,137	987,530	0	1,029,650
2018	6,620,754	21,178,413	19,458,957	345,531	19,804,488	1,614,129	987,507	0	1,029,637
2019	6,620,910	21,178,900	19,459,146	345,537	19,804,683	1,614,182	987,745	0	1,029,791
2020	6,618,974	21,172,147	19,456,930	345,455	19,802,385	1,613,575	984,790	0	1,027,891
2021	6,618,980	21,172,156	19,456,937	345,456	19,802,393	1,613,578	984,800	0	1,027,898
2022	6,619,025	21,172,262	19,456,999	345,456	19,802,455	1,613,595	984,881	0	1,027,946
2023	6,619,069	21,172,467	19,457,041	345,458	19,802,499	1,613,608	984,948	0	1,027,991
2024	6,618,891	21,171,811	19,456,836	345,452	19,802,288	1,613,552	984,680	0	1,027,819
2025	6,619,124	21,172,627	19,457,109	345,461	19,802,570	1,613,626	985,061	0	1,028,065
2026	6,618,588	21,170,739	19,456,497	345,438	19,801,935	1,613,460	984,251	0	1,027,546
2027	6,618,615	21,170,847	19,456,530	345,439	19,801,969	1,613,469	984,300	0	1,027,575
2028	6,618,614	21,170,844	19,456,529	345,439	19,801,968	1,613,468	984,295	0	1,027,572
2029	6,618,694	21,171,120	19,456,625	345,442	19,802,067	1,613,493	984,402	0	1,027,641
2030	6,618,457	21,170,281	19,456,347	345,433	19,801,780	1,613,417	984,004	0	1,027,386
2031	6,618,515	21,170,493	19,456,416	345,435	19,801,851	1,613,436	984,102	0	1,027,449
2032	6,618,470	21,170,315	19,456,364	345,434	19,801,798	1,613,421	984,039	0	1,027,406
2033	6,618,496	21,170,417	19,456,394	345,434	19,801,828	1,613,429	984,071	0	1,027,429
2034	6,618,679	21,171,052	19,456,608	345,441	19,802,049	1,613,488	984,347	0	1,027,606
2035	6,618,715	21,170,968	19,456,677	345,445	19,802,122	1,613,503	984,415	0	1,027,650
TOTAL	361,812,267	1,145,090,844	1,060,952,032	16,705,588	1,077,657,620	80,623,987	49,674,135	0	51,822,351

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed Through Minimum OMP&R Component of Transportation Charge (Continued)

(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
	[47]	[48]	[49]	[50]	[51]	[52]	[53]	[54]	[55]
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	120,271	75,768	80,436	1,036,831	51,520	362,153	2,030,064	26	578
1973	148,631	60,641	66,539	1,283,816	65,475	353,262	2,323,148	20,541	679,328
1974	88,200	65,007	77,667	1,477,946	96,340	334,302	2,375,962	24,380	799,400
1975	118,898	135,462	77,825	1,630,554	111,141	419,450	2,794,186	29,337	885,021
1976	151,555	106,314	131,007	1,598,071	107,787	304,638	2,902,124	51,356	1,103,139
1977	112,589	98,757	86,279	1,882,080	71,228	48,359	2,800,647	62,584	1,412,740
1978	120,584	109,271	71,763	2,211,965	72,179	637,401	3,731,410	67,186	1,159,950
1979	194,104	203,078	121,586	2,104,832	76,960	202,566	3,571,387	84,462	1,235,189
1980	237,250	156,794	117,274	2,670,471	147,009	688,605	4,870,784	72,651	1,532,581
1981	292,377	181,234	119,732	3,024,914	134,904	45,405	5,026,049	35,665	1,571,000
1982	334,826	188,582	127,071	3,288,529	302,522	630,941	6,248,023	27,198	1,842,148
1983	329,833	222,020	141,863	3,924,310	223,167	392,899	6,520,514	19,170	1,677,754
1984	328,559	266,104	146,268	4,756,774	59,337	1,090,191	7,890,452	11,319	2,322,388
1985	387,432	798,995	125,457	5,324,529	261,135	810,477	8,930,275	17,764	2,703,003
1986	314,968	241,805	178,587	6,178,528	154,339	514,550	8,981,977	31,012	2,768,654
1987	355,264	296,492	234,973	5,465,199	150,089	729,233	9,857,189	19,362	2,838,941
1988	400,555	324,487	152,766	6,869,462	215,983	952,861	11,323,411	36,159	2,997,862
1989	349,872	200,777	141,181	5,903,494	268,687	1,226,733	9,867,060	30,632	3,082,769
1990	241,456	284,015	54,609	6,860,949	368,699	1,889,081	11,762,891	22,200	3,305,322
1991	599,667	480,701	198,015	7,122,435	229,552	1,585,071	13,339,482	29,662	3,814,149
1992	660,792	517,289	406,261	7,439,191	2,264,682	1,255,337	16,280,997	102,315	5,457,622
1993	673,735	579,906	442,908	8,712,232	1,336,271	1,549,925	16,945,971	233,086	5,685,234
1994	692,259	594,692	404,838	8,651,026	745,084	1,218,371	15,886,927	653,711	5,516,275
1995	731,673	620,750	389,519	8,822,158	538,712	1,309,893	16,085,950	537,072	5,561,359
1996	698,225	590,385	375,289	7,965,389	515,229	95,828	13,688,018	480,346	5,359,537
1997	707,739	598,592	384,339	8,071,354	1,215,023	2,517,205	17,017,889	173,528	5,415,435
1998	702,910	593,922	379,181	8,005,629	716,237	1,115,386	14,973,416	529,128	5,372,316
1999	705,530	595,272	378,790	8,009,263	517,608	1,029,655	14,710,517	480,527	5,377,339
2000	717,361	601,962	384,039	8,058,347	520,734	1,538,561	15,329,454	480,527	5,381,505
2001	717,564	602,075	384,130	8,059,207	520,792	1,845,318	15,638,128	480,527	5,381,584
2002	718,953	602,861	384,743	8,064,954	521,156	1,736,578	15,542,275	480,527	5,382,067
2003	720,137	603,529	385,269	8,069,843	521,462	305,743	14,122,416	480,527	5,382,475
2004	722,301	604,752	386,231	8,078,859	522,044	3,213,468	17,050,329	480,527	5,383,252
2005	737,803	613,513	393,105	8,143,194	526,151	2,040,012	16,021,078	480,527	5,388,725
2006	737,918	613,581	393,156	8,143,679	526,181	1,757,739	15,739,887	480,527	5,388,766
2007	738,993	614,186	393,631	8,148,130	526,464	1,462,652	15,454,779	480,527	5,389,143
2008	740,232	614,886	394,181	8,153,284	526,793	2,509,658	16,513,330	480,527	5,389,583
2009	741,219	615,444	394,617	8,157,358	527,050	446,333	14,459,151	480,527	5,389,925
2010	743,969	617,000	395,837	8,168,786	527,785	2,150,920	16,189,348	480,527	5,390,906
2011	751,951	621,509	399,379	8,201,893	529,891	2,703,756	16,816,399	480,527	5,393,712
2012	752,606	621,879	399,669	8,204,613	530,063	1,652,922	15,771,661	480,527	5,393,940
2013	754,082	622,715	400,325	8,210,735	530,452	1,826,649	15,959,114	480,527	5,394,461
2014	755,207	623,349	400,821	8,215,380	530,744	312,614	14,455,499	480,527	5,394,849
2015	755,258	623,379	400,843	8,215,620	530,766	1,526,298	15,669,706	480,527	5,394,878
2016	755,344	623,428	400,884	8,215,995	530,793	1,977,553	16,121,792	480,527	5,394,914
2017	760,044	626,085	402,968	8,235,480	532,031	1,877,945	16,065,870	480,527	5,396,563
2018	760,031	626,076	402,961	8,235,411	532,025	1,743,789	15,931,566	480,527	5,396,557
2019	760,185	626,163	403,029	8,236,052	532,067	3,592,724	17,781,938	480,527	5,396,613
2020	758,285	625,092	402,188	8,228,190	531,568	792,039	14,963,618	480,527	5,395,948
2021	758,292	625,093	402,190	8,228,213	531,570	1,794,821	15,966,455	480,527	5,395,950
2022	758,340	625,123	402,212	8,228,426	531,584	1,619,195	15,791,302	480,527	5,395,969
2023	758,385	625,147	402,230	8,228,596	531,594	2,320,661	16,493,160	480,527	5,395,982
2024	758,213	625,052	402,156	8,227,888	531,547	1,322,590	15,493,497	480,527	5,395,920
2025	758,459	625,188	402,266	8,228,886	531,609	1,760,437	15,933,597	480,527	5,396,002
2026	757,940	624,896	402,034	8,226,727	531,471	1,894,017	16,062,342	480,527	5,395,818
2027	757,969	624,913	402,049	8,226,846	531,478	1,863,139	16,031,738	480,527	5,395,828
2028	757,966	624,912	402,048	8,226,838	531,478	1,863,308	16,031,885	480,527	5,395,828
2029	758,035	624,949	402,077	8,227,128	531,500	2,790,357	16,959,582	480,527	5,395,857
2030	757,780	624,807	401,963	8,226,102	531,437	1,576,651	15,743,547	480,527	5,395,773
2031	757,843	624,843	401,989	8,226,354	531,453	1,860,947	16,028,416	480,527	5,395,794
2032	757,800	624,818	401,973	8,226,184	531,440	1,861,374	16,028,455	480,527	5,395,779
2033	757,823	624,829	401,982	8,226,272	531,448	2,338,213	16,505,496	480,527	5,395,787
2034	758,000	624,930	402,062	8,227,016	531,496	2,059,605	16,228,550	480,527	5,395,851
2035	758,044	624,954	402,080	8,227,204	531,511	4,785,958	18,955,319	480,527	5,395,873
TOTAL	37,770,086	31,505,030	19,945,340	435,145,621	30,066,527	92,034,322	828,587,399	21,181,351	275,615,410

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed Through Minimum OMP&R Component of Transportation Charge (Continued)

(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
	[56]	[57]	[58]	[59]	[60]	[61]	[62]	[63]	[64]
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	109	30	0	743	719,255	159,249	199,145	234,196	88,198
1973	136,352	79	0	836,300	779,949	339,363	122,664	264,850	119,743
1974	155,262	34,693	854,637	1,868,372	883,312	158,366	112,458	350,160	(4,525)
1975	110,729	69,082	723,814	1,817,983	1,049,990	176,676	194,724	801,457	75,870
1976	138,575	100,400	635,853	2,029,323	1,220,429	215,588	202,591	624,614	98,268
1977	127,543	92,647	825,880	2,521,394	1,268,813	116,939	218,129	684,679	184
1978	166,919	68,363	835,082	2,297,500	1,174,708	342,479	267,308	415,641	17,764
1979	142,586	92,812	265,525	1,820,574	1,366,942	285,575	284,188	972,584	29,850
1980	158,340	129,897	1,120,131	3,013,600	1,698,257	224,472	455,619	874,259	288,303
1981	160,064	111,730	332,150	2,210,609	1,781,889	123,230	615,069	2,309,710	8,808
1982	207,789	137,018	1,549,321	3,763,474	1,943,564	193,487	713,830	2,250,579	416,726
1983	246,942	125,746	416,615	2,486,227	2,757,758	150,951	888,954	749,428	582,885
1984	240,497	190,925	759,011	3,524,140	3,445,955	82,610	2,352,760	500,793	719,307
1985	451,600	182,242	866,031	4,220,640	3,808,662	296,553	2,985,409	998,976	564,596
1986	439,048	256,526	985,310	4,480,550	3,775,608	457,816	2,886,066	1,480,353	1,024,427
1987	278,094	218,717	1,116,782	4,471,896	3,672,807	211,589	2,928,564	958,910	455,859
1988	272,400	202,097	1,184,577	4,693,095	3,421,078	265,147	3,004,125	884,474	447,642
1989	233,630	278,912	1,133,067	4,759,010	3,997,900	415,815	2,755,919	1,387,452	863,971
1990	436,474	310,493	1,545,870	5,620,359	4,044,384	414,725	3,240,775	3,153,157	748,639
1991	746,254	385,475	1,377,770	6,353,310	3,721,450	402,060	3,445,158	680,656	708,041
1992	1,213,111	465,388	1,588,879	8,827,315	4,539,159	719,857	2,346,587	3,196,535	631,702
1993	616,880	504,683	278,801	7,318,684	4,848,818	784,847	2,980,167	2,235,330	688,528
1994	687,848	512,296	1,089,143	8,459,273	4,937,798	680,015	3,006,427	2,299,412	700,172
1995	630,149	482,100	4,546,155	11,756,835	4,948,929	677,258	2,523,775	3,455,468	690,612
1996	573,294	458,390	2,208,568	9,080,135	4,612,427	640,388	2,282,740	2,896,088	673,970
1997	579,804	463,475	1,959,414	8,591,656	4,665,508	662,484	2,499,420	2,984,813	679,776
1998	577,357	460,323	2,511,629	9,450,753	4,631,288	651,293	2,514,677	2,927,268	676,869
1999	575,516	460,166	2,815,072	9,708,620	4,627,706	650,639	2,292,131	2,934,333	675,387
2000	575,516	460,166	2,602,176	9,499,890	4,631,585	670,597	2,297,984	3,002,583	675,387
2001	575,516	460,166	2,767,030	9,664,823	4,631,656	670,937	2,298,096	3,003,925	675,387
2002	575,516	460,166	2,327,517	9,225,793	4,632,107	673,278	2,298,775	3,011,839	675,387
2003	575,516	460,166	2,356,258	9,254,942	4,632,488	675,253	2,299,352	3,018,618	675,387
2004	575,516	460,166	2,021,175	8,920,636	4,633,208	678,930	2,300,442	3,031,267	675,387
2005	575,516	460,166	3,187,417	10,092,351	4,638,301	705,089	2,308,132	3,120,799	675,387
2006	575,516	460,166	2,672,928	9,577,903	4,638,341	705,280	2,308,189	3,121,483	675,387
2007	575,516	460,166	2,748,972	9,654,324	4,638,690	707,090	2,308,720	3,127,676	675,387
2008	575,516	460,166	2,408,964	9,314,756	4,639,100	709,188	2,309,338	3,134,863	675,387
2009	575,516	460,166	3,537,717	10,443,851	4,639,421	710,838	2,309,819	3,140,495	675,387
2010	575,516	460,166	2,979,518	9,886,633	4,640,329	715,468	2,311,193	3,156,378	675,387
2011	575,516	460,166	2,502,721	9,412,642	4,642,939	728,911	2,315,138	3,202,388	675,387
2012	575,516	460,166	2,767,090	9,677,239	4,643,156	730,021	2,315,463	3,206,163	675,387
2013	575,516	460,166	2,961,427	9,872,097	4,643,639	732,508	2,316,191	3,214,670	675,387
2014	575,516	460,166	2,861,105	9,772,163	4,644,001	734,391	2,316,739	3,221,138	675,387
2015	575,516	460,166	2,391,756	9,302,843	4,644,028	734,508	2,316,778	3,221,519	675,387
2016	575,516	460,166	3,372,346	10,283,469	4,644,063	734,671	2,316,826	3,222,077	675,387
2017	575,516	460,166	2,901,250	9,814,022	4,645,595	742,585	2,319,148	3,249,165	675,387
2018	575,516	460,166	2,716,660	9,629,426	4,645,589	742,556	2,319,137	3,249,071	675,387
2019	575,516	460,166	2,264,653	9,177,475	4,645,642	742,813	2,319,216	3,249,906	675,387
2020	575,516	460,166	3,744,047	10,656,204	4,645,024	739,631	2,318,283	3,239,070	675,387
2021	575,516	460,166	2,709,236	9,621,395	4,645,027	739,642	2,318,285	3,239,093	675,387
2022	575,516	460,166	3,168,708	10,080,886	4,645,044	739,719	2,318,309	3,239,360	675,387
2023	575,516	460,166	2,621,288	9,533,479	4,645,056	739,788	2,318,329	3,239,591	675,387
2024	575,516	460,166	2,267,984	9,180,113	4,644,999	739,499	2,318,244	3,238,597	675,387
2025	575,516	460,166	2,991,114	9,903,325	4,645,074	739,881	2,318,359	3,239,916	675,387
2026	575,516	460,166	2,649,437	9,561,464	4,644,903	738,999	2,318,100	3,236,896	675,387
2027	575,516	460,166	2,838,685	9,750,722	4,644,912	739,047	2,318,112	3,237,059	675,387
2028	575,516	460,166	2,875,001	9,787,038	4,644,912	739,046	2,318,112	3,237,050	675,387
2029	575,516	460,166	3,292,318	10,204,384	4,644,938	739,173	2,318,152	3,237,489	675,387
2030	575,516	460,166	3,033,772	9,945,754	4,644,862	738,784	2,318,035	3,236,144	675,387
2031	575,516	460,166	2,944,606	9,856,609	4,644,882	738,883	2,318,064	3,236,490	675,387
2032	575,516	460,166	2,809,735	9,721,723	4,644,866	738,807	2,318,043	3,236,228	675,387
2033	575,516	460,166	2,659,762	9,571,758	4,644,874	738,850	2,318,056	3,236,366	675,387
2034	575,516	460,166	2,796,812	9,708,872	4,644,935	739,153	2,318,145	3,237,438	675,387
2035	575,516	460,166	1,151,485	8,063,567	4,644,950	739,228	2,318,171	3,237,560	675,387
TOTAL	31,021,742	23,360,681	132,427,757	483,606,941	251,457,479	36,572,513	131,614,854	158,216,545	36,985,504

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed Through Minimum OMP&R Component of Transportation Charge (Continued)

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								GRAND TOTAL
	WEST BRANCH (contd.)		COASTAL BRANCH					Total	
	Reach 30	Subtotal	Reach 31A (a	Reach 33A	Reach 34	Reach 35	Subtotal		
	[65]	[66]	[67]	[68]	[69]	[70]	[71]	[72]	[73]
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	2,160,548	2,745,160
1969	0	0	509,728	0	0	0	509,728	3,324,718	4,074,939
1970	0	0	609,988	0	0	0	609,988	3,983,062	4,676,282
1971	0	0	699,052	0	0	0	699,052	5,614,013	6,185,714
1972	420,789	1,820,832	697,576	0	0	0	697,576	12,353,356	12,998,869
1973	621,431	2,248,000	641,626	0	0	0	641,626	14,590,688	15,194,233
1974	723,949	2,223,720	669,279	0	0	0	669,279	16,598,762	17,372,561
1975	841,991	3,140,708	806,429	0	0	0	806,429	19,569,999	20,517,423
1976	(650,944)	1,710,546	840,927	0	0	0	840,927	19,002,859	20,027,213
1977	634,581	2,923,325	872,169	0	0	0	872,169	23,272,236	24,217,840
1978	3,088,954	5,306,854	934,119	0	0	0	934,119	24,818,739	26,012,786
1979	958,068	3,897,207	871,688	0	0	0	871,688	23,421,881	24,675,598
1980	222,549	3,763,459	1,047,440	0	0	0	1,047,440	30,101,380	32,034,460
1981	1,094,200	5,932,906	1,032,312	0	0	0	1,032,312	33,826,249	35,455,634
1982	992,082	6,510,268	1,027,865	0	0	0	1,027,865	39,981,317	42,123,765
1983	3,138,942	8,268,918	1,154,830	0	0	0	1,154,830	54,259,140	56,534,754
1984	727,534	7,828,959	1,424,425	0	0	0	1,424,425	63,758,659	66,907,533
1985	1,775,925	10,430,121	1,856,449	0	0	0	1,856,449	70,463,381	74,034,123
1986	1,338,782	10,963,052	1,714,929	0	0	0	1,714,929	73,757,140	77,022,581
1987	1,401,145	9,628,874	1,706,458	0	0	0	1,706,458	71,516,647	75,290,130
1988	1,437,646	9,460,112	1,946,790	0	0	0	1,946,790	72,130,097	75,828,492
1989	1,498,927	10,919,984	1,753,521	0	0	0	1,753,521	73,488,077	78,356,021
1990	850,179	12,451,859	2,256,784	0	0	0	2,256,784	85,803,114	90,987,287
1991	237,096	9,194,461	2,376,328	0	0	0	2,376,328	82,188,597	87,826,266
1992	1,549,685	12,983,525	3,507,402	0	0	0	3,507,402	102,121,416	109,147,224
1993	1,630,214	13,167,904	4,031,550	0	0	0	4,031,550	105,567,505	112,594,322
1994	1,493,220	13,117,044	3,744,750	0	0	0	3,744,750	103,457,545	110,161,195
1995	1,112,871	13,408,913	3,588,738	0	0	0	3,588,738	105,510,288	112,046,418
1996	1,011,374	12,116,987	3,488,369	6,093,465	1,493,251	1,475,958	12,551,043	104,875,107	111,226,949
1997	4,006,598	15,498,599	3,555,802	3,744,729	685,305	663,804	8,649,640	108,055,642	114,576,886
1998	994,679	12,396,074	3,509,411	6,104,467	781,060	649,236	11,044,174	105,742,538	112,226,875
1999	2,412,068	13,592,264	3,503,791	5,871,330	1,383,862	1,355,800	12,114,783	107,748,811	114,127,852
2000	1,546,241	12,824,377	3,507,816	5,873,356	1,384,167	1,356,611	12,121,950	107,492,153	113,878,823
2001	2,493,690	13,773,691	3,507,889	5,873,395	1,384,173	1,356,626	12,122,083	108,916,750	115,303,560
2002	1,973,974	13,265,360	3,508,357	5,873,631	1,384,208	1,356,720	12,122,916	107,885,299	114,272,997
2003	2,044,219	13,345,317	3,508,754	5,873,829	1,384,238	1,356,800	12,123,621	106,584,662	112,973,111
2004	2,436,362	13,755,596	3,509,497	5,874,206	1,384,295	1,356,950	12,124,948	109,606,982	115,996,848
2005	2,050,515	13,498,223	3,514,780	5,876,867	1,384,695	1,358,016	12,134,358	109,624,403	116,024,292
2006	2,242,112	13,690,792	3,514,813	5,876,885	1,384,698	1,358,022	12,134,418	109,022,139	115,422,094
2007	2,233,667	13,691,230	3,515,180	5,877,071	1,384,726	1,358,096	12,135,073	108,823,042	115,223,688
2008	2,257,849	13,725,725	3,515,604	5,877,283	1,384,757	1,358,181	12,135,825	109,587,085	115,988,539
2009	2,172,201	13,648,161	3,515,934	5,877,449	1,384,783	1,358,248	12,136,414	108,592,798	114,994,877
2010	2,249,189	13,747,944	3,516,875	5,877,925	1,384,854	1,358,438	12,138,092	109,888,936	116,292,809
2011	2,338,455	13,903,218	3,519,581	5,879,289	1,385,059	1,358,985	12,142,914	110,265,058	116,674,063
2012	2,297,956	13,868,146	3,519,805	5,879,399	1,385,076	1,359,029	12,143,309	109,455,518	115,864,944
2013	2,260,062	13,842,457	3,520,305	5,879,654	1,385,115	1,359,129	12,144,203	109,824,668	116,235,047
2014	2,386,836	13,978,492	3,520,684	5,879,844	1,385,143	1,359,206	12,144,877	108,366,816	114,777,911
2015	2,240,430	13,832,650	3,520,707	5,879,856	1,385,144	1,359,211	12,144,918	108,966,252	115,377,396
2016	2,313,352	13,906,376	3,520,742	5,879,873	1,385,148	1,359,218	12,144,981	110,473,584	116,884,797
2017	2,343,793	13,975,673	3,522,337	5,880,676	1,385,269	1,359,539	12,147,821	110,057,524	116,471,760
2018	2,442,314	14,074,054	3,522,329	5,880,672	1,385,269	1,359,537	12,147,807	109,836,892	116,251,113
2019	2,100,574	13,733,538	3,522,382	5,880,701	1,385,272	1,359,548	12,147,903	110,895,959	117,310,288
2020	2,469,338	14,086,733	3,521,743	5,880,378	1,385,224	1,359,419	12,146,764	109,893,670	116,306,786
2021	2,339,875	13,957,309	3,521,743	5,880,378	1,385,224	1,359,420	12,146,765	109,732,298	116,145,417
2022	2,382,540	14,000,359	3,521,759	5,880,385	1,385,225	1,359,423	12,146,792	110,059,940	116,473,090
2023	2,333,683	13,951,834	3,521,773	5,880,395	1,385,226	1,359,427	12,146,821	110,166,347	116,579,524
2024	2,284,269	13,900,995	3,521,713	5,880,362	1,385,222	1,359,413	12,146,710	108,760,907	115,173,967
2025	2,385,015	14,003,632	3,521,792	5,880,403	1,385,227	1,359,429	12,146,851	110,028,809	116,442,019
2026	2,329,615	13,943,900	3,521,614	5,880,312	1,385,215	1,359,393	12,146,534	109,751,502	116,164,378
2027	2,329,539	13,944,056	3,521,623	5,880,318	1,385,215	1,359,397	12,146,553	109,910,576	116,323,471
2028	2,281,073	13,895,580	3,521,623	5,880,317	1,385,215	1,359,397	12,146,552	109,898,554	116,311,448
2029	2,326,782	13,941,921	3,521,651	5,880,334	1,385,217	1,359,401	12,146,603	111,290,610	117,703,555
2030	2,295,514	13,908,726	3,521,570	5,880,293	1,385,212	1,359,386	12,146,461	109,780,757	116,193,549
2031	2,329,284	13,942,990	3,521,593	5,880,301	1,385,213	1,359,389	12,146,496	110,011,246	116,424,078
2032	2,330,155	13,943,486	3,521,575	5,880,295	1,385,212	1,359,385	12,146,467	109,876,480	116,289,280
2033	2,280,733	13,894,266	3,521,584	5,880,300	1,385,213	1,359,386	12,146,483	110,154,571	116,567,388
2034	2,412,400	14,027,458	3,521,644	5,880,330	1,385,216	1,359,402	12,146,592	110,149,433	116,562,367
2035	1,565,374	13,180,670	3,521,656	5,880,339	1,385,218	1,359,401	12,146,614	110,383,910	116,796,867
TOTAL	116,663,515	731,510,410	183,051,552	233,451,292	54,203,061	53,061,376	523,767,281	5,707,079,641	6,043,701,307

a) Includes certain costs to be assigned directly to Kern County Water Agency. Refer to Appendix B text discussion of Table B–16A under "Project Water Charges."

TABLE B-12

Variable OMP&R Costs to Be Reimbursed Through Variable OMP&R Component of Transportation Charge

(in dollars)

Calendar Year	NORTH BAY AQUEDUCT				SOUTH BAY AQUEDUCT	CALIFORNIA AQUEDUCT			
	Reach 1 Barker Slough Pumping Plant	Reach 3A Cordelia Pumping Plant (Solano)	Reach 3B Cordelia Pumping Plant (Napa) (a	Total	Reach 1 South Bay & Del Valle Pumping Plants (b	Reach 1 Banks Pumping Plant	Reach 4 Dos Amigos Pumping Plant (c	Reach 14A Buena Vista Pumping Plant	Reach 15A Wheeler Ridge Pumping Plant
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
1962	0	0	0	0	36,970	0	0	0	0
1963	0	0	0	0	57,711	0	0	0	0
1964	0	0	0	0	74,134	0	0	0	0
1965	0	0	0	0	142,609	0	0	0	0
1966	0	0	0	0	192,605	0	0	0	0
1967	0	0	0	0	223,117	13,881	0	0	0
1968	0	0	6,989	6,989	336,671	452,630	202,947	0	0
1969	0	0	8,551	8,551	257,579	293,741	135,425	0	0
1970	0	0	13,598	13,598	396,358	346,215	211,198	0	0
1971	0	0	10,609	10,609	381,662	574,015	225,188	138,001	17,664
1972	0	0	14,434	14,434	598,702	927,369	498,482	234,626	89,516
1973	0	0	14,449	14,449	493,490	685,014	379,305	303,105	275,021
1974	0	0	17,473	17,473	565,575	769,839	438,997	344,632	350,558
1975	0	0	14,779	14,779	349,758	1,330,133	514,241	542,726	585,744
1976	0	0	20,856	20,856	571,361	1,456,742	562,537	609,257	600,780
1977	0	0	22,635	22,635	512,996	801,033	211,120	166,598	173,208
1978	0	0	21,692	21,692	586,355	2,215,828	574,813	658,309	578,337
1979	0	0	16,237	16,237	605,136	3,431,968	973,702	760,080	724,534
1980	0	0	19,945	19,945	523,369	1,882,630	1,010,938	853,317	826,802
1981	0	0	23,841	23,841	567,692	3,920,954	1,897,018	1,289,727	1,269,451
1982	0	0	12,159	12,159	531,147	3,060,402	1,360,551	1,196,255	1,208,785
1983	0	0	2,670	2,670	142,803	931,845	384,205	369,636	337,471
1984	0	0	4,507	4,507	254,046	1,749,327	903,969	642,644	569,853
1985	0	0	9,981	9,981	502,540	3,324,509	1,661,507	1,445,076	1,435,709
1986	0	0	15,406	15,406	828,230	7,064,638	2,614,148	2,401,271	2,427,971
1987	0	0	27,269	27,269	872,737	7,301,132	2,529,456	2,244,328	2,226,982
1988	14,331	18,040	27,241	59,612	887,043	7,616,890	2,624,691	2,556,294	2,551,285
1989	34,057	45,156	26,976	106,189	1,196,492	9,832,614	3,994,493	3,843,805	3,840,658
1990	58,673	68,535	43,140	170,348	1,874,996	11,352,774	4,315,221	5,785,143	6,020,008
1991	21,931	34,412	3,773	60,116	439,396	3,209,737	893,354	982,075	1,050,679
1992	25,918	23,255	17,886	67,059	673,118	8,578,661	3,198,377	3,242,958	3,699,802
1993	137,720	114,686	89,923	342,329	2,943,846	27,335,575	10,904,845	12,420,013	14,250,942
1994	161,089	127,839	105,356	394,284	3,236,093	28,505,673	11,781,716	13,476,310	15,468,545
1995	211,107	150,361	140,239	501,707	4,407,136	36,581,195	15,480,033	17,648,782	20,280,662
1996	227,482	151,463	145,444	524,389	4,337,649	36,365,013	15,236,924	17,191,731	19,754,353
1997	239,928	157,805	158,761	556,494	4,508,455	39,619,647	15,948,534	18,235,422	20,836,875
1998	245,957	160,665	168,141	574,763	4,506,638	38,632,421	15,923,546	18,180,419	20,769,957
1999	256,629	165,904	180,507	603,040	4,590,961	36,930,913	16,256,557	18,613,926	21,273,863
2000	288,654	184,086	209,361	682,101	5,028,148	40,419,866	17,779,483	20,527,460	23,478,858
2001	292,832	184,385	219,691	696,908	5,036,357	40,536,571	17,833,953	20,611,649	23,579,231
2002	299,211	186,246	230,536	715,993	5,087,149	40,886,827	17,991,442	20,790,511	23,782,328
2003	305,758	187,813	242,713	736,284	5,129,935	41,129,194	18,090,007	20,883,697	23,883,258
2004	314,711	190,796	256,710	762,217	5,211,449	41,793,550	18,386,925	21,262,234	24,321,203
2005	367,868	225,463	296,476	889,807	5,785,804	46,781,958	20,568,919	24,083,742	27,593,032
2006	371,748	225,628	305,215	902,591	5,790,048	46,804,629	20,589,567	24,109,616	27,623,268
2007	378,505	227,170	317,772	923,447	5,829,611	47,088,626	20,713,519	24,254,500	27,788,254
2008	386,483	228,967	332,965	948,415	5,875,743	47,430,173	20,864,561	24,437,073	27,997,549
2009	393,192	230,366	345,615	969,173	5,911,613	47,630,661	20,950,173	24,521,456	28,089,670
2010	406,638	236,476	362,735	1,005,849	6,014,531	48,944,620	21,530,077	25,354,645	29,075,751
2011	432,057	248,056	394,975	1,075,088	6,309,029	51,196,879	22,524,832	26,561,686	30,460,950
2012	438,437	248,997	408,720	1,096,154	6,332,995	51,402,733	22,611,706	26,667,709	30,583,180
2013	447,712	251,143	427,697	1,126,552	6,387,571	51,830,875	22,801,791	26,902,014	30,853,049
2014	456,342	252,746	445,902	1,154,990	6,428,341	52,058,954	22,893,037	26,986,240	30,943,565
2015	464,660	255,273	462,238	1,182,171	6,431,415	52,158,198	22,948,421	27,078,734	31,055,640
2016	470,071	255,424	477,601	1,203,096	6,435,211	52,267,249	22,990,841	27,149,240	31,140,446
2017	488,399	262,293	506,353	1,257,045	6,608,278	53,608,200	23,578,553	27,861,474	31,958,231
2018	493,780	262,262	522,363	1,278,405	6,607,490	53,582,853	23,564,313	27,837,852	31,929,697
2019	499,999	262,499	539,250	1,301,748	6,613,461	53,554,707	23,557,552	27,819,093	31,905,102
2020	500,110	259,730	550,944	1,310,784	6,543,679	53,098,286	23,348,722	27,579,464	31,633,274
2021	501,187	259,737	553,737	1,314,661	6,543,895	53,165,634	23,381,709	27,634,321	31,699,920
2022	501,336	259,815	553,902	1,315,053	6,545,843	53,164,011	23,388,284	27,643,386	31,710,496
2023	501,439	259,868	554,015	1,315,322	6,547,184	53,186,603	23,390,481	27,644,984	31,712,305
2024	500,945	259,612	553,469	1,314,026	6,540,723	53,047,727	23,336,722	27,560,356	31,610,816
2025	501,604	259,953	554,197	1,315,754	6,549,330	53,225,393	23,412,637	27,679,668	31,753,626
2026	500,125	259,187	552,564	1,311,876	6,530,031	53,062,480	23,342,326	27,590,933	31,651,125
2027	500,207	259,230	552,653	1,312,090	6,531,092	53,090,183	23,353,465	27,608,339	31,672,236
2028	500,203	259,227	552,650	1,312,080	6,531,046	53,088,256	23,352,594	27,607,089	31,670,423
2029	500,435	259,347	552,905	1,312,687	6,534,069	53,116,576	23,361,349	27,620,729	31,686,487
2030	499,764	259,000	552,165	1,310,929	6,525,309	53,039,836	23,330,643	27,579,702	31,638,917
2031	499,933	259,088	552,352	1,311,373	6,527,518	53,081,396	23,349,092	27,607,810	31,672,528
2032	499,806	259,021	552,211	1,311,038	6,525,853	53,059,084	23,341,083	27,596,322	31,659,010
2033	499,879	259,060	552,293	1,311,232	6,526,818	53,050,446	23,335,394	27,585,977	31,646,179
2034	500,395	259,327	552,861	1,312,583	6,533,548	53,114,029	23,366,004	27,626,820	31,694,012
2035	500,560	259,413	553,044	1,313,017	6,535,704	52,851,111	23,278,238	27,474,670	31,507,879
TOTAL	17,139,247	9,715,412	17,003,273	43,857,932	261,097,293	2,084,792,221	907,008,215	1,056,242,991	1,206,649,631

a) Costs for period 1968 through 1987 are for an interim facility.

b) The relatively minor costs of Del Valle Pumping Plant have been combined with those of South Bay Pumping Plant to simplify the allocation procedures.

c) Includes extra peaking costs assigned directly to Kern County Water Agency and Tulare Lake Basin Water Storage District. Refer to Appendix B text discussion of Table B-17 under "Project Water Charges."

TABLE B-12

Variable OMP&R Costs to Be Reimbursed Through Variable OMP&R Component of Transportation Charge (Continued)

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	Reach 16A Chrisman Pumping Plant	Reach 17E Edmonston Pumping Plant	Reach 18A Alamo Powerplant	Reach 22B Pearblossom Pumping Plant	Reach 23 Mojave Siphon Powerplant	Reach 24 Silverwood Lake (d	Reach 26A Devil Canyon Powerplant	Reach 28J Lake Perris (d	Reach 29A Oso Pumping Plant
	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]
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	165,589	494,616	0	23,387	0	4,216	(3,024)	0	93,212
1973	434,834	1,524,488	0	219,421	0	47,861	(436,769)	0	158,063
1974	589,117	2,058,680	0	315,705	0	98,179	(496,517)	52,549	189,479
1975	1,130,256	3,940,915	0	577,509	0	25,950	(1,033,054)	65,938	349,000
1976	1,222,413	4,235,934	0	869,201	0	122,336	(1,459,978)	104,257	245,397
1977	351,987	1,160,085	0	296,678	0	261,704	(1,115,096)	50,523	18,075
1978	1,034,893	3,636,671	0	1,551,015	0	0	(3,038,194)	0	69,043
1979	1,438,690	4,965,847	0	1,712,620	0	122,803	(3,159,826)	355,442	118,995
1980	1,634,049	5,416,333	0	1,733,275	0	154,695	(3,318,152)	0	36,761
1981	2,726,625	8,975,565	0	2,152,072	0	290,518	(3,678,813)	372,857	443,282
1982	2,416,093	8,325,450	0	1,489,997	0	0	(2,734,735)	0	539,246
1983	607,567	1,793,897	0	326,541	0	378,870	(5,497,700)	0	136,073
1984	1,061,329	3,226,910	0	587,001	0	0	(7,342,498)	(11,135)	228,202
1985	2,862,156	9,501,367	0	1,206,645	0	0	(10,475,498)	(50,923)	898,125
1986	4,990,691	16,921,966	(1,009,095)	2,357,866	0	0	(11,484,699)	0	1,265,840
1987	4,464,004	14,712,301	(1,013,385)	1,834,010	0	128,259	(10,805,276)	58,290	1,327,895
1988	5,109,456	16,771,518	(736,897)	2,385,045	0	39,211	(14,494,365)	0	1,400,894
1989	8,077,966	27,099,944	(721,618)	3,827,710	0	2,570,504	(18,532,110)	90,638	2,011,243
1990	13,630,180	48,369,765	(834,580)	6,511,263	0	89,487	(20,909,320)	148,475	2,857,589
1991	2,394,158	8,415,722	(357,621)	1,009,903	0	0	(6,921,017)	0	586,544
1992	7,221,366	24,445,340	(597,193)	3,561,146	0	21,117	(13,839,910)	31,089	1,895,460
1993	29,653,646	103,928,673	(1,161,515)	15,731,467	0	0	(29,815,095)	1,568,584	6,507,985
1994	32,218,067	112,962,206	(1,183,095)	16,791,980	0	159,875	(29,554,622)	749,417	7,153,368
1995	42,523,802	149,662,757	(4,343,743)	22,025,526	(8,807,599)	480,324	(30,002,919)	0	9,329,728
1996	41,392,172	145,629,908	(4,207,152)	20,800,794	(9,007,217)	1,618,299	(29,199,830)	175,386	9,306,112
1997	43,571,670	152,977,292	(4,253,952)	21,751,823	(9,304,242)	0	(29,287,312)	506,834	9,772,446
1998	43,417,795	152,411,911	(4,326,969)	21,829,449	(9,674,325)	566,063	(29,449,462)	0	9,682,331
1999	44,496,772	156,245,166	(4,322,180)	22,294,484	(9,297,863)	678,337	(29,659,171)	0	9,950,309
2000	49,192,887	172,882,893	(4,404,321)	24,658,515	(9,818,371)	190,305	(29,766,695)	0	10,868,358
2001	49,411,064	173,663,335	(4,412,389)	24,728,852	(9,648,556)	0	(29,811,644)	0	10,932,617
2002	49,839,566	175,174,751	(4,402,282)	24,930,235	(9,634,864)	0	(29,747,293)	220,870	11,029,605
2003	50,050,863	175,917,186	(4,353,514)	24,901,904	(9,630,694)	1,470,987	(29,725,071)	199,891	11,123,347
2004	50,989,147	179,251,613	(4,394,713)	25,458,856	(9,795,064)	0	(29,613,065)	566,626	11,292,747
2005	57,972,027	204,014,834	(4,612,484)	29,227,443	(10,281,986)	0	(30,668,903)	0	12,514,978
2006	58,035,237	204,236,780	(4,608,335)	29,237,604	(10,189,514)	38,814	(30,678,918)	31,926	12,537,145
2007	58,385,690	205,477,351	(4,601,087)	29,391,497	(10,154,949)	347,323	(30,690,636)	0	12,618,815
2008	58,832,056	207,059,882	(4,603,228)	29,612,532	(10,213,198)	0	(30,602,839)	326,335	12,713,947
2009	59,025,905	207,742,606	(4,572,196)	29,627,228	(9,993,808)	1,410,700	(30,720,625)	0	12,783,558
2010	61,142,735	215,269,709	(4,730,026)	30,814,124	(10,432,698)	0	(31,116,438)	0	13,000,381
2011	64,091,857	225,716,416	(4,713,010)	32,241,049	(10,155,485)	0	(31,105,968)	338,919	13,607,856
2012	64,350,387	226,630,027	(4,715,765)	32,381,976	(10,046,958)	210,903	(31,192,276)	69,384	13,657,479
2013	64,925,451	228,668,103	(4,719,036)	32,700,103	(10,089,050)	35,639	(31,198,818)	0	13,765,934
2014	65,114,383	229,331,430	(4,682,045)	32,654,687	(10,087,857)	1,601,642	(31,175,530)	0	13,853,917
2015	65,356,290	230,193,694	(4,733,108)	32,918,319	(10,407,513)	340,539	(31,137,192)	477,450	13,854,156
2016	65,540,891	230,853,596	(4,761,590)	33,083,299	(10,425,498)	0	(31,247,801)	0	13,868,310
2017	67,280,374	237,012,959	(4,752,366)	33,965,369	(10,417,490)	0	(31,242,185)	0	14,225,355
2018	67,218,825	236,794,151	(4,740,610)	33,902,728	(10,418,818)	137,791	(31,199,273)	190,423	14,223,405
2019	67,167,112	236,612,509	(4,730,277)	33,864,521	(10,286,253)	0	(31,145,152)	651,551	14,214,925
2020	66,589,852	234,569,877	(4,755,417)	33,591,786	(10,462,492)	1,104,335	(31,348,916)	0	14,091,649
2021	66,732,287	235,074,331	(4,774,739)	33,745,959	(10,470,960)	68,905	(31,333,721)	177,635	14,092,544
2022	66,755,285	235,157,459	(4,769,766)	33,760,229	(10,535,065)	250,685	(31,352,635)	0	14,096,391
2023	66,758,882	235,169,778	(4,765,843)	33,756,100	(10,553,293)	0	(31,292,660)	267,438	14,099,378
2024	66,539,459	234,386,856	(4,745,985)	33,563,390	(10,427,634)	558,419	(31,234,849)	633,826	14,081,658
2025	66,848,006	235,486,433	(4,752,122)	33,841,245	(10,504,441)	110,309	(31,399,080)	0	14,103,584
2026	66,629,079	234,709,935	(4,746,283)	33,715,038	(10,545,847)	0	(31,341,951)	235,694	14,064,007
2027	66,674,341	234,871,266	(4,749,009)	33,758,656	(10,561,190)	0	(31,379,480)	37,049	14,066,134
2028	66,670,720	234,858,146	(4,752,236)	33,765,598	(10,560,610)	0	(31,387,907)	0	14,061,840
2029	66,707,118	234,991,833	(4,759,957)	33,778,680	(10,584,701)	0	(31,388,365)	0	14,072,006
2030	66,603,531	234,620,415	(4,786,665)	33,722,518	(10,474,148)	295,571	(31,447,042)	0	14,051,317
2031	66,676,118	234,878,161	(4,788,608)	33,781,724	(10,581,702)	0	(31,423,032)	0	14,058,835
2032	66,646,863	234,774,812	(4,780,629)	33,759,542	(10,557,709)	0	(31,413,134)	70,880	14,055,347
2033	66,619,695	234,677,959	(4,783,870)	33,734,786	(10,518,783)	0	(31,392,584)	222,699	14,053,154
2034	66,721,771	235,040,136	(4,789,845)	33,796,485	(10,421,263)	0	(31,445,096)	83,880	14,070,929
2035	66,322,559	233,622,772	(4,749,276)	33,515,024	(10,004,738)	0	(31,232,365)	1,784,211	14,008,329
TOTAL	2,601,255,656	9,149,205,221	(197,561,627)	1,315,661,134	(415,984,446)	16,031,475	(1,463,344,101)	10,854,908	558,384,634

d) These values represent a proportionate allocation of the total variable OMP&R costs of pumping and recovery plants (Table B–3) associated with net annual withdrawals from storage for 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, divided by "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.

TABLE B-12

Variable OMP&R Costs to Be Reimbursed Through Variable OMP&R Component of Transportation Charge (Continued)

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)							GRAND TOTAL
	Reach 29G Warne Powerplant	Reach 29H Pyramid Lake (d	Reach 29J Castaic Powerplant	Reach 30 Castaic Lake (d	Reach 31A Las Perillas & Badger Hill Pumping Plants (e	Reach 33A Devil's Den, Bluestone & Polonio PP's San Luis Obispo Pwp	Total	
	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]
1962	0	0	0	0	0	0	0	36,970
1963	0	0	0	0	0	0	0	57,711
1964	0	0	0	0	0	0	0	74,134
1965	0	0	0	0	0	0	0	142,609
1966	0	0	0	0	0	0	0	192,605
1967	0	0	0	0	0	0	13,881	236,998
1968	0	0	0	118,676	0	0	774,253	1,117,913
1969	0	0	0	78,350	0	0	507,516	773,646
1970	0	0	0	136,429	0	0	693,842	1,103,798
1971	0	0	0	166,296	0	0	1,121,164	1,513,435
1972	3,578	(193,058)	72,639	237,638	0	0	2,648,786	3,261,922
1973	0	7,344	(1,057,564)	0	120,913	0	2,661,036	3,168,975
1974	0	42,364	(1,540,853)	5,561	118,582	0	3,336,872	3,919,920
1975	0	0	(2,445,397)	10,225	94,848	0	5,689,034	6,053,571
1976	0	60,068	(1,940,099)	1,056,464	141,260	0	7,886,569	8,478,786
1977	0	0	(607,380)	(1,211,050)	71,311	0	628,796	1,164,427
1978	0	1,061,100	(1,542,479)	0	179,925	0	6,979,261	7,587,308
1979	0	0	(2,384,748)	(12,206)	192,126	0	9,240,027	9,861,400
1980	0	456,892	(984,154)	10,716	168,458	0	9,882,560	10,425,874
1981	0	0	(3,201,635)	0	169,177	0	16,626,798	17,218,331
1982	(783,626)	0	(3,463,971)	0	168,390	0	12,782,837	13,326,143
1983	(851,084)	67,766	(4,369,865)	(1,590,753)	(10,844)	0	(6,986,375)	(6,840,902)
1984	(2,006,054)	0	(917,165)	(842,845)	105,353	0	(2,045,109)	(1,786,556)
1985	(5,957,634)	0	(16,159,985)	0	152,525	0	(10,156,421)	(9,643,900)
1986	(5,634,005)	0	(11,072,447)	0	297,313	0	11,141,458	11,985,094
1987	(6,292,329)	72,954	(11,562,308)	(34,766)	245,777	0	7,437,324	8,337,330
1988	(6,836,448)	0	(11,981,111)	(256,908)	216,262	0	6,965,817	7,912,472
1989	(8,242,167)	372	(14,514,469)	128,838	281,532	0	23,589,953	24,892,634
1990	(11,011,065)	0	(20,116,506)	249,287	386,928	0	46,844,649	48,889,993
1991	(4,945,942)	380,016	(9,116,935)	0	36,965	0	(2,382,362)	(1,882,850)
1992	(7,756,833)	0	(14,105,048)	0	168,447	0	19,764,779	20,504,956
1993	(15,118,828)	0	(26,604,142)	2,828	694,703	0	150,299,681	153,585,856
1994	(15,496,904)	0	(27,239,187)	51,758	747,848	0	166,592,955	170,223,332
1995	(16,988,996)	0	(27,647,237)	958,133	977,330	0	228,157,778	233,066,621
1996	(17,311,002)	0	(28,282,971)	954,327	1,219,485	1,648,046	223,284,378	228,146,416
1997	(17,688,195)	0	(28,941,857)	0	1,564,271	3,424,670	238,733,926	243,798,875
1998	(17,621,427)	0	(28,669,563)	1,023,260	1,563,641	3,422,893	237,681,940	242,763,341
1999	(17,755,764)	0	(28,959,305)	0	1,592,898	3,505,466	241,844,408	247,038,409
2000	(17,808,229)	0	(29,028,525)	535,797	1,681,306	3,933,589	275,323,176	281,033,425
2001	(17,858,740)	0	(29,157,287)	0	1,684,051	3,941,629	276,034,336	281,767,601
2002	(17,861,193)	0	(29,128,981)	104,640	1,701,035	3,991,369	279,668,566	285,471,708
2003	(17,869,097)	0	(29,144,764)	40,673	1,715,342	4,033,267	282,716,476	288,582,695
2004	(17,862,092)	0	(29,151,376)	0	1,742,598	4,113,091	288,362,280	294,335,946
2005	(17,924,799)	0	(29,250,275)	153,775	1,880,670	4,675,540	336,728,471	343,404,082
2006	(17,938,362)	0	(29,281,348)	0	1,882,049	4,679,695	337,109,853	343,802,492
2007	(17,939,040)	0	(29,276,884)	0	1,894,909	4,718,437	340,016,325	346,769,383
2008	(17,938,007)	0	(29,276,722)	0	1,909,903	4,763,614	343,313,631	350,137,789
2009	(17,934,298)	0	(29,266,515)	52,339	1,921,563	4,798,740	346,067,157	352,947,943
2010	(17,935,518)	0	(29,276,617)	0	1,955,017	4,899,525	358,495,287	365,515,667
2011	(17,935,521)	0	(29,276,453)	0	2,050,743	5,187,917	380,792,667	388,176,784
2012	(17,938,133)	0	(29,276,949)	0	2,058,533	5,211,388	382,665,324	390,094,473
2013	(17,934,043)	0	(29,268,243)	48,478	2,076,274	5,264,831	386,663,352	394,177,475
2014	(17,935,742)	0	(29,276,381)	0	2,089,525	5,304,755	389,674,580	397,257,911
2015	(17,931,974)	0	(29,263,705)	73,945	2,090,525	5,307,767	390,380,186	397,993,772
2016	(17,939,219)	0	(29,277,136)	0	2,091,759	5,311,485	390,645,872	398,284,179
2017	(17,939,170)	0	(29,277,086)	0	2,148,014	5,480,964	403,491,196	411,356,519
2018	(17,935,989)	0	(29,276,309)	0	2,147,758	5,480,192	403,438,989	411,324,884
2019	(17,919,042)	0	(29,233,916)	250,756	2,149,699	5,486,040	403,918,927	411,834,136
2020	(17,935,854)	0	(29,276,150)	0	2,127,016	5,417,704	399,373,136	407,227,599
2021	(17,938,860)	0	(29,277,047)	0	2,127,086	5,417,914	399,522,918	407,381,474
2022	(17,938,420)	0	(29,276,801)	0	2,127,720	5,419,822	399,601,081	407,461,977
2023	(17,939,267)	0	(29,276,965)	0	2,128,155	5,421,135	399,707,211	407,569,717
2024	(17,935,359)	0	(29,268,362)	50,102	2,126,056	5,414,809	399,298,007	407,152,756
2025	(17,937,128)	0	(29,276,661)	0	2,128,854	5,423,238	400,143,561	408,008,645
2026	(17,938,919)	0	(29,277,009)	0	2,122,580	5,404,340	398,677,528	406,519,435
2027	(17,938,949)	0	(29,277,058)	0	2,122,924	5,405,375	398,754,282	406,597,464
2028	(17,934,726)	0	(29,268,255)	50,002	2,122,910	5,405,333	398,749,177	406,592,303
2029	(17,938,223)	0	(29,276,359)	3,612	2,123,892	5,408,292	398,922,969	406,769,725
2030	(17,936,899)	0	(29,271,032)	34,455	2,121,045	5,399,713	398,521,877	406,358,115
2031	(17,940,193)	0	(29,277,160)	134	2,121,763	5,401,876	398,618,742	406,457,633
2032	(17,939,779)	0	(29,277,115)	0	2,121,221	5,400,246	398,516,044	406,352,935
2033	(17,936,094)	0	(29,268,357)	50,094	2,121,535	5,401,191	398,599,421	406,437,471
2034	(17,936,094)	0	(29,276,359)	0	2,123,723	5,407,783	399,176,915	407,023,046
2035	(17,871,112)	0	(29,138,763)	788,889	2,124,425	5,409,895	399,691,748	407,540,469
TOTAL	(823,508,809)	1,955,818	(1,382,280,667)	3,477,949	84,527,602	195,143,576	15,043,623,279	15,356,427,225

e) Includes extra peaking costs assigned directly to Kern County Water Agency. Refer to Appendix B text discussion of Table B-16A under "Project Water Charges."

TABLE B-13

Capital and Operating Costs of Project Conservation Facilities to Be Reimbursed Through Delta Water Charge

(in dollars)

Calendar Year	Initial Project Conservation Facilities (Portions of Upper Feather Lakes, Oroville–Thermalito and California Aqueduct Facilities)					Planning and Pre–operating Costs (a (f	Total
				Application of Oroville Power Revenues to:			
	Capital Costs (a	Capital Cost Credits (b	Operating Costs (c (g	Capital Costs (d	Operating Costs (e		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
1952	171,322	0	0	0	0	0	171,322
1953	312,190	0	0	0	0	0	312,190
1954	308,624	0	0	0	0	0	308,624
1955	194,645	0	0	0	0	0	194,645
1956	1,357,077	0	0	0	0	0	1,357,077
1957	6,210,709	0	0	0	0	0	6,210,709
1958	9,510,916	0	0	0	0	0	9,510,916
1959	11,390,586	0	0	0	0	0	11,390,586
1960	14,456,356	(4,850,000)	0	0	0	0	9,606,356
1961	18,682,616	(431,527)	0	0	0	0	18,251,089
1962	9,012,960	(479,280)	0	0	0	0	8,533,680
1963	72,965,728	(478,743)	(14,000)	0	0	0	72,472,985
1964	62,490,522	(751,330)	(14,000)	0	0	107,780	61,832,972
1965	70,913,845	(763,541)	(14,000)	0	0	551,850	70,688,154
1966	125,205,400	(748,649)	(14,000)	0	0	1,081,023	125,523,774
1967	94,296,914	(812,145)	(13,446)	0	0	1,189,212	94,660,535
1968	39,888,442	(431,574)	1,303,821	(951,000)	0	793,399	40,603,088
1969	5,279,786	(259,015)	2,890,772	(11,007,000)	0	601,867	(2,493,590)
1970	4,130,490	(203,733)	4,818,634	(14,650,000)	(1,500,000)	516,659	(6,887,950)
1971	3,877,493	(193,631)	6,026,480	(14,650,000)	(1,500,000)	408,754	(6,030,904)
1972	4,569,024	(196,361)	5,378,401	(14,650,000)	(1,500,000)	287,374	(6,111,562)
1973	3,985,415	(136,997)	6,083,392	(14,650,000)	(1,500,000)	203,384	(6,014,806)
1974	6,659,999	(137,503)	6,873,552	(17,950,000)	(1,500,000)	201,907	(5,852,045)
1975	8,084,449	(234,567)	7,622,422	(14,650,000)	(1,500,000)	146,188	(531,508)
1976	5,870,528	(204,944)	6,956,842	(14,650,000)	(1,500,000)	205,234	(3,322,340)
1977	21,285,846	(150,214)	10,413,891	(14,650,000)	(1,500,000)	857,419	16,256,942
1978	7,713,249	(64,566)	12,750,917	(14,650,000)	(1,500,000)	2,131,286	6,380,886
1979	9,030,800	0	9,435,703	(14,650,000)	(1,500,000)	2,131,884	4,448,387
1980	10,372,762	0	13,066,808	(14,650,000)	(1,500,000)	3,734,312	11,023,882
1981	11,096,968	0	9,995,085	(14,650,000)	(1,500,000)	4,599,246	9,541,299
1982	16,486,519	0	14,865,089	(14,650,000)	(1,500,000)	4,594,682	19,796,290
1983	12,682,279	0	21,787,322	(34,705,000)	(8,735,000)	3,751,993	(5,218,406)
1984	10,189,236	0	22,058,526	(14,650,000)	(10,348,000)	3,743,484	10,993,246
1985	10,507,230	0	23,317,540	(14,650,000)	(8,079,000)	3,675,801	14,771,571
1986	18,417,129	0	25,290,174	(14,650,000)	(9,107,000)	3,104,934	23,055,237
1987	28,696,104	0	22,941,987	(14,650,000)	(8,451,000)	3,542,427	31,079,518
1988	26,594,013	0	24,959,959	(14,650,000)	(8,677,000)	3,734,970	31,961,942
1989	10,561,767	0	29,701,755	(16,116,000)	(8,773,000)	4,264,867	19,639,389
1990	25,686,651	0	40,910,131	(14,650,000)	(8,498,000)	3,327,639	46,776,421
1991	80,889,603	0	33,756,883	(14,650,000)	(9,486,000)	3,698,936	94,209,422
1992	54,279,153	0	42,780,856	(14,650,000)	(8,526,000)	13,482,000	87,366,009
1993	58,919,063	0	44,730,726	(14,650,000)	(8,768,000)	17,135,000	97,366,789
1994	35,294,710	0	45,154,587	(14,650,000)	(8,716,000)	16,049,000	73,132,297
1995	20,328,364	0	45,337,848	(14,650,000)	(8,705,000)	15,019,000	57,330,212
1996	3,688,091	0	46,042,926	(14,650,000)	(8,705,000)	15,019,000	41,395,017
1997	1,900,154	0	47,043,409	(14,650,000)	(8,705,000)	15,019,000	40,607,563
1998	2,413,045	0	45,313,086	(14,650,000)	(8,705,000)	8,019,000	32,390,131
1999	2,435,405	0	43,011,646	(14,650,000)	(8,705,000)	8,019,000	30,111,051
2000	1,067,260	0	43,459,779	(14,650,000)	(8,705,000)	6,019,000	27,191,039
2001	0	0	39,524,870	(14,650,000)	(8,705,000)	5,019,000	21,188,870
2002	0	0	39,817,775	(14,650,000)	(8,705,000)	4,469,000	20,931,775
2003	0	0	39,622,601	(14,650,000)	(8,705,000)	4,469,000	20,736,601
2004	0	0	40,088,710	(14,650,000)	(8,705,000)	4,469,000	21,202,710
2005	0	0	40,523,952	(14,650,000)	(8,705,000)	4,469,000	21,637,952
2006	0	0	41,131,367	(14,650,000)	(8,705,000)	4,469,000	22,245,367
2007	0	0	41,201,599	(14,650,000)	(8,705,000)	4,469,000	22,315,599
2008	0	0	41,392,295	(14,650,000)	(8,705,000)	4,469,000	22,506,295
2009	0	0	41,393,345	(14,650,000)	(8,705,000)	4,469,000	22,507,345
2010	0	0	40,618,366	(14,650,000)	(8,705,000)	4,469,000	21,732,366
2011	0	0	41,553,381	(14,650,000)	(8,705,000)	0	18,198,381
2012	0	0	41,358,683	(14,650,000)	(8,705,000)	0	18,003,683
2013	0	0	41,618,872	(14,650,000)	(8,705,000)	0	18,263,872
2014	0	0	41,318,664	(14,650,000)	(8,705,000)	0	17,963,664
2015	0	0	41,866,178	(14,650,000)	(8,705,000)	0	18,511,178
2016	0	0	41,495,475	(14,650,000)	(8,705,000)	0	18,140,475
2017	0	0	41,833,331	(14,650,000)	(8,705,000)	0	18,478,331
2018	0	0	41,652,371	(14,650,000)	(8,705,000)	0	18,297,371
2019	0	0	42,116,757	(14,650,000)	(8,705,000)	0	18,761,757
2020	0	0	41,287,483	(14,650,000)	(8,705,000)	0	17,932,483
2021	0	0	41,504,583	(14,650,000)	(8,705,000)	0	18,149,583
2022	0	0	41,942,690	(14,650,000)	(8,705,000)	0	18,587,690
2023	0	0	41,510,542	(14,650,000)	(8,705,000)	0	18,155,542
2024	0	0	41,933,606	(14,650,000)	(8,705,000)	0	18,578,606
2025	0	0	41,740,179	(14,650,000)	(8,705,000)	0	18,385,179
2026	0	0	43,026,742	(14,650,000)	(8,705,000)	0	19,671,742
2027	0	0	42,930,912	(14,650,000)	(8,705,000)	0	19,575,912
2028	0	0	42,938,127	(14,650,000)	(8,705,000)	0	19,583,127
2029	0	0	42,715,656	(14,650,000)	(8,705,000)	0	19,360,656
2030	0	0	42,685,953	(14,650,000)	(8,705,000)	0	19,330,953
2031	0	0	42,677,989	(14,650,000)	(8,705,000)	0	19,322,989
2032	0	0	42,781,687	(14,650,000)	(8,705,000)	0	19,426,687
2033	0	0	42,697,527	(14,650,000)	(8,705,000)	0	19,342,527
2034	0	0	42,986,795	(14,650,000)	(8,705,000)	0	19,631,795
2035	0	0	44,771,911	(14,650,000)	(8,705,000)	0	21,416,911
TOTAL	1,060,361,437	(11,528,320)	2,226,272,477	(1,003,679,000)	(483,569,000)	216,208,511	2,004,066,105

a) Reimbursed through the capital cost component of the Delta Water Charge.
b) Negotiated settlements as to the magnitude of SWP planning costs from 1952 through 1978.
c) Reimbursed through the minimum OMP&R component of the Delta Water Charge. Credits for Gianelli power generation are reflected in these net costs.
d) Revenues credited through the capital cost component of the Delta Water Charge.
e) Revenue credits through the minimum OMP&R component of the Delta Water Charge.
f) Under amendments of Articles 22(e) and 22(g), planning and pre–operating costs of additional Project Conservation Facilities incurred through the previous year (1988) are reflected in the Delta Water Charge.
g) Replacement account charges under the minimum OMP&R component of the Delta Water Rate are zero for 1993.

TABLE B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor

(in dollars)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA(a	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	114	410	607	121	224	345
1953	0	0	0	324	479	1,808	2,611	336	619	955
1954	0	0	0	819	1,305	5,150	7,274	422	779	1,201
1955	0	0	0	976	1,570	6,297	8,843	211	388	599
1956	0	0	0	8,844	14,459	63,816	87,119	227	419	646
1957	15,199	11,435	26,634	21,563	35,239	649,598	706,400	290	535	825
1958	33,420	16,591	50,011	67,764	71,717	733,415	872,896	721	1,329	2,050
1959	20,697	6,591	27,288	154,254	143,731	493,049	791,034	25,853	53,921	79,774
1960	9,097	8,830	17,927	296,491	275,611	1,018,661	1,590,763	37,106	77,940	115,046
1961	6,950	7,445	14,395	853,505	802,675	1,914,709	3,570,889	15,637	31,207	46,844
1962	(195)	(925)	(1,120)	545,122	615,142	1,686,043	2,846,307	19,638	37,213	56,851
1963	1,320	1,110	2,430	657,426	1,281,271	3,243,839	5,182,536	73,102	136,561	209,663
1964	38,392	35,467	73,859	712,650	1,747,783	7,251,800	9,712,233	146,707	273,909	420,616
1965	198,833	62,221	261,054	360,779	606,026	3,414,457	4,381,262	261,448	486,412	747,860
1966	461,619	49,917	511,536	592,714	592,598	2,245,216	3,430,528	598,306	1,107,130	1,705,436
1967	1,569,498	40,379	1,609,877	796,993	803,951	2,401,863	4,002,807	947,498	1,751,608	2,699,106
1968	859,613	61,691	921,304	736,470	696,074	1,997,925	3,430,469	359,885	666,467	1,026,352
1969	74,389	59,317	133,706	269,698	293,274	764,952	1,327,924	84,313	157,235	241,548
1970	43,362	67,876	111,238	58,677	61,200	135,569	255,446	54,660	102,454	157,114
1971	26,764	34,051	60,815	12,086	18,227	84,089	114,402	37,649	71,701	109,350
1972	19,643	18,905	38,548	12,291	12,762	63,612	88,665	24,098	45,421	69,519
1973	56,510	30,874	87,384	10,494	12,137	39,380	62,011	27,479	51,710	79,189
1974	165,830	65,832	231,662	15,721	24,402	73,121	113,244	30,087	56,331	86,418
1975	91,825	89,233	181,058	16,730	15,807	41,394	73,931	25,395	50,761	76,156
1976	57,766	83,650	141,416	34,004	34,663	109,610	178,277	54,576	109,504	164,080
1977	64,167	80,147	144,314	46,229	45,116	133,374	224,719	130,013	243,030	373,043
1978	69,319	81,717	151,036	71,234	66,008	174,897	312,139	43,226	82,011	125,237
1979	191,272	282,908	474,180	45,469	42,942	110,667	199,078	51,321	97,291	148,612
1980	264,433	386,006	650,439	134,522	124,352	304,615	563,489	186,288	345,517	531,805
1981	227,598	383,083	610,681	(33,766)	(29,882)	(65,711)	(129,359)	(71,770)	(130,181)	(201,951)
1982	546,896	870,608	1,417,504	3,166	3,729	13,671	20,566	(44,905)	(82,034)	(126,939)
1983	1,254,498	1,433,060	2,687,558	134,897	127,859	328,435	591,191	30,493	57,436	87,929
1984	2,515,224	2,750,019	5,265,243	152,943	140,928	351,814	645,685	34,829	65,297	100,126
1985	7,098,476	6,443,613	13,542,089	18,267	17,771	49,369	85,407	20,569	40,517	61,086
1986	10,540,172	16,926,654	27,466,826	32,146	31,687	88,364	152,197	86,506	183,019	269,525
1987	7,966,370	12,601,509	20,567,879	51,736	50,231	143,975	245,942	432,124	949,089	1,381,213
1988	2,327,496	4,400,149	6,727,645	115,049	111,254	299,207	525,510	484,555	1,058,064	1,542,619
1989	1,059,195	1,576,650	2,635,845	115,702	110,116	279,320	505,138	408,962	881,859	1,290,821
1990	431,176	869,830	1,301,006	196,293	198,667	560,506	955,466	524,785	1,122,793	1,647,578
1991	105,827	96,815	202,642	168,736	159,181	401,806	729,723	748,126	1,585,221	2,333,347
1992	119,135	86,865	206,000	187,302	175,561	439,352	802,215	2,876,196	5,867,773	8,743,969
1993	492,095	397,905	890,000	480,412	451,847	1,143,354	2,075,613	14,841,924	30,350,067	45,191,991
1994	302,042	665,958	968,000	635,412	587,983	1,436,623	2,660,018	39,573,149	76,994,325	116,567,474
1995	9,208	16,792	26,000	47,249	44,112	108,336	199,697	39,957,335	89,774,024	129,731,359
1996	3,274	2,726	6,000	5,624	6,016	17,552	29,192	15,450,892	39,221,233	54,672,125
1997	1,297	703	2,000	1,680	1,847	5,512	9,039	441,300	941,062	1,382,362
1998	0	0	0	300	275	660	1,235	165	304	469
1999	0	0	0	300	275	660	1,235	165	304	469
2000	0	0	0	0	0	0	0	0	0	0
TOTAL	39,339,702	51,104,207	90,443,909	8,847,380	10,630,092	34,766,141	54,243,613	119,032,013	254,919,799	373,951,812

a) Costs from Table B–10 allocated to Solano County Water Agency are reduced herein by $2,102,700 in 1986 and $1,823,500 in 1987 under provisions of Amendment No. 10 to its water supply contract.

TABLE B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor (Continued)

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA									
				Kern County Water Agency						
	Dudley Ridge Water District	Empire West Side Irrigation District(c	Future Contractor San Joaquin Valley	Municipal and Industrial	Municipal and (d Industrial	Agri-cultural	County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]
1952	389	19	59	938	120	9,127	19	13	784	11,468
1953	1,076	53	161	2,888	344	27,381	56	33	2,158	34,150
1954	1,350	67	200	3,374	416	32,371	70	42	2,719	40,609
1955	676	36	100	1,498	198	14,718	36	22	1,371	18,655
1956	727	33	107	2,703	272	24,257	34	26	1,416	29,575
1957	932	38	139	6,047	495	49,932	38	30	1,707	59,358
1958	2,308	100	345	14,372	1,154	119,049	103	61	4,367	141,859
1959	7,384	363	2,517	26,219	2,597	253,890	372	381	14,757	308,480
1960	12,940	629	3,666	34,053	4,155	352,167	644	498	25,696	434,448
1961	21,849	1,063	3,957	51,406	6,500	538,710	1,087	599	43,376	668,547
1962	49,320	2,410	7,866	94,932	13,836	1,017,145	2,466	1,879	98,141	1,287,995
1963	208,758	10,686	32,171	364,014	55,715	3,934,637	10,933	5,990	425,330	5,048,234
1964	328,285	16,961	64,891	600,151	88,904	6,636,279	17,349	11,942	672,011	8,436,773
1965	538,215	27,481	117,998	1,098,999	152,931	11,999,894	28,115	21,802	1,095,126	15,080,561
1966	1,107,759	52,587	279,171	2,218,832	339,222	24,857,488	53,788	38,891	2,173,090	31,120,828
1967	852,537	39,539	445,560	2,012,745	286,990	23,629,027	40,444	34,775	1,653,428	28,995,045
1968	198,739	9,739	166,266	1,104,133	70,088	11,544,940	9,962	12,237	396,074	13,512,178
1969	94,436	4,794	35,472	616,518	27,216	6,416,146	4,902	7,302	191,574	7,398,360
1970	54,345	2,719	21,684	414,660	15,521	4,145,045	2,783	3,999	109,471	4,770,227
1971	25,462	1,290	12,094	190,552	7,112	1,622,275	1,320	540	51,620	1,912,265
1972	11,589	589	8,354	82,884	3,409	723,623	601	343	23,526	854,918
1973	6,657	336	10,202	39,975	1,976	458,532	341	220	13,449	531,688
1974	9,478	469	11,044	45,421	2,767	483,865	478	326	18,981	572,829
1975	13,328	678	5,245	36,469	3,710	382,745	692	426	27,049	470,342
1976	17,507	837	12,616	53,085	5,621	654,024	856	1,152	34,454	780,152
1977	9,671	437	47,790	36,478	3,753	886,672	445	494	18,496	1,004,236
1978	23,499	(30,407)	6,178	54,218	6,579	575,170	1,208	1,402	47,447	685,294
1979	25,051	1,295	5,665	53,867	6,609	559,748	1,324	1,862	51,294	706,715
1980	144,981	(4,617)	31,161	321,889	38,126	3,211,810	7,682	7,144	297,216	4,055,392
1981	(3,772)	(15,378)	443	(41,966)	(789)	(354,928)	(208)	1,751	(7,927)	(422,774)
1982	47,748	2,475	5,654	78,749	12,535	599,991	2,525	1,178	97,907	848,762
1983	54,422	(35,188)	11,934	112,917	14,360	1,096,390	2,877	1,269	111,490	1,370,471
1984	87,395	4,529	14,455	156,974	23,048	1,639,645	4,627	2,676	179,171	2,112,520
1985	27,470	1,418	5,681	49,943	7,282	513,864	1,450	1,151	56,211	664,470
1986	40,546	(40,952)	10,208	75,322	10,905	836,332	2,127	781	82,734	1,018,003
1987	43,056	2,217	9,371	78,952	11,719	876,649	2,265	1,526	87,977	1,113,732
1988	63,201	3,394	18,564	87,749	14,878	1,096,956	3,470	4,669	132,022	1,424,903
1989	163,851	8,414	29,965	366,185	45,036	3,999,933	8,606	12,360	334,376	4,968,726
1990	295,765	15,315	50,774	555,159	88,046	6,097,775	15,661	22,514	606,132	7,747,141
1991	343,350	17,784	58,048	565,721	90,107	6,265,557	18,189	22,960	703,764	8,085,480
1992	191,511	9,884	39,762	321,529	50,663	3,644,207	10,108	17,372	391,814	4,676,850
1993	149,186	7,521	63,476	291,679	41,476	3,596,494	7,693	9,572	301,595	4,468,692
1994	158,535	8,109	45,190	282,875	42,749	3,313,764	8,294	12,790	322,870	4,195,176
1995	23,307	1,207	3,932	38,335	6,137	425,293	1,234	2,189	47,762	549,396
1996	5,658	290	1,198	9,810	1,522	110,550	296	480	11,538	141,342
1997	517	26	231	1,164	157	13,866	26	18	1,025	17,030
1998	190	12	80	351	48	4,386	12	8	388	5,475
1999	190	12	80	351	48	4,386	12	8	388	5,475
2000	0	0	0	0	0	0	0	0	0	0
TOTAL	5,461,374	131,313	1,701,725	12,615,119	1,606,263	138,941,777	277,412	269,703	10,957,365	171,962,051

b) Costs from Table B-10 allocated to Devil's Den Water District are reduced herein by $14,088 in 1978 in accordance with a letter of agreement with the district.

c) Costs from Table B-10 allocated to Empire West Side Irrigation District are reduced herein by $31,588 in 1978; $12,129 in 1980; $15,173 in 1981; $38,004 in 1983; and $43,033 in 1986 in accordance with letters of agreement with the district.

d) Costs related to maximum annual entitlement of 15,000 acre-feet under Amendment No. 18 of the water supply contract with Kern County Water Agency.

TABLE B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley–East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley 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	3,157	1,044	850	252	1,405	72	1,695	418	6,079	1,547
1953	10,024	3,326	2,667	800	4,401	221	5,322	1,327	19,058	4,855
1954	12,741	4,194	3,464	1,032	5,714	286	6,911	1,692	24,608	6,289
1955	5,411	1,879	1,376	398	2,266	115	2,753	713	9,227	2,376
1956	9,773	3,588	2,197	615	3,621	192	4,449	1,268	13,136	3,437
1957	26,304	9,255	6,342	1,818	10,462	541	12,769	3,451	40,646	10,536
1958	49,201	17,599	11,582	3,291	19,099	990	23,359	6,416	72,709	18,896
1959	70,246	29,741	15,870	4,614	26,170	1,346	31,757	9,029	98,594	25,519
1960	84,550	38,759	22,068	6,794	36,393	1,548	43,258	10,770	147,170	37,468
1961	126,540	54,258	34,617	12,534	57,086	2,250	63,709	16,436	236,163	57,706
1962	198,556	85,350	43,721	13,859	72,100	3,347	84,710	24,943	253,432	64,329
1963	580,138	255,252	116,797	33,149	192,624	9,829	234,926	73,257	610,278	160,623
1964	1,094,365	501,857	209,460	55,448	345,447	18,442	429,607	137,768	1,026,065	276,115
1965	1,908,076	947,523	385,531	103,756	635,821	32,818	786,986	244,589	1,913,091	512,861
1966	3,960,301	2,150,974	812,657	215,858	1,340,233	69,326	1,664,584	517,268	3,943,586	1,062,420
1967	4,976,539	4,100,533	1,077,423	296,069	1,776,895	88,302	2,182,238	653,250	5,821,682	1,550,237
1968	5,924,471	3,998,943	1,350,742	368,157	2,227,645	107,350	2,738,008	783,940	7,982,824	2,122,941
1969	5,822,708	3,079,427	1,690,259	539,852	2,787,631	121,302	3,256,507	865,454	10,898,186	2,769,647
1970	5,032,961	3,277,780	2,050,790	695,344	3,382,250	106,383	3,872,369	736,777	13,795,811	3,457,106
1971	2,577,508	2,146,955	1,071,521	338,583	1,767,179	48,337	2,087,224	347,057	8,137,052	1,987,119
1972	973,434	283,255	331,757	92,077	547,138	19,134	668,550	134,359	2,691,133	697,957
1973	354,409	914,305	158,582	82,223	261,558	6,304	238,095	46,103	1,760,569	403,583
1974	451,451	280,865	259,176	74,112	427,434	8,143	518,452	59,144	1,617,393	425,927
1975	253,437	246,493	193,631	52,820	319,338	4,954	392,109	33,995	1,533,663	407,917
1976	237,537	255,240	136,750	37,235	225,528	4,245	277,805	31,001	962,276	255,900
1977	199,550	372,505	91,384	25,857	150,713	3,755	183,607	26,835	591,447	155,535
1978	302,110	470,179	78,574	22,228	129,585	5,233	157,814	38,655	428,988	111,769
1979	357,676	938,984	81,808	21,794	134,914	5,963	166,932	44,409	403,569	108,408
1980	1,867,514	1,777,296	423,753	113,166	698,857	32,436	864,105	240,897	2,040,758	548,083
1981	(155,573)	612,146	(46,542)	(8,724)	(76,759)	(2,523)	(101,403)	(19,194)	(141,397)	(42,875)
1982	1,545,565	854,058	295,205	77,915	486,845	26,015	606,360	195,035	1,400,838	382,784
1983	2,060,067	530,796	394,564	115,236	650,711	34,647	801,078	259,562	2,116,236	579,088
1984	1,521,041	296,896	298,026	85,217	491,504	27,317	607,096	188,900	1,541,238	421,981
1985	876,225	158,172	203,076	58,956	334,914	12,291	412,351	103,265	1,046,829	286,149
1986	728,342	106,866	99,573	27,407	164,211	6,078	203,387	75,208	504,990	137,136
1987	315,001	118,672	(72,258)	(16,241)	(119,163)	(2,556)	(152,012)	10,000	(280,275)	(78,798)
1988	234,047	181,027	263,887	72,827	435,198	790	537,566	15,630	1,315,140	356,647
1989	1,283,070	449,137	491,918	139,878	811,275	31,387	998,161	193,835	2,138,201	580,970
1990	640,014	361,299	207,227	65,953	341,758	7,575	413,474	66,859	935,437	252,118
1991	742,037	364,541	426,857	135,653	703,968	10,118	857,484	79,739	2,225,677	608,557
1992	690,225	397,065	375,747	201,147	619,682	11,959	679,604	88,227	3,561,539	975,085
1993	726,925	563,996	240,162	157,628	396,079	12,797	404,022	93,774	3,178,114	860,643
1994	463,961	464,196	135,917	82,397	224,150	8,113	235,346	59,636	3,301,909	888,516
1995	44,942	20,950	11,602	9,205	19,133	765	18,347	5,708	1,580,813	423,808
1996	13,360	6,795	2,988	789	4,929	235	6,140	1,726	14,927	4,020
1997	2,981	1,791	890	245	1,469	57	1,804	403	4,789	1,264
1998	1,103	613	318	89	521	16	635	142	1,857	492
1999	1,103	613	318	89	521	16	635	142	1,857	492
2000	0	0	0	0	0	0	0	0	0	0
TOTAL	49,205,124	31,736,988	13,994,824	4,419,401	23,080,453	888,261	27,530,685	6,509,818	91,527,912	23,885,183

TABLE B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA					
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California(e	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total	South Bay Area Future Contractor	GRAND TOTAL
	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]	[40]
1952	963	69,021	371	86,874	0	0	0	0	59	99,353
1953	3,011	217,635	1,186	273,833	0	0	0	0	263	311,812
1954	3,903	279,966	1,492	352,292	0	0	0	0	767	402,143
1955	1,473	111,618	671	140,276	0	0	0	0	969	169,342
1956	2,123	179,340	1,299	225,038	0	0	0	0	9,173	351,551
1957	6,526	516,047	3,365	648,062	0	0	0	0	23,173	1,464,452
1958	11,701	945,682	6,392	1,186,917	0	0	2	2	32,888	2,286,623
1959	15,817	1,364,307	9,893	1,702,903	0	0	14	14	57,919	2,967,412
1960	23,309	1,914,533	12,799	2,379,419	0	0	28	28	123,202	4,660,833
1961	36,154	3,212,117	18,768	3,928,338	0	0	10	10	316,221	8,545,244
1962	40,012	3,543,478	29,068	4,456,905	0	0	32	32	228,201	8,875,171
1963	99,266	11,185,924	86,806	13,638,869	0	0	51	51	528,495	24,610,278
1964	170,010	18,065,460	164,709	22,494,753	0	0	7,791	7,791	590,035	41,736,060
1965	316,082	33,763,578	307,475	41,858,187	0	0	3,139	3,139	332,680	62,664,743
1966	654,195	74,485,021	681,899	91,558,322	0	0	(48)	(48)	783,728	129,110,330
1967	958,408	130,599,410	1,279,076	155,360,062	0	0	47	47	1,479,421	194,146,365
1968	1,314,842	147,502,292	1,360,688	177,782,843	0	0	51,573	51,573	1,254,192	197,978,911
1969	1,726,890	140,096,647	1,085,028	174,739,538	0	0	234,232	234,232	398,182	184,473,490
1970	2,160,120	161,983,071	1,147,608	201,698,370	0	0	16,227	16,227	74,028	207,082,650
1971	1,237,575	133,903,313	738,824	156,388,247	0	0	27,204	27,204	12,456	158,624,739
1972	434,505	43,931,735	66,878	50,871,912	0	0	9	9	13,183	51,936,754
1973	256,715	39,722,992	290,020	44,495,458	0	0	25	25	8,098	45,263,853
1974	264,348	18,896,593	86,361	23,369,399	0	0	45	45	28,569	24,402,166
1975	253,840	16,732,933	83,976	20,509,106	0	0	21	21	8,224	21,318,838
1976	158,851	13,545,457	84,624	16,212,449	0	0	51	51	16,485	17,492,910
1977	96,516	11,797,207	111,213	13,806,124	0	0	28	28	21,182	15,573,646
1978	69,151	15,781,693	174,876	17,770,855	0	0	38	38	28,876	19,073,475
1979	66,848	27,627,424	343,358	30,302,087	0	0	23	23	26,667	31,857,362
1980	337,809	59,493,779	641,585	69,080,038	0	0	26	26	59,168	74,940,357
1981	(25,939)	15,707,624	224,715	15,923,556	0	0	34	34	(6,763)	15,773,424
1982	235,406	30,555,853	313,661	36,975,540	0	0	11	11	13,817	39,149,261
1983	356,200	25,264,914	190,845	33,353,944	0	0	19	19	70,455	38,161,567
1984	259,417	16,317,413	103,545	22,159,591	0	0	26	26	83,234	30,366,425
1985	175,903	9,851,297	56,045	13,575,473	0	0	29	29	15,669	27,944,223
1986	84,399	5,503,682	35,450	7,676,729	0	0	31	31	16,296	36,599,607
1987	(48,263)	1,576,321	40,433	1,290,861	0	0	32	32	29,963	24,629,622
1988	219,573	11,538,357	59,432	15,230,121	0	0	56	56	49,364	25,500,218
1989	356,179	22,964,394	157,691	30,596,096	0	0	64	64	46,278	40,042,968
1990	154,302	14,015,702	120,525	17,582,243	0	0	88	88	85,740	29,319,262
1991	373,106	21,200,139	119,831	27,847,707	0	0	84	84	65,512	39,264,495
1992	599,264	30,349,178	126,830	38,675,552	0	0	0	0	73,512	53,178,098
1993	531,129	31,391,007	178,135	38,734,411	0	0	0	0	184,126	91,544,833
1994	554,154	29,364,936	153,957	35,937,188	0	0	0	0	225,943	160,553,799
1995	266,492	8,835,449	6,824	11,244,038	0	0	0	0	17,578	141,768,068
1996	2,474	246,106	2,136	306,625	0	0	0	0	3,402	55,158,686
1997	785	70,996	548	88,022	0	0	0	0	1,261	1,499,714
1998	306	24,816	192	31,100	0	0	0	0	187	38,466
1999	306	24,816	192	31,100	0	0	0	0	187	38,466
2000	0	0	0	0	0	0	0	0	0	0
TOTAL	14,816,156	1,386,271,273	10,711,295	1,684,577,373	0	0	341,042	341,042	7,432,265	2,382,952,065

e) Costs from Table B–10 allocated to MWDSC are reduced herein by $16,425,537 in 1972 under provisions of Amendment No. 7 to its water contract.

TABLE B-15

Capital Cost Component of Transportation Charge for Each Contractor (a, b

(in dollars)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA	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]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	105,210	105,872	366,617	577,699	0	0	0
1964	0	0	0	123,746	171,241	532,114	827,101	8,923	17,668	26,591
1965	0	0	0	156,305	260,411	902,093	1,318,809	14,709	28,507	43,216
1966	18,099	0	18,099	172,789	291,329	1,076,295	1,540,413	24,023	45,898	69,921
1967	41,651	0	41,651	199,869	321,563	1,190,843	1,712,275	42,377	79,930	122,307
1968	121,725	0	121,725	236,282	362,580	1,313,384	1,912,246	56,719	106,571	163,290
1969	165,581	0	165,581	269,930	398,093	1,415,316	2,083,339	60,492	113,660	174,152
1970	169,376	0	169,376	282,252	413,055	1,454,343	2,149,650	62,510	117,470	179,980
1971	171,589	0	171,589	284,933	416,178	1,461,259	2,162,370	63,848	120,021	183,869
1972	172,954	0	172,954	332,138	417,108	1,465,549	2,214,795	64,883	122,045	186,928
1973	173,956	31,440	205,396	332,765	417,759	1,468,795	2,219,319	65,405	123,057	188,462
1974	176,839	33,015	209,854	333,300	418,378	1,470,804	2,222,482	65,824	123,881	189,705
1975	185,300	36,373	221,673	334,102	419,623	1,474,534	2,228,259	66,330	124,858	191,188
1976	189,985	40,926	230,911	334,956	420,429	1,476,646	2,232,031	173,771	323,273	497,044
1977	192,932	45,194	238,126	336,691	422,198	1,482,238	2,241,127	176,555	328,859	505,414
1978	196,205	49,283	245,488	339,049	424,500	1,489,043	2,252,592	183,189	341,258	524,447
1979	199,742	53,452	253,194	342,684	427,867	1,497,966	2,268,517	185,394	345,443	530,837
1980	209,501	67,886	277,387	345,003	430,058	1,503,612	2,278,673	188,012	350,406	538,418
1981	222,992	87,579	310,571	351,867	436,402	1,519,153	2,307,422	197,516	368,034	565,550
1982	234,603	107,124	341,727	350,144	434,878	1,515,801	2,300,823	193,855	361,392	555,247
1983	262,505	151,541	414,046	350,305	435,068	1,516,498	2,301,871	191,564	357,207	548,771
1984	326,509	224,654	551,163	357,188	441,591	1,533,255	2,332,034	193,120	360,137	553,257
1985	454,832	364,957	819,789	364,991	448,781	1,551,204	2,364,976	194,896	363,469	558,365
1986	816,989	693,703	1,510,692	365,923	449,688	1,553,723	2,369,334	195,946	365,536	561,482
1987	1,357,652	1,561,964	2,919,616	367,572	451,313	1,558,255	2,377,140	200,383	374,924	575,307
1988	1,768,621	2,212,051	3,980,672	370,241	453,905	1,565,683	2,389,829	222,676	423,886	646,562
1989	1,889,413	2,440,408	4,329,821	376,211	459,678	1,581,211	2,417,100	247,823	478,797	726,620
1990	1,944,730	2,522,750	4,467,480	382,254	465,429	1,595,798	2,443,481	269,181	524,852	794,033
1991	1,967,399	2,568,480	4,535,879	392,574	475,874	1,625,266	2,493,714	296,771	583,881	880,652
1992	1,973,001	2,573,606	4,546,607	401,507	484,301	1,646,539	2,532,347	336,378	667,806	1,004,184
1993	1,979,355	2,578,238	4,557,593	411,496	493,665	1,669,971	2,575,132	489,775	980,754	1,470,529
1994	2,005,805	2,599,625	4,605,430	437,318	517,951	1,731,425	2,686,694	1,287,513	2,612,038	3,899,551
1995	2,022,173	2,635,714	4,657,887	471,752	549,814	1,809,276	2,830,842	3,432,011	6,784,418	10,216,429
1996	2,022,676	2,636,632	4,659,308	474,334	552,225	1,815,198	2,841,757	5,616,112	11,691,539	17,307,651
1997	2,022,856	2,636,782	4,659,638	474,644	552,557	1,816,166	2,843,367	6,468,405	13,855,038	20,323,443
1998	2,022,929	2,636,821	4,659,750	474,738	552,660	1,816,473	2,843,871	6,492,983	13,907,450	20,400,433
1999	2,022,929	2,636,821	4,659,750	474,755	552,675	1,816,510	2,843,940	6,492,992	13,907,467	20,400,459
2000	2,022,929	2,636,821	4,659,750	474,772	552,691	1,816,548	2,844,011	6,493,002	13,907,484	20,400,486
2001	2,022,929	2,636,821	4,659,750	474,772	552,691	1,816,548	2,844,011	6,493,002	13,907,484	20,400,486
2002	2,022,929	2,636,821	4,659,750	474,772	552,691	1,816,548	2,844,011	6,493,002	13,907,484	20,400,486
2003	2,022,929	2,636,821	4,659,750	474,772	552,691	1,816,548	2,844,011	6,493,002	13,907,484	20,400,486
2004	2,022,929	2,636,821	4,659,750	474,772	552,691	1,816,548	2,844,011	6,493,002	13,907,484	20,400,486
2005	2,022,929	2,636,821	4,659,750	474,772	552,691	1,816,548	2,844,011	6,493,002	13,907,484	20,400,486
2006	2,022,929	2,636,821	4,659,750	474,772	552,691	1,816,548	2,844,011	6,493,002	13,907,484	20,400,486
2007	2,022,929	2,636,821	4,659,750	474,772	552,691	1,816,548	2,844,011	6,493,002	13,907,484	20,400,486
2008	2,022,929	2,636,821	4,659,750	474,772	552,691	1,816,548	2,844,011	6,493,002	13,907,484	20,400,486
2009	2,022,929	2,636,821	4,659,750	474,772	552,691	1,816,548	2,844,011	6,493,002	13,907,484	20,400,486
2010	2,022,929	2,636,821	4,659,750	474,772	552,691	1,816,548	2,844,011	6,493,002	13,907,484	20,400,486
2011	2,022,929	2,636,821	4,659,750	474,772	552,691	1,816,548	2,844,011	6,493,002	13,907,484	20,400,486
2012	2,022,929	2,636,821	4,659,750	474,772	552,691	1,816,548	2,844,011	6,493,002	13,907,484	20,400,486
2013	2,022,929	2,636,821	4,659,750	363,624	446,819	1,449,931	2,260,374	6,493,002	13,907,484	20,400,486
2014	2,022,929	2,636,821	4,659,750	328,288	381,450	1,284,434	1,994,172	6,484,078	13,889,817	20,373,895
2015	2,022,929	2,636,821	4,659,750	290,280	292,280	914,455	1,497,015	6,478,293	13,878,977	20,357,270
2016	2,004,829	2,636,821	4,641,650	271,179	261,362	740,253	1,272,794	6,468,979	13,861,586	20,330,565
2017	1,981,278	2,636,821	4,618,099	240,018	231,128	625,705	1,096,851	6,450,625	13,827,555	20,278,180
2018	1,901,204	2,636,821	4,538,025	198,395	190,111	503,164	891,670	6,436,283	13,800,914	20,237,197
2019	1,857,348	2,636,821	4,494,169	160,174	154,598	401,232	716,004	6,432,510	13,793,824	20,226,334
2020	1,853,552	2,636,821	4,490,373	146,260	139,636	362,205	648,101	6,430,492	13,790,015	20,220,507
2021	1,851,340	2,636,821	4,488,161	143,251	136,513	355,289	635,053	6,429,153	13,787,463	20,216,616
2022	1,849,975	2,636,821	4,486,796	142,634	135,584	350,999	629,217	6,428,119	13,785,440	20,213,559
2023	1,848,972	2,605,382	4,454,354	142,007	134,932	347,753	624,692	6,427,597	13,784,428	20,212,025
2024	1,846,089	2,603,807	4,449,896	141,472	134,313	345,744	621,529	6,427,178	13,783,604	20,210,782
2025	1,837,629	2,600,448	4,438,077	140,669	133,068	342,014	615,751	6,426,671	13,782,627	20,209,298
2026	1,832,944	2,595,895	4,428,839	139,816	132,262	339,902	611,980	6,319,231	13,584,212	19,903,443
2027	1,829,997	2,591,628	4,421,625	138,081	130,493	334,310	602,884	6,316,446	13,578,625	19,895,071
2028	1,826,723	2,587,539	4,414,262	135,723	128,192	327,505	591,420	6,309,813	13,566,226	19,876,039
2029	1,823,187	2,583,370	4,406,557	132,088	124,824	318,582	575,494	6,307,608	13,562,042	19,869,650
2030	1,813,428	2,568,936	4,382,364	129,768	122,633	312,936	565,337	6,304,990	13,557,078	19,862,068
2031	1,799,937	2,549,242	4,349,179	122,905	116,289	297,395	536,589	6,295,485	13,539,450	19,834,935
2032	1,788,325	2,529,698	4,318,023	124,628	117,813	300,747	543,188	6,299,147	13,546,092	19,845,239
2033	1,760,423	2,485,280	4,245,703	124,466	117,623	300,050	542,139	6,301,438	13,550,277	19,851,715
2034	1,696,420	2,412,167	4,108,587	117,584	111,100	283,293	511,977	6,299,882	13,547,347	19,847,229
2035	1,568,096	2,271,864	3,839,960	109,781	103,910	265,344	479,035	6,298,105	13,544,016	19,842,121
TOTAL	98,641,964	127,859,158	226,501,122	22,666,945	26,908,613	88,997,222	138,572,780	265,797,015	567,827,821	833,624,836

a) Unadjusted for prior overpayments or underpayments of charges.
b) Determined at the current Project Interest Rate of 4.621 percent per annum.

TABLE B-15

Capital Cost Component of Transportation Charge for Each Contractor (Continued)

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA									
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Kern County Water Agency			County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
				Municipal and Industrial	Municipal and (c Industrial	Agri-cultural				
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]
1961	0	0	0	0	0	0	0	0	0	0
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	2,729	0	0	0	0	0	0	2,729
1965	0	0	6,040	64,404	9,302	0	0	0	0	79,746
1966	0	0	12,060	120,474	17,104	0	0	0	0	149,638
1967	0	0	26,303	233,676	34,411	0	0	0	0	294,390
1968	75,318	2,454	49,035	336,364	49,053	416,323	8,520	4,762	64,355	1,006,184
1969	75,450	7,362	57,518	392,696	52,628	854,982	9,028	5,176	243,500	1,698,340
1970	82,692	7,362	59,328	424,150	54,017	1,039,915	9,278	5,383	180,195	1,862,320
1971	94,279	7,362	60,434	445,305	54,809	1,381,193	9,420	5,797	191,753	2,250,352
1972	105,340	7,362	61,051	455,027	55,172	2,068,216	9,487	11,110	591,545	3,364,310
1973	115,874	7,362	61,477	459,256	55,346	2,385,372	9,518	6,419	228,801	3,329,425
1974	175,865	7,362	61,998	461,295	55,446	2,671,259	9,535	7,187	379,771	3,829,718
1975	213,604	7,362	62,561	463,612	55,588	3,199,436	9,560	7,404	453,157	4,472,284
1976	162,861	7,362	62,829	465,473	55,777	3,448,962	9,595	8,363	324,178	4,545,400
1977	160,117	7,362	63,472	468,181	56,064	3,779,073	9,639	7,661	309,957	4,861,526
1978	171,178	7,362	65,911	470,042	56,255	4,200,756	9,661	8,075	332,547	5,321,787
1979	203,012	7,362	66,226	472,808	56,591	4,612,613	9,723	8,282	374,265	5,810,882
1980	215,947	7,362	66,515	475,557	56,928	5,033,403	9,791	11,802	376,676	6,253,981
1981	215,947	7,362	68,105	491,979	58,873	5,508,691	10,183	8,903	399,266	6,769,309
1982	215,947	7,362	68,127	489,838	58,833	5,947,349	10,172	9,317	421,331	7,228,276
1983	225,955	7,362	68,416	493,856	59,472	6,446,759	10,301	9,524	50,160	7,371,805
1984	237,542	7,362	69,025	499,617	60,205	6,763,021	10,448	9,938	328,927	7,986,085
1985	248,603	7,362	69,762	507,625	61,381	7,201,680	10,684	10,145	239,292	8,356,534
1986	259,664	7,362	70,052	510,173	61,752	7,636,764	10,758	10,560	510,641	9,077,726
1987	270,724	7,362	70,575	514,037	62,312	8,079,890	10,867	10,767	532,706	9,559,240
1988	281,785	7,362	71,059	518,110	62,916	8,493,533	10,984	11,181	554,770	10,011,700
1989	292,846	7,362	72,022	522,664	63,689	8,791,928	11,164	11,595	577,360	10,350,630
1990	303,906	7,362	73,587	541,788	66,041	9,101,937	11,613	11,802	622,540	10,740,576
1991	303,906	7,362	76,257	570,975	70,669	9,101,937	12,436	11,802	622,540	10,777,884
1992	303,906	7,362	79,330	600,925	75,440	9,101,937	13,399	11,802	622,540	10,816,641
1993	303,906	7,362	81,450	618,073	78,142	9,101,937	13,939	11,802	622,540	10,839,151
1994	303,906	7,362	84,862	633,751	80,371	9,101,937	14,352	11,802	622,540	10,860,883
1995	303,906	7,362	87,311	649,080	82,688	9,101,937	14,801	11,802	622,540	10,881,427
1996	303,906	7,362	87,526	651,176	83,023	9,101,937	14,869	11,802	622,540	10,884,141
1997	303,906	7,362	87,592	651,717	83,107	9,101,937	14,885	11,802	622,540	10,884,848
1998	303,906	7,362	87,605	651,781	83,116	9,101,937	14,887	11,802	622,540	10,884,936
1999	303,906	7,362	87,609	651,801	83,119	9,101,937	14,887	11,802	622,540	10,884,963
2000	303,906	7,362	87,614	651,821	83,121	9,101,937	14,888	11,802	622,540	10,884,991
2001	303,906	7,362	87,614	651,821	83,121	9,101,937	14,888	11,802	622,540	10,884,991
2002	303,906	7,362	87,614	651,821	83,121	9,101,937	14,888	11,802	622,540	10,884,991
2003	303,906	7,362	87,614	651,821	83,121	9,101,937	14,888	11,802	622,540	10,884,991
2004	303,906	7,362	87,614	651,821	83,121	9,101,937	14,888	11,802	622,540	10,884,991
2005	303,906	7,362	87,614	651,821	83,121	9,101,937	14,888	11,802	622,540	10,884,991
2006	303,906	7,362	87,614	651,821	83,121	9,101,937	14,888	11,802	622,540	10,884,991
2007	303,906	7,362	87,614	651,821	83,121	9,101,937	14,888	11,802	622,540	10,884,991
2008	303,906	7,362	87,614	651,821	83,121	9,101,937	14,888	11,802	622,540	10,884,991
2009	303,906	7,362	87,614	651,821	83,121	9,101,937	14,888	11,802	622,540	10,884,991
2010	303,906	7,362	87,614	651,821	83,121	9,101,937	14,888	11,802	622,540	10,884,991
2011	303,906	7,362	87,614	651,821	83,121	9,101,937	14,888	11,802	622,540	10,884,991
2012	303,906	7,362	87,614	651,821	83,121	9,101,937	14,888	11,802	622,540	10,884,991
2013	303,906	7,362	87,614	651,821	83,121	9,101,937	14,888	11,802	622,540	10,884,991
2014	303,906	7,362	84,885	651,821	83,121	9,101,937	14,888	11,802	622,540	10,882,262
2015	303,906	7,362	81,574	587,417	73,820	9,101,937	14,888	11,802	622,540	10,805,246
2016	303,906	7,362	75,554	531,348	66,017	9,101,937	14,888	11,802	622,540	10,735,354
2017	303,906	7,362	61,311	418,145	48,711	9,101,937	14,888	11,802	622,540	10,590,602
2018	303,906	7,362	38,579	315,457	34,069	9,101,937	6,368	11,802	622,540	10,442,020
2019	303,906	7,362	30,096	259,126	30,493	9,101,937	5,860	11,802	622,540	10,373,122
2020	303,906	7,362	28,286	227,672	29,104	9,101,937	5,610	11,802	622,540	10,338,219
2021	303,906	7,362	27,180	206,516	28,313	9,101,937	5,468	11,802	622,540	10,315,024
2022	303,906	7,362	26,563	196,794	27,950	9,101,937	5,401	11,802	622,540	10,304,255
2023	303,906	7,362	26,137	192,566	27,776	9,101,937	5,370	11,802	622,540	10,299,396
2024	303,906	7,362	25,616	190,526	27,675	9,101,937	5,353	11,802	622,540	10,296,717
2025	303,906	7,362	25,053	188,209	27,534	9,101,937	5,328	11,802	622,540	10,293,671
2026	303,906	7,362	24,785	186,348	27,344	9,101,937	5,293	11,802	622,540	10,291,317
2027	303,906	7,362	24,142	183,640	27,058	9,101,937	5,249	11,802	622,540	10,287,636
2028	303,906	7,362	21,703	181,779	26,866	9,101,937	5,227	11,802	622,540	10,283,122
2029	303,906	7,362	21,388	179,013	26,531	9,101,937	5,165	11,802	622,540	10,279,644
2030	303,906	7,362	21,099	176,264	26,193	9,101,937	5,097	11,802	622,540	10,276,200
2031	303,906	7,362	19,509	159,842	24,248	9,101,937	4,705	11,802	622,540	10,255,851
2032	303,906	7,362	19,487	161,983	24,288	9,101,937	4,716	11,802	622,540	10,258,021
2033	303,906	7,362	19,198	157,965	23,649	9,101,937	4,587	11,802	622,540	10,252,946
2034	303,906	7,362	18,589	152,205	22,916	9,101,937	4,440	11,802	622,540	10,245,697
2035	303,906	7,362	17,852	144,196	21,740	9,101,937	4,204	11,802	622,540	10,235,539
TOTAL	18,080,226	495,708	4,270,941	31,751,612	4,028,750	518,650,220	719,809	732,243	36,301,993	615,031,502

c) Charges under Amendment No. 18 of the water supply contract with Kern County Water Agency.

TABLE B-15

Capital Cost Component of Transportation Charge for Each Contractor (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley–East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley 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]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,386	0	0	0	0	0	0	0	51,831	0
1964	62,984	27,499	14,455	4,378	37,231	1,145	28,492	8,221	82,967	35,056
1965	118,817	53,103	25,141	7,207	40,844	2,086	50,410	15,250	135,316	35,409
1966	216,165	101,445	44,811	12,501	73,283	3,761	90,562	27,728	232,920	61,574
1967	418,215	211,185	86,271	23,514	141,660	7,298	175,487	54,119	434,117	115,778
1968	672,113	420,390	141,240	38,619	232,315	11,803	286,822	87,447	731,133	194,869
1969	974,373	624,412	210,154	57,402	345,967	17,280	426,512	127,443	1,138,408	303,179
1970	1,271,441	781,521	296,389	84,944	488,189	23,468	592,656	171,597	1,694,421	444,484
1971	1,528,217	948,749	401,018	120,420	660,748	28,896	790,220	209,187	2,398,268	620,861
1972	1,659,719	1,058,285	455,686	137,694	750,907	31,362	896,708	226,893	2,813,411	722,242
1973	1,709,382	1,072,736	472,612	142,392	778,822	32,338	930,816	233,748	2,950,710	757,851
1974	1,727,464	1,119,383	480,702	146,587	792,166	32,660	942,964	236,100	3,040,532	778,441
1975	1,750,496	1,133,712	493,925	150,368	813,973	33,075	969,414	239,118	3,123,050	800,172
1976	1,763,426	1,146,288	503,804	153,063	830,266	33,328	989,419	240,852	3,201,296	820,983
1977	1,775,545	1,159,310	510,781	154,962	841,772	33,545	1,003,593	242,434	3,250,390	834,039
1978	1,785,726	1,178,315	515,443	156,282	849,461	33,736	1,012,960	243,803	3,280,565	841,974
1979	1,801,139	1,202,303	519,452	157,416	856,072	34,003	1,021,012	245,775	3,302,451	847,676
1980	1,819,388	1,250,209	523,626	158,528	862,955	34,307	1,029,528	248,041	3,323,041	853,207
1981	1,914,666	1,340,884	545,245	164,301	898,610	35,962	1,073,614	260,331	3,427,158	881,170
1982	1,906,729	1,372,115	542,871	163,856	894,694	35,833	1,068,441	259,352	3,419,944	878,982
1983	1,985,582	1,415,689	557,932	167,831	919,532	37,161	1,099,376	269,302	3,491,413	898,512
1984	2,090,684	1,442,769	578,062	173,710	952,731	38,928	1,140,246	282,545	3,599,382	928,056
1985	2,168,286	1,457,916	593,267	178,058	977,807	40,322	1,171,220	292,182	3,678,014	949,585
1986	2,212,990	1,465,986	603,627	181,066	994,894	40,949	1,192,258	297,451	3,731,422	964,184
1987	2,250,351	1,471,468	608,735	182,472	1,003,317	41,261	1,202,690	301,308	3,757,326	971,219
1988	2,266,601	1,477,590	605,007	181,634	997,170	41,129	1,194,848	301,824	3,742,867	967,154
1989	2,278,747	1,486,985	618,703	185,414	1,019,756	41,170	1,222,747	302,635	3,811,119	985,663
1990	2,345,757	1,510,441	644,393	192,719	1,062,125	42,809	1,274,876	312,759	3,922,789	1,016,004
1991	2,379,404	1,529,436	655,288	196,186	1,080,092	43,207	1,296,614	316,274	3,971,968	1,029,259
1992	2,418,689	1,548,736	677,887	203,368	1,117,362	43,743	1,342,011	320,495	4,089,799	1,061,477
1993	2,455,501	1,569,912	697,927	214,096	1,150,412	44,381	1,378,257	325,201	4,279,748	1,113,482
1994	2,494,573	1,600,227	710,835	222,568	1,171,700	45,069	1,399,972	330,241	4,450,568	1,159,740
1995	2,519,715	1,625,382	718,200	227,033	1,183,847	45,508	1,412,726	333,473	4,629,501	1,207,890
1996	2,522,172	1,626,527	718,835	227,536	1,184,893	45,550	1,413,729	333,785	4,715,910	1,231,055
1997	2,522,909	1,626,902	718,999	227,580	1,185,165	45,563	1,414,068	333,880	4,716,733	1,231,277
1998	2,523,075	1,627,001	719,049	227,594	1,185,247	45,566	1,414,168	333,902	4,717,000	1,231,348
1999	2,523,137	1,627,036	719,067	227,599	1,185,276	45,567	1,414,204	333,910	4,717,104	1,231,375
2000	2,523,200	1,627,071	719,085	227,604	1,185,306	45,568	1,414,240	333,918	4,717,210	1,231,403
2001	2,523,200	1,627,071	719,085	227,604	1,185,306	45,568	1,414,240	333,918	4,717,210	1,231,403
2002	2,523,200	1,627,071	719,085	227,604	1,185,306	45,568	1,414,240	333,918	4,717,210	1,231,403
2003	2,523,200	1,627,071	719,085	227,604	1,185,306	45,568	1,414,240	333,918	4,717,210	1,231,403
2004	2,523,200	1,627,071	719,085	227,604	1,185,306	45,568	1,414,240	333,918	4,717,210	1,231,403
2005	2,523,200	1,627,071	719,085	227,604	1,185,306	45,568	1,414,240	333,918	4,717,210	1,231,403
2006	2,523,200	1,627,071	719,085	227,604	1,185,306	45,568	1,414,240	333,918	4,717,210	1,231,403
2007	2,523,200	1,627,071	719,085	227,604	1,185,306	45,568	1,414,240	333,918	4,717,210	1,231,403
2008	2,523,200	1,627,071	719,085	227,604	1,185,306	45,568	1,414,240	333,918	4,717,210	1,231,403
2009	2,523,200	1,627,071	719,085	227,604	1,185,306	45,568	1,414,240	333,918	4,717,210	1,231,403
2010	2,523,200	1,627,071	719,085	227,604	1,185,306	45,568	1,414,240	333,918	4,717,210	1,231,403
2011	2,523,200	1,627,071	719,085	227,604	1,185,306	45,568	1,414,240	333,918	4,717,210	1,231,403
2012	2,523,200	1,627,071	719,085	227,604	1,185,306	45,568	1,414,240	333,918	4,717,210	1,231,403
2013	2,489,814	1,627,071	719,085	227,604	1,171,914	45,568	1,414,240	333,918	4,665,379	1,218,276
2014	2,460,216	1,599,572	704,630	223,225	1,162,086	44,423	1,385,747	325,697	4,634,243	1,210,081
2015	2,404,382	1,573,967	693,944	220,396	1,144,462	43,482	1,363,829	318,669	4,581,894	1,195,994
2016	2,307,034	1,525,626	674,274	215,103	1,112,023	41,807	1,323,678	306,190	4,484,290	1,169,829
2017	2,104,984	1,415,885	632,813	204,090	1,043,646	38,271	1,238,753	279,799	4,283,093	1,115,625
2018	1,851,087	1,206,681	577,845	188,985	952,990	33,765	1,127,418	246,471	3,986,077	1,036,534
2019	1,548,827	1,002,659	508,931	170,202	839,338	28,289	987,728	206,476	3,578,802	928,224
2020	1,251,759	845,550	422,696	142,659	697,117	22,100	821,584	162,321	3,022,789	786,920
2021	994,983	678,322	318,067	107,184	524,558	16,672	624,020	124,732	2,318,942	610,542
2022	863,481	568,786	263,399	89,909	434,398	14,206	517,532	107,025	1,903,799	509,161
2023	813,817	554,335	246,473	85,212	406,484	13,230	483,424	100,170	1,766,500	473,552
2024	795,736	507,688	238,383	81,017	393,140	12,908	471,276	97,818	1,676,678	452,962
2025	772,703	493,359	225,160	77,236	371,332	12,493	444,825	94,801	1,594,160	431,232
2026	759,773	480,783	215,281	74,541	355,040	12,240	424,820	93,066	1,515,914	410,420
2027	747,654	467,761	208,304	72,641	343,534	12,024	410,647	91,485	1,466,820	397,364
2028	737,474	448,756	203,642	71,322	335,845	11,832	401,280	90,116	1,436,645	389,429
2029	722,060	424,768	199,633	70,188	329,234	11,565	393,228	88,143	1,414,759	383,727
2030	703,812	376,862	195,459	69,076	322,350	11,261	384,712	85,878	1,394,169	378,196
2031	608,534	286,186	173,840	63,302	286,695	9,606	340,626	73,587	1,290,052	350,233
2032	616,471	254,955	176,214	63,748	290,612	9,735	345,799	74,567	1,297,266	352,421
2033	537,618	211,382	161,153	59,772	265,773	8,407	314,864	64,616	1,225,797	332,892
2034	432,515	184,302	141,023	53,893	232,575	6,640	273,993	51,374	1,117,829	303,347
2035	354,914	169,154	125,818	49,546	207,499	5,246	243,020	41,736	1,039,196	281,818
TOTAL	124,548,812	80,368,180	35,303,611	11,090,601	58,192,884	2,251,923	69,485,803	16,498,195	229,073,415	59,732,245

TABLE B-15

Capital Cost Component of Transportation Charge for Each Contractor (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				South Bay 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		
	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]	[40]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	692,178	0	777,395	0	0	0	0	43,204	1,398,298
1964	21,778	1,262,872	9,395	1,596,473	0	0	0	0	70,167	2,523,061
1965	21,906	2,184,551	17,799	2,707,839	0	0	405	405	100,270	4,250,285
1966	38,033	3,907,132	33,486	4,843,401	0	0	565	565	117,243	6,739,280
1967	71,409	7,707,275	68,275	9,514,603	0	0	563	563	157,228	11,843,017
1968	120,306	14,370,312	133,532	17,440,901	0	0	565	565	232,706	20,877,617
1969	187,388	21,895,715	202,953	26,511,186	0	0	3,197	3,197	296,694	30,932,489
1970	275,492	29,043,291	258,310	35,426,203	0	0	15,147	15,147	317,009	40,119,685
1971	385,698	37,307,488	316,860	45,716,630	0	0	15,975	15,975	320,786	50,821,571
1972	448,838	44,139,086	354,554	53,695,385	0	0	17,363	17,363	321,421	59,973,156
1973	471,006	46,380,435	357,966	56,290,814	0	0	17,363	17,363	322,094	62,572,873
1974	484,103	48,407,058	372,762	58,560,922	0	0	17,364	17,364	322,507	65,352,552
1975	497,590	49,371,141	377,168	59,753,202	0	0	17,367	17,367	323,964	67,207,937
1976	510,541	50,224,837	381,453	60,799,556	0	0	17,368	17,368	324,384	68,646,694
1977	518,645	50,915,911	385,770	61,626,697	0	0	17,370	17,370	325,225	69,815,485
1978	523,569	51,517,791	391,444	62,331,069	0	0	17,372	17,372	326,306	71,019,061
1979	527,097	52,322,956	400,366	63,237,718	0	0	17,374	17,374	327,779	72,446,301
1980	530,508	53,732,476	417,884	64,783,698	0	0	17,375	17,375	329,139	74,478,671
1981	547,743	56,767,783	450,617	68,308,084	0	0	17,376	17,376	332,158	78,610,470
1982	546,419	57,569,168	462,081	69,120,485	0	0	17,378	17,378	331,813	79,895,749
1983	558,429	59,128,094	478,084	71,006,937	0	0	17,379	17,379	332,518	81,993,327
1984	576,602	60,417,082	487,831	72,708,618	0	0	17,380	17,380	336,113	84,484,650
1985	589,837	61,249,578	493,104	73,839,176	0	0	17,381	17,381	340,359	86,296,580
1986	598,812	61,752,181	495,963	74,531,783	0	0	17,382	17,382	341,158	88,409,557
1987	603,141	62,034,495	497,781	74,925,564	0	0	17,384	17,384	341,994	90,716,245
1988	600,651	62,115,814	499,867	74,992,156	0	0	17,386	17,386	343,540	92,381,845
1989	612,047	62,714,628	502,952	75,782,566	0	0	17,388	17,388	346,102	93,970,227
1990	630,648	63,913,960	511,187	77,380,467	0	0	17,392	17,392	348,519	96,191,948
1991	638,760	64,650,813	517,523	78,304,824	0	0	17,396	17,396	353,027	97,363,376
1992	658,513	65,773,191	523,868	79,779,139	0	0	17,401	17,401	356,495	99,052,814
1993	690,474	67,391,814	530,632	81,841,837	0	0	17,401	17,401	360,416	101,662,059
1994	719,022	69,079,047	540,206	83,923,768	0	0	17,401	17,401	370,312	106,364,039
1995	749,052	70,670,355	548,549	85,871,231	0	0	17,401	17,401	382,556	114,857,773
1996	763,619	71,153,308	548,922	86,485,841	0	0	17,401	17,401	383,517	122,579,616
1997	763,755	71,166,883	549,040	86,502,754	0	0	17,401	17,401	383,705	125,615,156
1998	763,799	71,170,837	549,071	86,507,657	0	0	17,401	17,401	383,775	125,697,823
1999	763,816	71,172,234	549,082	86,509,407	0	0	17,401	17,401	383,785	125,699,705
2000	763,833	71,173,645	549,092	86,511,175	0	0	17,401	17,401	383,796	125,701,610
2001	763,833	71,173,645	549,092	86,511,175	0	0	17,401	17,401	383,796	125,701,610
2002	763,833	71,173,645	549,092	86,511,175	0	0	17,401	17,401	383,796	125,701,610
2003	763,833	71,173,645	549,092	86,511,175	0	0	17,401	17,401	383,796	125,701,610
2004	763,833	71,173,645	549,092	86,511,175	0	0	17,401	17,401	383,796	125,701,610
2005	763,833	71,173,645	549,092	86,511,175	0	0	17,401	17,401	383,796	125,701,610
2006	763,833	71,173,645	549,092	86,511,175	0	0	17,401	17,401	383,796	125,701,610
2007	763,833	71,173,645	549,092	86,511,175	0	0	17,401	17,401	383,796	125,701,610
2008	763,833	71,173,645	549,092	86,511,175	0	0	17,401	17,401	383,796	125,701,610
2009	763,833	71,173,645	549,092	86,511,175	0	0	17,401	17,401	383,796	125,701,610
2010	763,833	71,173,645	549,092	86,511,175	0	0	17,401	17,401	383,796	125,701,610
2011	763,833	71,173,645	549,092	86,511,175	0	0	17,401	17,401	383,796	125,701,610
2012	763,833	71,173,645	549,092	86,511,175	0	0	17,401	17,401	383,796	125,701,610
2013	755,665	70,481,467	549,092	85,699,093	0	0	17,401	17,401	340,592	124,262,687
2014	750,601	69,910,773	539,697	84,950,991	0	0	17,401	17,401	313,629	123,192,100
2015	741,927	68,989,094	531,294	83,803,334	0	0	16,996	16,996	283,526	121,423,137
2016	725,801	67,266,513	515,607	81,667,775	0	0	16,835	16,835	266,553	118,931,526
2017	692,425	63,466,370	480,817	76,996,571	0	0	16,838	16,838	226,568	113,823,709
2018	643,528	56,803,333	415,560	69,070,274	0	0	16,835	16,835	151,089	105,347,110
2019	576,446	49,277,930	346,139	59,999,991	0	0	14,204	14,204	87,102	95,910,926
2020	488,342	42,130,354	290,782	51,084,973	0	0	2,254	2,254	66,787	86,851,214
2021	378,135	33,866,157	232,233	40,794,547	0	0	1,426	1,426	63,010	76,513,837
2022	314,995	27,034,559	194,539	32,815,789	0	0	38	38	62,375	68,512,029
2023	292,827	24,793,210	191,127	30,220,361	0	0	38	38	61,702	65,872,568
2024	279,730	22,766,587	176,330	27,950,253	0	0	36	36	61,289	63,590,502
2025	266,243	21,802,504	171,924	26,757,972	0	0	34	34	59,832	62,374,635
2026	253,293	20,948,808	167,640	25,711,619	0	0	33	33	59,412	61,006,643
2027	245,188	20,257,734	163,322	24,884,478	0	0	31	31	58,571	60,150,296
2028	240,264	19,655,854	157,648	24,180,107	0	0	29	29	57,490	59,402,469
2029	236,736	18,850,689	148,726	23,273,456	0	0	27	27	56,017	58,460,845
2030	233,325	17,441,169	131,209	21,727,478	0	0	26	26	54,657	56,868,130
2031	216,091	14,405,862	98,476	18,203,090	0	0	25	25	51,638	53,231,307
2032	217,414	13,604,477	87,011	17,390,690	0	0	23	23	51,983	52,407,167
2033	205,404	12,045,551	71,008	15,504,237	0	0	22	22	51,278	50,448,040
2034	187,231	10,756,563	61,272	13,802,557	0	0	21	21	47,683	48,563,751
2035	173,996	9,924,067	55,989	12,671,999	0	0	20	20	43,437	47,112,111
TOTAL	37,054,482	3,497,010,780	27,131,965	4,247,742,896	0	0	869,969	869,969	18,895,556	6,081,238,661

TABLE B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(in dollars)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA	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]
1961	0	0	0	0	0	0	0	0	0	0
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	123,665	335,225	586,786	0	0	0
1968	130	0	130	126,058	120,563	333,506	580,127	11,801	21,769	33,570
1969	80,875	0	80,875	145,410	138,051	372,584	656,045	63,112	116,434	179,546
1970	94,872	0	94,872	128,993	120,246	320,663	569,902	74,187	136,867	211,054
1971	45,579	0	45,579	113,071	108,346	296,004	517,421	74,011	136,541	210,552
1972	37,895	0	37,895	122,407	117,483	334,366	574,256	79,195	146,107	225,302
1973	32,993	0	32,993	122,738	116,785	325,727	565,250	75,714	139,685	215,399
1974	46,498	0	46,498	154,434	146,929	403,081	704,444	76,531	141,190	217,721
1975	37,707	0	37,707	189,176	182,087	513,823	885,086	92,605	170,845	263,450
1976	60,786	0	60,786	203,063	193,436	524,814	921,313	94,933	175,142	270,075
1977	78,400	0	78,400	179,911	169,103	500,192	849,206	102,969	189,966	292,935
1978	56,318	0	56,318	239,301	228,854	647,829	1,115,984	104,061	191,982	296,043
1979	73,852	0	73,852	236,986	232,103	666,744	1,135,833	100,749	185,873	286,622
1980	81,770	0	81,770	389,583	372,191	1,010,846	1,772,620	124,630	229,928	354,558
1981	100,786	0	100,786	316,994	301,893	833,364	1,452,251	138,102	254,779	392,881
1982	194,251	0	194,251	394,383	376,860	1,119,081	1,890,324	142,150	262,250	404,400
1983	80,624	0	80,624	441,986	432,572	1,280,032	2,154,590	170,520	314,591	485,111
1984	106,099	0	106,099	593,687	567,956	1,822,928	2,984,571	201,670	372,054	573,724
1985	215,127	0	215,127	682,934	662,771	1,857,542	3,203,247	248,648	458,725	707,373
1986	203,337	0	203,337	617,522	586,965	1,793,339	2,997,826	235,002	433,550	668,552
1987	294,766	0	294,766	689,917	654,559	2,005,816	3,350,292	232,508	467,535	700,043
1988	316,165	148	316,313	672,696	651,257	1,902,369	3,226,322	256,147	556,081	812,228
1989	462,194	787,448	1,249,642	707,581	701,426	1,877,518	3,286,525	241,455	662,316	903,771
1990	653,664	656,603	1,310,267	773,851	770,468	2,111,474	3,655,793	309,319	675,319	984,638
1991	741,074	847,640	1,588,714	823,221	818,188	2,234,434	3,875,843	324,357	714,996	1,039,353
1992	583,398	914,633	1,498,031	1,157,246	1,131,479	3,085,937	5,374,662	441,757	814,986	1,256,743
1993	616,341	964,798	1,581,139	1,134,324	1,109,106	3,053,266	5,296,696	493,151	909,805	1,402,956
1994	562,707	986,372	1,549,079	1,067,504	1,045,344	2,925,632	5,038,480	464,674	857,267	1,321,941
1995	566,069	985,249	1,551,318	1,039,698	1,013,914	2,818,226	4,871,838	448,897	828,157	1,277,054
1996	558,828	968,493	1,527,321	1,006,568	979,908	2,726,544	4,713,020	3,212,358	7,090,075	10,302,433
1997	583,108	988,189	1,571,297	1,033,062	1,005,177	2,791,465	4,829,704	2,079,386	4,363,655	6,443,041
1998	569,000	993,432	1,562,432	1,029,184	1,000,969	2,778,913	4,809,066	2,924,480	5,944,158	8,868,638
1999	561,245	972,987	1,534,232	1,010,615	983,833	2,737,470	4,731,918	3,117,126	6,823,274	9,940,400
2000	562,239	975,237	1,537,476	1,011,486	984,641	2,739,454	4,735,581	3,118,701	6,826,666	9,945,367
2001	562,259	975,279	1,537,538	1,011,502	984,655	2,739,490	4,735,647	3,118,730	6,826,727	9,945,457
2002	562,375	975,542	1,537,917	1,011,603	984,748	2,739,722	4,736,073	3,118,912	6,827,124	9,946,036
2003	562,472	975,762	1,538,234	1,011,687	984,828	2,739,918	4,736,433	3,119,065	6,827,455	9,946,520
2004	562,658	976,182	1,538,840	1,011,849	984,978	2,740,285	4,737,112	3,119,359	6,828,084	9,947,443
2005	563,968	979,140	1,543,108	1,012,994	986,037	2,742,891	4,741,922	3,121,424	6,832,530	9,953,954
2006	563,977	979,161	1,543,138	1,013,001	986,043	2,742,907	4,741,951	3,121,437	6,832,560	9,953,997
2007	564,066	979,366	1,543,432	1,013,079	986,115	2,743,088	4,742,282	3,121,581	6,832,870	9,954,451
2008	564,172	979,605	1,543,777	1,013,171	986,203	2,743,295	4,742,669	3,121,746	6,833,226	9,954,972
2009	564,254	979,789	1,544,043	1,013,243	986,267	2,743,459	4,742,969	3,121,875	6,833,505	9,955,380
2010	564,489	980,319	1,544,808	1,013,447	986,457	2,743,925	4,743,829	3,122,245	6,834,298	9,956,543
2011	565,159	981,836	1,546,995	1,014,031	987,001	2,745,258	4,746,290	3,123,301	6,836,577	9,959,878
2012	565,215	981,959	1,547,174	1,014,080	987,045	2,745,367	4,746,492	3,123,387	6,836,765	9,960,152
2013	565,340	982,241	1,547,581	1,014,189	987,145	2,745,614	4,746,948	3,123,585	6,837,190	9,960,775
2014	565,433	982,451	1,547,884	1,014,270	987,221	2,745,801	4,747,292	3,123,734	6,837,507	9,961,241
2015	565,441	982,469	1,547,910	1,014,275	987,225	2,745,813	4,747,313	3,123,741	6,837,525	9,961,266
2016	565,451	982,488	1,547,939	1,014,282	987,232	2,745,832	4,747,346	3,123,754	6,837,556	9,961,310
2017	565,846	983,380	1,549,226	1,014,628	987,552	2,746,617	4,748,797	3,124,378	6,838,900	9,963,278
2018	565,844	983,375	1,549,219	1,014,625	987,550	2,746,615	4,748,790	3,124,376	6,838,892	9,963,268
2019	565,861	983,408	1,549,269	1,014,638	987,561	2,746,640	4,748,839	3,124,397	6,838,936	9,963,333
2020	565,702	983,049	1,548,751	1,014,500	987,433	2,746,325	4,748,258	3,124,148	6,838,399	9,962,547
2021	565,703	983,051	1,548,754	1,014,500	987,433	2,746,324	4,748,257	3,124,148	6,838,400	9,962,548
2022	565,707	983,061	1,548,768	1,014,502	987,437	2,746,334	4,748,273	3,124,152	6,838,411	9,962,563
2023	565,710	983,067	1,548,777	1,014,505	987,440	2,746,342	4,748,287	3,124,161	6,838,429	9,962,590
2024	565,696	983,032	1,548,728	1,014,492	987,427	2,746,312	4,748,231	3,124,134	6,838,374	9,962,508
2025	565,714	983,079	1,548,793	1,014,511	987,443	2,746,348	4,748,302	3,124,166	6,838,441	9,962,607
2026	565,673	982,979	1,548,652	1,014,471	987,407	2,746,262	4,748,140	3,124,098	6,838,291	9,962,389
2027	565,675	982,984	1,548,659	1,014,473	987,409	2,746,268	4,748,150	3,124,102	6,838,299	9,962,401
2028	565,675	982,984	1,548,659	1,014,473	987,409	2,746,268	4,748,150	3,124,102	6,838,298	9,962,400
2029	565,681	982,999	1,548,680	1,014,479	987,415	2,746,280	4,748,174	3,124,112	6,838,323	9,962,435
2030	565,660	982,955	1,548,615	1,014,462	987,398	2,746,242	4,748,102	3,124,082	6,838,256	9,962,338
2031	565,666	982,965	1,548,631	1,014,468	987,403	2,746,251	4,748,122	3,124,088	6,838,271	9,962,359
2032	565,661	982,956	1,548,617	1,014,463	987,401	2,746,243	4,748,107	3,124,082	6,838,259	9,962,341
2033	565,664	982,961	1,548,625	1,014,465	987,402	2,746,247	4,748,114	3,124,087	6,838,265	9,962,352
2034	565,680	982,996	1,548,676	1,014,478	987,413	2,746,278	4,748,169	3,124,111	6,838,317	9,962,428
2035	565,685	983,008	1,548,693	1,014,480	987,414	2,746,283	4,748,177	3,124,113	6,838,325	9,962,438
TOTAL	29,033,929	45,393,107	74,427,036	54,416,979	52,926,049	147,741,904	255,084,932	129,181,819	280,874,153	410,055,972

TABLE B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor (Continued)

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA								
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Basin Water Storage District	Total
				Municipal and Industrial	Agricultural				
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]
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	37,806	1,963	5,639	60,702	678,085	2,007	2,073	77,592	865,867
1969	45,479	2,237	30,159	80,553	1,197,126	2,286	2,086	90,772	1,450,698
1970	46,969	2,292	35,450	96,672	1,381,493	2,345	2,158	93,407	1,660,786
1971	47,997	2,315	35,365	106,654	1,643,161	2,366	2,288	94,874	1,935,020
1972	49,867	2,414	37,845	122,312	1,729,170	2,470	2,254	98,776	2,045,108
1973	50,005	2,386	36,180	125,553	1,719,871	2,439	2,310	98,329	2,037,073
1974	52,816	2,557	36,571	135,661	1,823,063	2,615	2,529	104,610	2,160,422
1975	66,962	3,242	44,250	162,739	2,235,242	3,317	3,191	132,663	2,651,606
1976	66,504	3,327	45,365	159,304	2,215,996	3,404	2,919	133,940	2,630,759
1977	75,670	3,814	49,203	189,781	2,523,621	3,904	3,716	152,989	3,002,698
1978	70,688	3,504	49,725	174,899	2,427,160	3,583	3,644	141,673	2,874,876
1979	68,878	3,437	48,143	173,678	2,378,303	3,514	3,492	138,493	2,817,938
1980	95,903	4,724	59,554	235,749	3,146,693	4,830	4,778	191,591	3,743,822
1981	118,527	5,970	65,991	266,285	3,436,826	6,103	5,191	239,484	4,144,377
1982	135,683	6,791	67,925	315,514	3,894,043	6,943	6,455	273,278	4,706,632
1983	186,105	9,301	81,481	429,204	5,063,608	9,510	8,552	374,586	6,162,347
1984	199,950	9,953	96,366	479,956	5,730,717	10,177	9,346	401,617	6,938,082
1985	221,852	11,003	118,816	527,439	6,486,581	11,253	10,747	444,847	7,832,538
1986	218,543	10,875	112,295	551,202	6,595,105	11,124	11,366	438,918	7,949,428
1987	211,680	10,582	111,105	545,205	6,521,522	10,826	10,998	426,144	7,848,062
1988	207,012	10,378	122,399	523,693	6,459,533	10,615	10,458	417,348	7,761,436
1989	221,336	11,121	115,381	559,820	6,685,236	11,373	10,798	446,660	8,061,725
1990	270,997	13,653	147,808	664,865	8,107,941	13,965	13,253	547,649	9,780,131
1991	283,158	14,214	154,991	671,920	8,355,134	14,538	13,346	571,199	10,078,500
1992	324,435	16,144	211,094	781,865	10,111,599	16,514	18,529	651,568	12,131,748
1993	323,060	16,071	235,653	793,869	10,519,490	16,438	18,282	648,688	12,571,551
1994	320,712	15,951	222,043	785,114	10,281,139	16,314	18,588	643,917	12,303,778
1995	318,240	15,805	214,503	779,064	10,138,795	16,164	18,479	638,480	12,139,530
1996	310,495	15,425	208,238	751,400	9,804,943	15,778	18,000	623,058	11,747,337
1997	316,363	15,716	226,623	764,392	9,861,527	16,076	18,247	634,838	11,853,782
1998	314,796	15,643	224,048	759,546	9,786,439	16,002	18,328	631,791	11,766,593
1999	311,666	15,484	223,297	754,213	9,724,611	15,838	18,061	625,403	11,688,573
2000	312,358	15,516	223,607	755,893	9,744,421	15,872	18,082	626,775	11,712,524
2001	312,368	15,517	223,609	755,916	9,744,737	15,872	18,082	626,796	11,712,897
2002	312,449	15,521	223,643	756,114	9,747,041	15,875	18,084	626,956	11,715,683
2003	312,518	15,525	223,674	756,282	9,749,035	15,879	18,087	627,094	11,718,094
2004	312,644	15,531	223,730	756,585	9,752,629	15,885	18,090	627,342	11,722,436
2005	313,546	15,575	224,134	758,781	9,778,552	15,931	18,117	629,138	11,753,774
2006	313,550	15,575	224,134	758,790	9,778,698	15,931	18,118	629,147	11,753,943
2007	313,614	15,578	224,161	758,945	9,780,491	15,934	18,120	629,272	11,756,115
2008	313,685	15,582	224,194	759,119	9,782,557	15,937	18,121	629,415	11,758,610
2009	313,743	15,585	224,220	759,257	9,784,203	15,940	18,123	629,528	11,760,599
2010	313,903	15,591	224,290	759,645	9,788,765	15,949	18,128	629,844	11,766,115
2011	314,362	15,615	224,496	760,768	9,802,034	15,972	18,142	630,762	11,782,151
2012	314,404	15,615	224,514	760,863	9,803,155	15,974	18,143	630,841	11,783,509
2013	314,488	15,621	224,551	761,068	9,805,603	15,978	18,145	631,007	11,786,461
2014	314,555	15,624	224,580	761,232	9,807,516	15,982	18,148	631,142	11,788,779
2015	314,557	15,624	224,581	761,237	9,807,567	15,982	18,148	631,145	11,788,841
2016	314,564	15,625	224,584	761,251	9,807,748	15,982	18,148	631,157	11,789,059
2017	314,836	15,638	224,708	761,914	9,815,595	15,994	18,156	631,699	11,798,540
2018	314,836	15,638	224,707	761,913	9,815,576	15,994	18,156	631,698	11,798,518
2019	314,843	15,639	224,710	761,931	9,815,789	15,995	18,156	631,712	11,798,775
2020	314,733	15,632	224,663	761,668	9,812,688	15,991	18,153	631,497	11,795,025
2021	314,734	15,632	224,663	761,668	9,812,693	15,991	18,153	631,498	11,795,032
2022	314,736	15,632	224,664	761,671	9,812,728	15,991	18,153	631,501	11,795,076
2023	314,740	15,632	224,665	761,681	9,812,836	15,991	18,153	631,510	11,795,208
2024	314,728	15,632	224,659	761,654	9,812,519	15,989	18,153	631,487	11,794,821
2025	314,741	15,632	224,666	761,688	9,812,900	15,991	18,153	631,513	11,795,284
2026	314,710	15,631	224,651	761,612	9,812,026	15,989	18,153	631,452	11,794,224
2027	314,715	15,631	224,653	761,618	9,812,079	15,989	18,153	631,456	11,794,294
2028	314,714	15,631	224,653	761,617	9,812,078	15,989	18,153	631,456	11,794,291
2029	314,718	15,631	224,654	761,627	9,812,211	15,989	18,153	631,464	11,794,447
2030	314,707	15,631	224,650	761,595	9,811,820	15,988	18,153	631,438	11,793,982
2031	314,708	15,631	224,650	761,604	9,811,919	15,989	18,153	631,446	11,794,100
2032	314,707	15,631	224,649	761,596	9,811,833	15,988	18,153	631,438	11,793,995
2033	314,708	15,631	224,650	761,600	9,811,880	15,988	18,153	631,442	11,794,052
2034	314,717	15,631	224,654	761,625	9,812,172	15,989	18,153	631,463	11,794,404
2035	314,714	15,631	224,655	761,616	9,812,078	15,988	18,153	631,455	11,794,290
TOTAL	16,901,507	840,129	11,552,832	40,902,467	525,371,945	859,319	947,404	33,925,168	631,300,771

TABLE B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley–East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley 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]
1961	0	0	0	0	0	0	0	0	0	0
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	65,073	28,084	11,697	2,958	19,290	1,088	24,380	8,171	52,314	14,399
1969	86,340	70,345	15,522	3,924	25,595	1,444	32,346	10,843	69,418	19,106
1970	107,806	84,580	19,391	4,902	31,979	1,802	40,392	13,540	86,726	23,866
1971	178,822	105,978	32,230	8,152	53,149	2,991	66,998	22,459	144,137	39,636
1972	363,554	202,628	106,741	30,966	176,039	6,603	213,029	48,104	548,122	144,113
1973	404,662	222,767	121,341	34,673	200,118	7,347	243,320	53,976	724,532	190,155
1974	434,864	235,526	130,629	37,060	215,431	7,678	262,736	56,382	786,108	207,020
1975	504,790	289,504	151,033	43,179	249,085	9,082	303,109	65,579	905,424	238,842
1976	559,011	262,418	160,688	44,454	265,002	10,030	325,512	73,253	964,525	256,572
1977	675,631	335,806	184,833	47,750	304,832	11,888	381,208	87,370	1,069,549	289,821
1978	600,343	376,950	187,027	54,153	308,449	10,711	373,191	78,304	1,148,279	300,751
1979	661,123	349,073	196,264	52,212	323,679	12,125	401,467	87,126	1,125,451	302,509
1980	858,071	415,585	253,097	71,923	417,412	15,433	508,394	112,859	1,518,448	401,234
1981	999,530	510,271	284,453	73,380	469,114	18,015	587,002	131,750	1,544,955	419,638
1982	1,140,250	564,319	324,475	90,546	535,124	20,408	656,354	149,554	1,891,146	503,344
1983	1,753,334	821,771	452,539	119,985	746,325	30,795	927,050	226,915	2,387,995	643,561
1984	2,096,176	939,602	546,043	149,347	900,535	36,647	1,106,856	269,955	3,003,088	799,476
1985	2,173,786	1,062,560	587,308	158,491	968,589	39,237	1,196,854	279,239	3,241,232	863,797
1986	2,314,689	1,105,321	618,837	162,746	1,020,585	40,099	1,269,097	296,335	3,318,562	893,083
1987	2,361,989	1,041,135	619,545	165,021	1,021,749	41,676	1,266,023	307,143	3,359,946	902,789
1988	2,300,046	1,038,738	647,304	174,747	1,067,530	40,547	1,318,115	298,160	3,557,610	953,056
1989	2,282,278	1,084,532	612,251	168,988	1,009,730	39,594	1,239,647	293,357	3,466,144	923,578
1990	2,630,472	1,269,280	707,851	200,474	1,167,391	45,506	1,422,925	336,131	4,066,344	1,073,555
1991	2,595,846	1,145,729	728,461	201,644	1,201,374	46,686	1,472,889	341,229	4,179,519	1,105,124
1992	3,100,780	1,725,712	839,648	241,474	1,384,754	55,307	1,696,434	405,232	5,161,647	1,372,578
1993	3,273,641	1,846,913	909,740	255,287	1,500,347	58,360	1,841,332	426,970	5,425,211	1,448,501
1994	3,172,092	1,789,185	884,002	241,137	1,457,898	56,731	1,799,085	414,462	5,202,723	1,394,480
1995	3,106,326	1,751,539	878,376	239,103	1,448,624	55,778	1,786,873	406,816	5,156,855	1,380,483
1996	2,927,280	1,642,758	806,669	208,746	1,330,351	52,585	1,664,426	383,402	4,578,893	1,244,020
1997	2,972,910	1,783,590	845,781	247,819	1,394,873	53,397	1,689,335	389,347	5,244,936	1,382,458
1998	2,945,558	1,681,579	822,562	224,363	1,356,570	52,911	1,674,361	385,802	4,864,089	1,304,458
1999	2,938,308	1,710,948	819,947	221,393	1,352,258	52,803	1,672,088	384,952	4,806,313	1,289,904
2000	2,946,378	1,690,411	828,727	228,687	1,366,741	52,988	1,679,443	386,225	4,936,485	1,316,640
2001	2,946,515	1,718,233	831,933	232,540	1,372,032	52,989	1,679,572	386,249	5,005,008	1,330,032
2002	2,947,458	1,703,578	831,234	231,286	1,370,877	53,013	1,680,433	386,399	4,982,808	1,325,860
2003	2,948,262	1,706,114	816,933	213,469	1,347,276	53,033	1,681,164	386,525	4,666,238	1,264,235
2004	2,949,740	1,718,479	847,377	250,032	1,397,509	53,066	1,682,512	386,759	5,316,118	1,391,267
2005	2,960,318	1,713,484	840,024	236,560	1,385,378	53,313	1,692,147	388,429	5,077,355	1,346,444
2006	2,960,392	1,719,140	837,165	233,034	1,380,659	53,313	1,692,218	388,441	5,014,728	1,334,241
2007	2,961,119	1,719,328	834,468	229,426	1,376,206	53,330	1,692,886	388,557	4,950,633	1,321,857
2008	2,961,966	1,720,541	845,565	242,627	1,394,522	53,349	1,693,656	388,691	5,185,300	1,367,778
2009	2,962,638	1,718,430	824,726	216,879	1,360,130	53,364	1,694,269	388,796	4,727,762	1,278,631
2010	2,964,506	1,721,800	843,019	238,427	1,390,315	53,406	1,695,976	389,092	5,110,863	1,353,685
2011	2,969,942	1,727,647	851,085	245,970	1,403,620	53,534	1,700,930	389,946	5,245,271	1,380,809
2012	2,970,388	1,726,730	840,515	232,870	1,386,184	53,546	1,701,337	390,019	5,012,473	1,335,471
2013	2,971,391	1,726,216	842,743	235,157	1,389,853	53,567	1,702,258	390,178	5,053,230	1,343,589
2014	2,972,160	1,730,383	827,569	216,297	1,364,816	53,584	1,702,954	390,298	4,718,076	1,278,326
2015	2,972,197	1,726,122	840,022	231,491	1,385,359	53,585	1,702,988	390,304	4,988,113	1,331,016
2016	2,972,260	1,728,297	844,671	237,146	1,393,033	53,586	1,703,044	390,314	5,088,622	1,350,633
2017	2,975,463	1,731,093	845,065	236,267	1,393,687	53,663	1,705,960	390,821	5,073,197	1,348,158
2018	2,975,450	1,733,970	843,688	234,586	1,391,411	53,661	1,705,953	390,820	5,043,333	1,342,329
2019	2,975,551	1,724,028	862,676	257,740	1,422,743	53,663	1,706,047	390,835	5,454,817	1,422,624
2020	2,974,269	1,734,063	833,411	222,539	1,374,456	53,635	1,704,873	390,631	4,829,144	1,300,347
2021	2,974,273	1,730,274	843,687	235,090	1,391,410	53,635	1,704,876	390,631	5,052,202	1,343,864
2022	2,974,302	1,731,539	841,899	232,894	1,388,465	53,637	1,704,905	390,634	5,013,205	1,336,263
2023	2,974,334	1,730,125	849,104	241,678	1,400,346	53,638	1,704,934	390,640	5,169,296	1,366,721
2024	2,974,215	1,728,608	838,824	229,173	1,383,385	53,634	1,704,826	390,623	4,947,045	1,323,339
2025	2,974,377	1,731,653	843,384	234,670	1,390,909	53,638	1,704,975	390,647	5,044,778	1,342,434
2026	2,974,020	1,729,816	844,591	236,303	1,392,907	53,630	1,704,651	390,594	5,073,745	1,348,025
2027	2,974,039	1,729,828	844,285	235,917	1,392,400	53,631	1,704,669	390,595	5,066,919	1,346,697
2028	2,974,037	1,728,408	844,287	235,920	1,392,403	53,631	1,704,667	390,595	5,066,955	1,346,704
2029	2,974,089	1,729,775	853,806	247,530	1,408,110	53,632	1,704,711	390,602	5,273,262	1,386,962
2030	2,973,921	1,728,769	841,297	232,320	1,387,469	53,626	1,704,561	390,578	5,002,942	1,334,198
2031	2,973,964	1,729,780	844,227	235,883	1,392,305	53,629	1,704,594	390,584	5,066,268	1,346,560
2032	2,973,931	1,729,788	844,221	235,883	1,392,291	53,626	1,704,571	390,579	5,066,298	1,346,561
2033	2,973,951	1,728,350	849,109	241,852	1,400,363	53,629	1,704,585	390,582	5,172,398	1,367,259
2034	2,974,074	1,732,277	846,309	238,381	1,395,742	53,632	1,704,693	390,600	5,110,678	1,355,240
2035	2,974,081	1,707,491	874,254	272,508	1,441,848	53,632	1,704,714	390,603	5,717,153	1,473,562
TOTAL	159,435,352	89,559,294	44,822,185	12,470,029	73,920,941	2,860,972	90,634,380	20,872,133	265,922,959	70,754,268

TABLE B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA					
	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 Area Future Contractor	GRAND TOTAL
	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]
1961	0	0	0	0	0	0	0	0	0	0
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	8,819	972,744	9,504	1,218,521	0	0	0	0	46,945	2,745,160
1969	11,706	1,295,613	12,610	1,654,812	0	0	0	0	52,963	4,074,939
1970	14,621	1,624,573	15,745	2,069,923	0	0	0	0	69,745	4,676,282
1971	24,302	2,716,582	26,120	3,421,556	0	0	54	54	55,532	6,185,714
1972	89,132	8,038,457	68,368	10,035,856	0	0	40	40	80,412	12,998,869
1973	117,781	9,890,314	78,312	12,289,298	0	0	1	1	54,219	15,194,233
1974	128,166	11,581,499	83,451	14,166,550	0	0	143	143	76,783	17,372,561
1975	147,900	13,584,540	101,892	16,593,959	0	0	1,069	1,069	84,546	20,517,423
1976	158,663	12,862,497	94,799	16,037,424	0	0	139	139	106,717	20,027,213
1977	178,791	16,205,614	121,985	19,895,078	0	0	892	892	98,631	24,217,840
1978	186,386	17,811,759	132,438	21,568,741	0	0	39	39	100,785	26,012,786
1979	186,685	16,414,295	126,757	20,238,766	0	0	3,235	3,235	119,352	24,675,598
1980	248,407	20,927,493	154,101	25,902,457	0	0	416	416	178,817	32,034,460
1981	258,691	23,693,159	186,314	29,176,272	0	0	3,847	3,847	185,220	35,455,634
1982	311,341	28,334,603	211,611	34,733,075	0	0	10,956	10,956	184,127	42,123,765
1983	396,932	38,600,058	322,833	47,430,093	0	0	(422)	(422)	222,411	56,534,754
1984	494,371	45,323,130	379,878	56,045,104	0	0	643	643	226,674	66,874,897
1985	533,599	50,164,246	417,199	61,686,137	0	0	2,599	2,599	342,930	73,989,951
1986	551,066	52,861,416	442,413	64,894,249	0	0	2,595	2,595	280,790	76,996,777
1987	557,487	50,713,198	413,995	62,771,696	0	0	2,595	2,595	346,081	75,313,535
1988	588,836	51,022,114	405,030	63,411,833	0	0	2,600	2,600	363,837	75,894,569
1989	571,265	52,382,468	429,909	64,503,741	0	0	2,672	2,672	416,445	78,424,521
1990	664,705	60,778,200	492,187	74,855,021	0	0	2,687	2,687	468,792	91,057,329
1991	683,864	56,760,081	439,181	70,901,627	0	0	2,730	2,730	456,098	87,942,865
1992	848,413	70,965,172	532,852	88,330,003	0	0	2,774	2,774	553,263	109,147,224
1993	895,336	72,753,084	565,398	91,200,120	0	0	2,912	2,912	538,948	112,594,322
1994	860,212	71,608,973	551,512	89,432,492	0	0	3,058	3,058	512,367	110,161,195
1995	852,151	74,094,261	540,822	91,698,007	0	0	3,058	3,058	505,613	112,046,418
1996	766,204	66,330,692	504,619	82,440,645	0	0	3,058	3,058	493,135	111,226,949
1997	856,488	71,967,756	540,297	89,368,987	0	0	3,058	3,058	507,017	114,576,886
1998	805,007	68,086,755	510,656	84,714,671	0	0	3,058	3,058	502,417	112,226,875
1999	796,057	69,170,262	518,604	85,733,837	0	0	3,058	3,058	495,834	114,127,852
2000	813,391	68,689,102	512,709	85,447,927	0	0	3,058	3,058	496,890	113,878,823
2001	822,163	69,973,902	520,888	86,872,056	0	0	3,058	3,058	496,907	115,303,560
2002	819,410	68,988,248	516,597	85,837,201	0	0	3,058	3,058	497,029	114,272,997
2003	779,010	68,154,022	517,355	84,533,636	0	0	3,058	3,058	497,136	112,973,111
2004	862,213	70,174,541	521,016	87,550,629	0	0	3,058	3,058	497,330	115,996,848
2005	832,599	70,483,976	519,735	87,529,762	0	0	3,058	3,058	498,714	116,024,292
2006	824,601	69,967,956	521,396	86,927,284	0	0	3,058	3,058	498,723	115,422,094
2007	816,467	69,859,790	521,464	86,725,531	0	0	3,058	3,058	498,819	115,223,688
2008	846,541	70,264,150	521,836	87,486,522	0	0	3,058	3,058	498,931	115,988,539
2009	788,107	69,954,851	521,228	86,489,811	0	0	3,058	3,058	499,017	114,994,877
2010	837,241	70,658,612	522,250	87,779,192	0	0	3,058	3,058	499,264	116,292,809
2011	854,893	70,788,007	524,064	88,135,718	0	0	3,058	3,058	499,973	116,674,063
2012	825,168	70,326,021	523,805	87,324,527	0	0	3,058	3,058	500,032	115,864,944
2013	830,468	70,627,742	523,669	87,690,061	0	0	3,058	3,058	500,163	116,235,047
2014	787,686	69,662,335	524,909	86,229,393	0	0	3,058	3,058	500,264	114,777,911
2015	822,211	69,861,673	523,659	86,828,740	0	0	3,058	3,058	500,268	115,377,396
2016	835,063	71,214,840	524,299	88,335,808	0	0	3,058	3,058	500,277	116,884,797
2017	833,367	70,796,251	525,174	87,908,166	0	0	3,058	3,058	500,695	116,471,760
2018	829,548	70,616,799	526,018	87,687,566	0	0	3,058	3,058	500,694	116,251,113
2019	882,161	71,070,323	523,099	88,746,307	0	0	3,058	3,058	500,707	117,310,288
2020	802,066	71,003,147	526,026	87,748,607	0	0	3,058	3,058	500,540	116,306,786
2021	830,581	70,511,791	524,913	87,587,227	0	0	3,058	3,058	500,541	116,145,417
2022	825,598	70,896,183	525,284	87,914,808	0	0	3,058	3,058	500,544	116,473,090
2023	845,553	70,769,814	524,873	88,021,056	0	0	3,058	3,058	500,548	116,579,524
2024	817,134	69,700,862	524,421	86,616,089	0	0	3,058	3,058	500,532	115,173,967
2025	829,642	70,816,994	525,322	87,883,423	0	0	3,058	3,058	500,552	116,442,019
2026	833,315	70,501,039	524,773	87,607,409	0	0	3,058	3,058	500,506	116,164,378
2027	832,443	70,670,199	524,778	87,766,400	0	0	3,058	3,058	500,509	116,323,471
2028	832,448	70,659,966	524,361	87,754,382	0	0	3,058	3,058	500,508	116,311,448
2029	858,827	71,740,175	524,764	89,146,245	0	0	3,058	3,058	500,516	117,703,555
2030	824,255	70,638,564	524,460	87,636,960	0	0	3,058	3,058	500,494	116,193,549
2031	832,352	70,772,404	524,758	87,867,308	0	0	3,058	3,058	500,500	116,424,078
2032	832,355	70,637,801	524,761	87,732,666	0	0	3,058	3,058	500,496	116,289,280
2033	845,918	70,758,353	524,340	88,010,689	0	0	3,058	3,058	500,498	116,567,388
2034	838,040	70,839,954	525,498	88,005,118	0	0	3,058	3,058	500,514	116,562,367
2035	915,573	70,196,065	518,214	88,239,698	0	0	3,058	3,058	500,513	116,796,867
TOTAL	43,731,792	3,742,782,060	28,258,108	4,646,024,473	0	0	173,652	173,652	26,852,131	6,043,918,967

TABLE B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(in dollars)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA	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]
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	10,070	0	10,070	47,473	31,446	863,937	942,856	0	0	0
1984	29,957	0	29,957	157,280	77,388	2,040,188	2,274,856	0	0	0
1985	54,709	0	54,709	458,427	582,679	2,696,449	3,737,555	0	0	0
1986	45,886	0	45,886	312,937	365,147	2,595,766	3,273,850	0	0	0
1987	90,385	0	90,385	622,029	674,111	2,306,079	3,602,219	0	0	0
1988	113,458	113,340	226,798	617,183	799,591	2,101,745	3,518,519	0	0	0
1989	64,584	138,240	202,824	407,353	396,069	1,389,347	2,192,769	0	0	0
1990	74,540	159,551	234,091	470,149	457,126	1,603,525	2,530,800	0	0	0
1991	40,395	111,903	152,298	408,303	548,742	1,223,477	2,180,522	0	190,534	190,534
1992	91,942	150,920	242,862	507,651	605,537	1,354,907	2,468,095	0	0	0
1993	80,497	145,095	225,592	528,205	581,805	1,377,218	2,487,228	0	0	0
1994	88,308	155,417	243,725	573,131	601,787	1,432,826	2,607,744	0	0	0
1995	91,564	169,001	260,565	582,823	582,824	1,387,674	2,553,321	0	0	0
1996	98,268	181,810	280,078	614,688	586,801	1,397,145	2,598,634	941,724	1,713,409	2,655,133
1997	102,173	180,264	282,437	629,572	574,827	1,368,635	2,573,034	922,507	1,678,446	2,600,953
1998	103,909	175,291	279,200	605,001	552,393	1,315,219	2,472,613	886,503	1,612,939	2,499,442
1999	105,624	171,200	276,824	584,063	533,276	1,269,703	2,387,042	855,824	1,557,120	2,412,944
2000	102,091	158,160	260,251	533,382	487,001	1,159,525	2,179,908	781,560	1,422,001	2,203,561
2001	104,718	154,928	259,646	522,483	477,050	1,135,833	2,135,366	765,590	1,392,945	2,158,535
2002	104,430	148,838	253,268	501,945	458,298	1,091,185	2,051,428	735,496	1,338,190	2,073,686
2003	102,470	139,976	242,446	472,058	431,010	1,026,213	1,929,281	691,703	1,258,512	1,950,215
2004	101,037	132,643	233,680	447,325	408,427	972,445	1,828,197	655,461	1,192,573	1,848,034
2005	92,285	122,136	214,421	393,255	359,058	854,902	1,607,215	576,233	1,048,422	1,624,655
2006	92,292	118,803	211,095	382,526	349,262	831,578	1,563,366	560,511	1,019,818	1,580,329
2007	89,227	111,142	200,369	357,858	326,739	777,951	1,462,548	524,366	954,052	1,478,418
2008	85,072	102,063	187,135	328,625	300,049	714,403	1,343,077	481,532	876,119	1,357,651
2009	82,315	95,771	178,086	308,366	281,552	670,362	1,260,280	451,846	822,109	1,273,955
2010	74,065	84,151	158,216	269,322	245,903	585,482	1,100,707	394,635	718,015	1,112,650
2011	71,465	78,478	149,943	251,163	229,323	546,006	1,026,492	368,027	669,604	1,037,631
2012	66,778	71,309	138,087	226,219	208,375	496,129	932,723	334,409	608,435	942,844
2013	15,864	16,406	32,270	52,507	47,941	114,145	214,593	76,938	139,983	216,921
2014	32,596	32,677	65,273	104,584	95,489	227,355	427,428	153,245	278,820	432,065
2015	14,306	14,001	28,307	44,539	40,666	96,824	182,029	65,263	118,742	184,005
2016	7,242	6,898	14,140	21,945	20,036	47,706	89,687	32,156	58,505	90,661
2017	3,371	3,128	6,499	9,950	9,084	21,631	40,665	14,579	26,527	41,106
2018	3,457	3,127	6,584	9,946	9,081	21,623	40,650	14,574	26,516	41,090
2019	3,556	3,137	6,693	9,978	9,111	21,692	40,781	14,621	26,603	41,224
2020	3,651	3,142	6,793	9,998	9,127	21,733	40,858	14,649	26,652	41,301
2021	3,659	3,136	6,795	9,979	9,110	21,692	40,781	14,621	26,603	41,224
2022	3,668	3,144	6,812	10,002	9,133	21,745	40,880	14,656	26,667	41,323
2023	3,678	3,154	6,832	10,031	9,160	21,807	40,998	14,700	26,744	41,444
2024	7,602	6,517	14,119	20,733	18,930	45,071	84,734	30,380	55,274	85,654
2025	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
TOTAL	2,557,164	3,468,897	6,026,061	13,436,987	13,400,464	39,268,878	66,106,329	11,388,309	20,910,879	32,299,188

TABLE B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities (Continued)

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA							
		Empire	Kern County Water Agency				Tulare Lake	
	Dudley Ridge Water District	West Side Irrigation District	Municipal and Industrial	Agricultural	County of Kings	Oak Flat Water District	Basin Water Storage District	Total
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	159,191	0	34,366	2,964,185	13,174	9,673	3,733	3,184,322
1984	389,518	0	816,103	9,095,509	26,774	33,576	49,601	10,411,081
1985	527,952	59,324	1,053,957	11,978,046	38,810	42,297	1,253,257	14,953,643
1986	552,171	12,858	885,988	11,788,715	40,659	38,275	872,009	14,190,675
1987	450,941	24,936	1,192,388	10,448,063	39,134	37,538	911,938	13,104,938
1988	427,210	30,932	1,133,020	9,927,859	35,605	26,785	853,333	12,434,744
1989	331,852	17,226	619,401	7,540,901	22,979	24,306	754,007	9,310,672
1990	383,009	19,882	714,886	8,703,387	26,521	28,053	870,243	10,745,981
1991	14,983	3,572	733,769	163,206	0	1,554	35,234	952,318
1992	303,374	15,773	866,197	7,110,064	21,031	19,316	623,047	8,958,802
1993	302,076	15,706	755,143	6,497,168	20,941	20,353	620,381	8,231,768
1994	307,987	16,014	769,921	6,624,315	21,351	20,751	632,522	8,392,861
1995	298,282	15,508	745,659	6,415,566	20,678	20,096	612,590	8,128,379
1996	300,318	15,614	750,748	6,459,352	20,820	20,234	616,770	8,183,856
1997	294,189	15,296	741,375	6,539,239	20,394	19,821	604,185	8,234,499
1998	282,708	14,699	712,440	6,284,024	19,599	19,048	580,604	7,913,122
1999	272,924	14,190	687,785	6,066,551	18,920	18,388	560,512	7,639,270
2000	249,241	12,959	628,102	5,540,129	17,278	16,792	511,873	6,976,374
2001	244,149	12,694	615,268	5,426,926	16,925	16,450	501,414	6,833,826
2002	234,552	12,195	591,083	5,213,602	16,260	15,803	481,704	6,565,199
2003	220,586	11,469	555,889	4,903,173	15,292	14,862	453,022	6,174,293
2004	209,028	10,868	526,763	4,646,273	14,491	14,083	429,287	5,850,793
2005	183,762	9,555	463,091	4,084,659	12,739	12,381	377,397	5,143,584
2006	178,749	9,293	450,457	3,973,216	12,391	12,044	367,100	5,003,250
2007	167,221	8,695	421,408	3,716,995	11,593	11,266	343,427	4,680,605
2008	153,562	7,984	386,985	3,413,365	10,645	10,346	315,374	4,298,261
2009	144,095	7,492	363,127	3,202,940	9,989	9,709	295,931	4,033,283
2010	125,850	6,544	317,149	2,797,392	8,724	8,479	258,462	3,522,600
2011	117,365	6,102	295,766	2,608,779	8,136	7,908	241,035	3,285,091
2012	106,644	5,545	268,748	2,370,471	7,393	7,185	219,016	2,985,002
2013	24,536	1,276	61,831	545,377	1,701	1,653	50,389	686,763
2014	48,870	2,541	123,156	1,086,285	3,388	3,293	100,366	1,367,899
2015	20,813	1,082	52,448	462,620	1,443	1,402	42,743	582,551
2016	10,254	534	25,841	227,937	711	690	21,060	287,027
2017	4,649	242	11,717	103,348	323	313	9,549	130,141
2018	4,647	242	11,712	103,310	323	313	9,545	130,092
2019	4,663	242	11,750	103,643	323	315	9,576	130,512
2020	4,671	243	11,773	103,837	324	315	9,594	130,757
2021	4,663	242	11,750	103,643	323	314	9,576	130,511
2022	4,674	243	11,779	103,894	324	315	9,599	130,828
2023	4,688	243	11,814	104,196	325	316	9,627	131,209
2024	9,688	503	24,415	215,348	672	652	19,897	271,175
2025	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0
TOTAL	8,080,305	420,558	19,466,968	179,767,508	579,426	567,263	15,550,529	224,432,557

TABLE B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley–East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley 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
	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	1,083,881	411,247	565,798	35,432	894,572	1,250	0	0	233,134	28,548
1984	2,499,848	1,122,640	1,427,428	102,114	2,263,172	77	0	0	502,967	693,074
1985	3,775,658	1,572,025	2,032,672	170,137	3,230,452	0	0	131,200	884,188	601,582
1986	3,159,858	1,694,487	2,097,407	173,460	3,340,188	15,872	0	301,486	739,563	1,088,902
1987	3,167,759	1,694,698	1,991,841	190,149	3,230,424	95,994	1,786	258,719	1,951,799	1,091,691
1988	2,688,189	1,767,924	1,926,823	187,160	3,172,187	33,051	840	139,620	1,995,304	834,845
1989	2,357,669	1,373,513	1,326,863	132,076	2,218,516	50,948	13,206	493,424	1,257,332	792,087
1990	2,721,121	1,585,250	1,531,409	152,436	2,560,517	58,802	15,242	569,489	1,451,159	914,193
1991	1,203,870	609,920	1,174,005	144,337	1,936,345	74,765	543,470	560,597	620,207	914,639
1992	3,295,169	1,767,569	1,273,035	238,809	2,099,681	106,543	1,318,584	615,029	1,763,512	991,975
1993	3,286,027	1,579,420	1,267,590	117,979	2,090,700	106,705	1,975,464	663,432	1,920,590	987,732
1994	3,500,753	1,749,422	1,292,396	125,882	2,131,614	108,794	2,014,123	712,364	2,126,019	1,007,061
1995	3,543,214	1,823,008	1,251,669	130,043	2,064,441	105,365	2,752,588	712,821	2,221,577	975,326
1996	3,723,296	1,965,388	1,260,212	137,750	2,078,531	106,085	2,771,374	797,019	2,400,403	981,983
1997	3,793,257	2,064,398	1,234,495	138,948	2,036,116	103,920	2,714,822	781,658	2,538,572	961,945
1998	3,645,214	1,983,828	1,186,315	133,525	1,956,650	99,864	2,608,868	751,151	2,619,344	924,402
1999	3,519,063	1,915,173	1,145,260	128,904	1,888,936	96,408	2,518,581	725,157	2,726,810	892,411
2000	3,674,809	2,042,104	1,045,881	135,828	1,725,025	88,042	2,300,032	662,231	2,716,574	905,524
2001	3,599,721	2,000,377	1,024,510	133,054	1,689,776	86,243	2,253,036	648,700	2,661,065	887,022
2002	3,458,222	1,921,745	984,239	127,823	1,623,354	82,853	2,164,472	623,201	2,556,463	852,154
2003	3,252,312	1,807,321	925,635	120,212	1,526,696	77,920	2,035,595	586,094	2,404,246	801,415
2004	3,081,908	1,712,626	877,136	113,914	1,446,706	73,837	1,928,940	555,386	2,278,276	759,425
2005	3,273,841	1,641,039	771,113	127,685	1,271,836	64,912	1,695,782	488,254	3,004,338	711,026
2006	3,184,520	1,596,266	750,075	124,200	1,237,137	63,141	1,649,516	474,932	2,922,370	691,627
2007	2,979,160	1,493,327	701,704	116,192	1,157,357	59,069	1,543,143	444,306	2,733,914	647,026
2008	2,735,801	1,371,342	644,385	106,700	1,062,816	54,245	1,417,088	408,012	2,510,589	594,173
2009	2,567,146	1,286,802	604,660	100,122	997,296	50,901	1,329,728	382,859	2,355,817	557,544
2010	2,628,669	1,123,871	528,099	108,592	871,021	44,456	1,161,361	334,382	2,345,585	514,382
2011	2,494,694	1,048,094	492,493	101,270	812,293	41,458	1,083,058	311,836	2,187,435	479,701
2012	2,266,807	952,352	447,504	92,019	738,092	37,671	984,121	283,351	1,987,615	435,881
2013	521,527	219,109	102,957	21,171	169,814	8,667	226,418	65,191	457,293	100,283
2014	1,038,781	436,422	205,072	42,168	338,236	17,263	450,981	129,847	910,840	199,745
2015	442,389	185,860	87,335	20,038	144,045	7,352	192,061	55,298	387,902	89,981
2016	217,969	91,574	43,031	9,873	70,972	3,622	94,630	27,246	191,122	44,334
2017	98,829	41,521	19,510	4,476	32,180	1,642	42,906	12,354	86,656	20,102
2018	98,791	41,506	19,503	4,474	32,168	1,642	42,889	12,349	86,624	20,094
2019	99,110	41,640	19,566	4,489	32,271	1,647	43,028	12,389	86,904	20,159
2020	99,297	41,717	19,603	4,837	32,332	1,650	43,109	12,412	87,067	21,215
2021	99,110	41,640	19,566	4,828	32,271	1,647	43,028	12,389	86,903	21,175
2022	99,351	41,740	19,614	4,839	32,350	1,651	43,132	12,419	87,114	21,227
2023	99,640	41,862	19,670	4,854	32,443	1,656	43,258	12,455	87,368	21,288
2024	205,930	86,518	40,653	10,032	67,053	3,422	89,403	25,741	180,567	43,998
2025	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
TOTAL	93,282,180	47,988,285	34,398,732	4,082,831	56,368,582	2,041,052	42,149,663	14,806,800	63,353,127	24,142,897

TABLE B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				TOTAL STATE WATER PROJECT (a
	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	
	[29]	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]
1971	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0
1983	0	12,791,358	0	16,045,220	0	0	0	0	20,182,468
1984	0	39,229,567	0	47,840,887	0	0	0	0	60,556,781
1985	0	77,446,522	0	89,844,436	0	0	0	0	108,590,343
1986	0	77,581,287	0	90,192,510	0	0	0	0	107,702,921
1987	0	68,939,195	0	82,614,055	0	0	0	0	99,411,597
1988	0	79,972,830	0	92,718,773	0	0	0	0	108,898,834
1989	0	68,311,548	0	78,327,182	0	0	0	0	90,033,447
1990	0	78,842,278	0	90,401,896	0	0	0	0	103,912,768
1991	0	62,253,009	151,812	70,186,976	0	0	0	0	73,662,648
1992	0	101,877,052	249,926	115,596,884	0	0	0	0	127,266,643
1993	0	105,108,588	248,857	119,353,084	0	0	0	0	130,297,672
1994	0	107,035,462	253,727	122,057,617	0	0	0	0	133,301,947
1995	0	103,536,523	245,731	119,362,306	0	0	0	0	130,304,571
1996	0	104,116,341	247,409	120,585,791	0	0	0	0	134,303,492
1997	297,669	101,991,745	969,440	119,626,985	0	0	0	0	133,317,908
1998	286,051	98,011,195	931,604	115,138,011	0	0	0	0	128,302,388
1999	276,152	94,619,295	899,364	111,351,514	0	0	0	0	124,067,594
2000	287,504	86,408,732	821,322	102,813,608	0	0	0	0	114,433,702
2001	281,629	84,643,134	804,540	100,712,807	0	0	0	0	112,100,180
2002	270,559	81,315,944	772,915	96,753,944	0	0	0	0	107,697,525
2003	254,449	76,474,222	726,894	90,993,011	0	0	0	0	101,289,246
2004	241,118	72,467,377	688,808	86,225,457	0	0	0	0	95,986,161
2005	282,074	63,707,958	605,549	77,645,407	0	0	0	0	86,235,282
2006	274,379	61,969,796	589,028	75,526,987	0	0	0	0	83,885,027
2007	256,684	57,973,539	551,043	70,656,464	0	0	0	0	78,478,404
2008	235,717	53,237,866	506,030	64,884,764	0	0	0	0	72,070,888
2009	221,185	49,955,879	474,835	60,884,774	0	0	0	0	67,630,378
2010	241,189	43,630,596	414,712	53,946,915	0	0	0	0	59,841,088
2011	224,926	40,688,834	386,751	50,352,843	0	0	0	0	55,852,000
2012	204,380	36,971,958	351,421	45,753,172	0	0	0	0	50,751,828
2013	47,022	8,506,180	80,852	10,526,484	0	0	0	0	11,677,031
2014	93,659	16,942,670	161,041	20,966,725	0	0	0	0	23,259,390
2015	51,229	7,215,425	68,583	8,947,498	0	0	0	0	9,924,390
2016	25,241	3,555,095	33,791	4,408,500	0	0	0	0	4,890,015
2017	11,444	1,611,913	15,321	1,998,854	0	0	0	0	2,217,265
2018	11,440	1,611,303	15,316	1,998,099	0	0	0	0	2,216,515
2019	11,477	1,616,510	15,365	2,004,555	0	0	0	0	2,223,765
2020	14,129	1,619,544	15,394	2,012,306	0	0	0	0	2,232,015
2021	14,654	1,616,503	15,365	2,009,079	0	0	0	0	2,228,390
2022	14,689	1,620,425	15,402	2,013,953	0	0	0	0	2,233,796
2023	14,732	1,625,141	15,447	2,019,814	0	0	0	0	2,240,297
2024	30,446	3,358,752	31,925	4,174,440	0	0	0	0	4,630,122
2025	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0
TOTAL	4,475,827	2,242,009,091	12,375,520	2,641,474,587	0	0	0	0	2,970,338,722

a) Costs allocated to contractors in 1989, 1990 and 1991 are reduced by credits for Off-Aqueduct Power Facility costs allocated to the pumping of non-SWP entitlement water prior to 1992.

TABLE B-17

Unit Variable OMP&R Component of Transportation Charge

(in dollars per acre-foot)

Calendar Year	NORTH BAY AQUEDUCT						SOUTH BAY AQUEDUCT		CALIFORNIA AQUEDUCT	
	Reach 1 Barker Slough Pumping Plant		Reach 3A Cordelia Pumping Plant Solano County WA		Reach 3B Cordelia Pumping Plant Napa County FC&WCD (a		Reach 1 South Bay and Del Valle Pumping Plants (b		Reach 1 Banks 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]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	4.1511341	4.1511341	0	0
1963	0	0	0	0	0	0	4.5639383	4.5639383	0	0
1964	0	0	0	0	0	0	3.5452154	3.5452154	0	0
1965	0	0	0	0	0	0	4.1911773	4.1911773	0	0
1966	0	0	0	0	0	0	3.5074573	3.5074573	0	0
1967	0	0	0	0	0	0	3.9306767	5.1337448	1.2030681	1.2030681
1968	0	0	0	0	5.7570016	5.7570016	3.3315620	4.8750942	1.5435322	1.5435322
1969	0	0	0	0	3.1823595	3.1823595	3.6949019	4.8016170	1.1067151	1.1067151
1970	0	0	0	0	3.7584301	3.7584301	4.4256141	5.3721490	0.9465349	0.9465349
1971	0	0	0	0	4.2082507	4.2082507	3.8714396	4.7522833	0.8808437	0.8808437
1972	0	0	0	0	3.9577735	3.9577735	4.3250690	5.2281686	0.9030996	0.9030996
1973	0	0	0	0	3.8103903	3.8103903	5.2455409	6.1841800	0.9386391	0.9386391
1974	0	0	0	0	3.5878850	3.5878850	6.3321503	7.2293909	0.8972406	0.8972406
1975	0	0	0	0	2.1606725	2.1606725	3.7365711	4.8327731	1.0962020	1.0962020
1976	0	0	0	0	2.9283909	2.9283909	4.5191527	5.7132795	1.1941268	1.1941268
1977	0	0	0	0	2.7516411	2.7516411	4.7630172	6.5309908	1.7679736	1.7679736
1978	0	0	0	0	3.5949619	3.5949619	5.2086183	6.8200209	1.6114026	1.6114026
1979	0	0	0	0	2.4747752	2.4747752	4.9524184	7.0889234	2.1365050	2.1365050
1980	0	0	0	0	2.9737588	2.9737588	4.5186576	5.8865852	1.3679276	1.3679276
1981	0	0	0	0	2.6487057	2.6487057	4.3834851	6.4772202	2.0937351	2.0937351
1982	0	0	0	0	10.0239077	10.0239077	4.9779475	6.7284782	1.7505307	1.7505307
1983	0	0	0	0	1.1674683	1.1674683	1.5086524	2.3731213	0.8644689	0.8644689
1984	0	0	0	0	1.5419090	1.5419090	2.5890830	3.8004166	1.2113336	1.2113336
1985	0	0	0	0	2.4711562	2.4711562	4.1162113	5.7979393	1.6817280	1.6817280
1986	0	0	0	0	4.3779483	4.3779483	7.4623383	11.0065695	3.5442312	3.5442312
1987	0	0	0	0	3.5446510	3.5446510	6.3798430	9.8783182	3.4984752	3.4984752
1988	0.9479428	0.9479428	1.8550129	2.8029557	5.0521142	6.0000570	6.0238566	9.3091383	3.2852817	3.2852817
1989	1.6159905	1.6159905	2.6183463	4.2343368	7.0636292	8.6796197	8.4100683	12.0170634	3.6069951	3.6069951
1990	2.7343182	2.7343182	6.0957929	8.8301111	0.2161383	8.9504565	11.9779733	16.4591093	4.4811360	4.4811360
1991	2.9335206	2.9335206	11.4592075	14.3927281	3.1259321	6.0594527	8.7426332	14.9007691	6.1581359	6.1581359
1992	1.3646080	1.3646080	2.6205770	3.9851850	3.7758075	5.1404155	7.7115493	12.3044792	4.5929299	4.5929299
1993	3.9780474	3.9780474	6.9380520	10.9160994	10.5916372	14.5696846	16.6332139	23.8383430	7.2051291	7.2051291
1994	4.3286041	4.3286041	7.5510337	11.8796378	11.5332239	15.8618280	17.7807308	25.2434177	7.4626869	7.4626869
1995	4.7957065	4.7957065	8.6713379	13.4670444	14.3393661	19.1350726	23.9518261	33.4700563	9.5182302	9.5182302
1996	4.7170969	4.7170969	8.5331268	13.2502237	13.9514628	18.6685597	23.3206935	32.6107824	9.2900889	9.2900889
1997	4.8645229	4.8645229	8.7840245	13.6485474	14.3480343	19.2125572	23.9811436	33.9630608	9.9819172	9.9819172
1998	4.8776797	4.8776797	8.8364866	13.7141663	14.3587532	19.2364329	23.9714787	33.7249609	9.7534822	9.7534822
1999	4.9835712	4.9835712	9.0199532	14.0035244	14.6396594	19.6232306	24.4200053	33.7071118	9.2871065	9.2871065
2000	5.4804253	5.4804253	9.8928418	15.3732671	16.0429885	21.5234138	26.7454681	36.8596333	10.1141652	10.1141652
2001	5.4955804	5.4955804	9.9089101	15.4044905	16.0769118	21.5724922	26.7891330	36.9145780	10.1254450	10.1254450
2002	5.5610259	5.5610259	10.0089209	15.5699468	16.2520973	21.8131232	27.0593032	37.2802229	10.2209197	10.2209197
2003	5.6184859	5.6184859	10.0931320	15.7116179	16.3995270	22.0180129	27.2868883	37.5936213	10.3067330	10.3067330
2004	5.7199382	5.7199382	10.2534394	15.9733776	16.6694805	22.3894187	27.7204734	38.1731386	10.4526652	10.4526652
2005	6.3977043	6.3977043	11.5693247	17.9670290	18.5297500	24.9274543	30.7755532	42.3086680	11.5331148	11.5331148
2006	6.4149784	6.4149784	11.5777915	17.9927699	18.5541033	24.9690817	30.7981277	42.3344199	11.5362922	11.5362922
2007	6.4701709	6.4701709	11.6569171	18.1270880	18.6924706	25.1626415	31.0085691	42.6197424	11.6111733	11.6111733
2008	6.5339476	6.5339476	11.7491277	18.2830753	18.8648725	25.3988201	31.2539521	42.9501953	11.6962432	11.6962432
2009	6.5861307	6.5861307	11.8209154	18.4070461	18.9898352	25.5759659	31.4447500	43.2100406	11.7652906	11.7652906
2010	6.7212893	6.7212893	12.0614098	18.7826991	19.3458667	26.0671560	31.9921862	43.9459748	11.9537886	11.9537886
2011	7.0655274	7.0655274	12.6520453	19.7175727	20.3595361	27.4250635	33.5586649	46.0624239	12.5037590	12.5037590
2012	7.1059481	7.1059481	12.7000408	19.8059889	20.4872180	27.5931661	33.6861436	46.2381519	12.5520083	12.5520083
2013	7.1806255	7.1806255	12.8094971	19.9901226	20.7619903	27.9426158	33.9764415	46.6295124	12.6530709	12.6530709
2014	7.2435238	7.2435238	12.8912578	20.1347816	20.9836235	28.2271473	34.1933032	46.9287159	12.7354127	12.7354127
2015	7.2716745	7.2716745	12.9422531	20.2139276	21.1067580	28.3784325	34.2096543	46.9436952	12.7340409	12.7340409
2016	7.2879225	7.2879225	12.9499087	20.2378312	21.2267111	28.5146336	34.2298457	46.9725598	12.7427141	12.7427141
2017	7.5022888	7.5022888	13.2981647	20.8004535	21.9200433	29.4223321	35.1504149	48.2200518	13.0696369	13.0696369
2018	7.5156773	7.5156773	13.2965930	20.8122703	22.0406329	29.5563102	35.1462234	48.2161238	13.0699004	13.0699004
2019	7.5414630	7.5414630	13.3086088	20.8500718	22.1913580	29.7328210	35.1779840	48.2541439	13.0761599	13.0761599
2020	7.4754858	7.4754858	13.1682215	20.6437073	22.1262651	29.6017509	34.8068032	47.7568718	12.9500686	12.9500686
2021	7.4804030	7.4804030	13.1685764	20.6489794	22.1494800	29.6298830	34.8079521	47.7577671	12.9498150	12.9498150
2022	7.4826269	7.4826269	13.1725309	20.6551578	22.1560800	29.6387069	34.8183138	47.7672131	12.9488993	12.9488993
2023	7.4841642	7.4841642	13.1752180	20.6593822	22.1606000	29.6447642	34.8254468	47.7810384	12.9555916	12.9555916
2024	7.4767910	7.4767910	13.1622389	20.6390299	22.1387600	29.6155510	34.7910798	47.7316328	12.9405530	12.9405530
2025	7.4866269	7.4866269	13.1795275	20.6661544	22.1678800	29.6545069	34.8368617	47.7938033	12.9569416	12.9569416
2026	7.4645522	7.4645522	13.1406915	20.6052437	22.1025600	29.5671122	34.7342074	47.6545065	12.9202991	12.9202991
2027	7.4657761	7.4657761	13.1428716	20.6086477	22.1061200	29.5718961	34.7398511	47.6627108	12.9228597	12.9228597
2028	7.4657164	7.4657164	13.1427195	20.6084359	22.1060000	29.5717164	34.7396064	47.6623933	12.9227869	12.9227869
2029	7.4691791	7.4691791	13.1488035	20.6179826	22.1162000	29.5853791	34.7556862	47.6842747	12.9285885	12.9285885
2030	7.4591642	7.4591642	13.1312107	20.5903749	22.0866000	29.5457642	34.7090904	47.6211878	12.9120974	12.9120974
2031	7.4616866	7.4616866	13.1356723	20.5973589	22.0940800	29.5557666	34.7208404	47.6370119	12.9161715	12.9161715
2032	7.4597910	7.4597910	13.1322754	20.5920664	22.0884400	29.5482310	34.7119840	47.6242155	12.9122315	12.9122315
2033	7.4608806	7.4608806	13.1342527	20.5951333	22.0917200	29.5526006	34.7171170	47.6316212	12.9145042	12.9145042
2034	7.4685821	7.4685821	13.1477895	20.6163716	22.1144400	29.5830221	34.7529149	47.6787881	12.9258732	12.9258732
2035	7.4710448	7.4710448	13.1521497	20.6231945	22.1217600	29.5928048	34.7643830	47.6763854	12.9120024	12.9120024

a) For the period 1968 through 1987, rates are for an interim facility.

b) The relatively minor costs of Del Valle Pumping Plant have been combined with those of South Bay Pumping Plant to simplify the allocation procedure.

TABLE B-17

Unit Variable OMP&R Component of Transportation Charge (Continued)

(in dollars per acre-foot)

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	Reach 4 Dos Amigos Pumping Plant		Reach 14A Buena Vista Pumping Plant		Reach 15A Wheeler Ridge Pumping Plant		Reach 16A Chrisman Pumping Plant		Reach 17E Edmonston 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
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]
1961	0	0	0	0	0	0	0	0	0	0
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	1.0732031	2.6167353	0	0	0	0	0	0	0	0
1969	0.7028165	1.8095316	0	0	0	0	0	0	0	0
1970	0.7813430	1.7278779	0.3333333	2.0612112	0	0	0	0	0	0
1971	0.4125312	1.2933749	1.3594550	2.6528299	4.9729730	7.6258029	0	0	0	0
1972	0.5554925	1.4585921	1.0808850	2.5394771	1.1418280	3.6813051	2.2892599	5.9705650	7.3206022	13.2911672
1973	0.5996892	1.5383283	0.9844807	2.5228090	1.2143719	3.7371809	2.1051633	5.8423442	7.4512435	13.2935877
1974	0.5736894	1.4709300	0.9223291	2.3932591	1.0924098	3.4856689	1.9449022	5.4305711	6.9004732	12.3310443
1975	0.4602594	1.5564614	0.8190849	2.3755463	0.9574493	3.3329956	1.9610412	5.2940368	6.9962702	12.2903070
1976	0.5163827	1.7105095	0.9626676	2.6731771	1.0211874	3.6943645	2.2275746	5.9219391	7.9384515	13.8603906
1977	0.6138931	2.3818667	1.0969170	3.4787837	1.3715867	4.8503704	2.9301764	7.7805468	9.9990004	17.7795472
1978	0.4199303	2.0313329	0.9606230	2.9919559	1.0432294	4.0351853	1.9779157	6.0131010	7.0810192	13.0941202
1979	0.6587934	2.7952984	1.1099369	3.9052353	1.2652451	5.1704804	2.6939701	7.8644505	9.6345625	17.4990130
1980	0.8056952	2.1736228	1.3516057	3.5252285	1.5041463	5.0293748	3.1923433	8.2217181	10.9860288	19.2077469
1981	1.0909294	3.1846645	1.2388784	4.4235429	1.3195560	5.7430989	2.9541028	8.6972017	9.9484860	18.6456877
1982	0.8307526	2.5812833	1.2001820	3.7814653	1.3668611	5.1483264	2.8880977	8.0364241	10.1769284	18.2133525
1983	0.3922614	1.2567303	0.7581088	2.0148391	0.8844225	2.8992616	1.7654349	4.6646965	5.5224174	10.1871139
1984	0.6744472	1.8857808	1.0070388	2.8928196	1.1666349	4.0594545	2.4197504	6.4792049	7.8119975	14.2912024
1985	0.8984420	2.5801700	1.4688497	4.0490197	1.6972706	5.7462903	3.5695961	9.3158864	12.1239468	21.4398332
1986	1.3925909	4.9368221	2.3674309	7.3042530	2.7518656	10.0561186	5.9424378	15.9985564	20.5596458	36.5582022
1987	1.3008085	4.7992837	2.2602815	7.0595652	2.5790563	9.6386215	5.3865021	15.0251236	18.0098286	33.0349522
1988	1.2113089	4.4965906	2.1416815	6.6382721	2.4366669	9.0749390	5.0838084	14.1587474	16.8704975	31.0292449
1989	1.5502221	5.1572172	2.6889102	7.8461274	3.0017402	10.8478676	6.5343232	17.3821908	22.1238659	39.5060567
1990	1.8178538	6.2989898	3.3080795	9.6070693	3.7483386	13.3554079	8.6833357	22.0387436	31.0407429	53.0794865
1991	1.8974458	8.0555817	2.2567561	10.3123378	2.4468372	12.7591750	5.6028467	18.3620217	19.9100086	38.2720303
1992	1.7990635	6.3919934	2.7111972	9.1031906	3.2870560	12.3902466	6.5224060	18.9126526	22.2151002	41.1277528
1993	3.0197129	10.2248420	5.0646405	15.2894825	6.1649717	21.4544542	13.0328566	34.4873108	45.9471241	80.4344349
1994	3.2438110	10.7064979	5.4490687	16.1555666	6.6319155	22.7874821	14.0314038	36.8188859	49.4849249	86.3038108
1995	4.2369528	13.7551830	7.0746327	20.8298157	8.6155618	29.4453775	18.3477547	47.7931322	64.9499851	112.7431173
1996	4.0929898	13.3830787	6.8952214	20.2783001	8.3968818	28.6751819	17.8700918	46.5452737	63.2375621	109.7828358
1997	4.2242826	14.2061998	7.0661963	21.2723961	8.6075012	29.8798973	18.3405144	48.2204117	64.9404208	113.1608325
1998	4.2269083	13.9803905	7.0674958	21.0478863	8.6092230	29.6571093	18.3394847	47.9965940	64.9279955	112.9245895
1999	4.2974033	13.5845098	7.1921396	20.7766494	8.7611008	29.5377502	18.6714656	48.2092158	66.1189238	114.3281396
2000	4.6755360	14.7897012	7.8493726	22.6390738	9.5625326	32.2016064	20.4101062	52.6117126	72.3307333	124.9424459
2001	4.6811519	14.8065969	7.8603033	22.6669002	9.5758239	32.2427241	20.4406345	52.6833586	72.4428511	125.1262097
2002	4.7263711	14.9472908	7.9379818	22.8852726	9.6705890	32.5558616	20.6446137	53.2004753	73.1688041	126.3692794
2003	4.7645191	15.0712521	8.0034798	23.0747319	9.7504495	32.8251814	20.8165620	53.6417434	73.7806454	127.4223888
2004	4.8327341	15.2853993	8.1241226	23.4095219	9.8975390	33.3070609	21.1378247	54.4448856	74.9325459	129.3774315
2005	5.3251265	16.8582413	8.9846939	25.8429352	10.9467704	36.7897056	23.4175536	60.2072592	83.0838288	143.2910880
2006	5.3293022	16.8655944	8.9915022	25.8570966	10.9550805	36.8121771	23.4350592	60.2472363	83.1455011	143.3927374
2007	5.3637537	16.9749270	9.0512943	26.0262213	11.0279734	37.0541947	23.5928278	60.6470225	83.7086791	144.3557016
2008	5.4032787	17.0995219	9.1204310	26.2199529	11.1123347	37.3322876	23.7760324	61.1083200	84.3635195	145.4718395
2009	5.4349614	17.2002520	9.1750663	26.3753183	11.1788826	37.5542009	23.9197008	61.4739017	84.8753856	146.3492873
2010	5.5194202	17.4732088	9.3260179	26.7992267	11.3629306	38.1621573	24.3233158	62.4854731	86.3254237	148.8108968
2011	5.7743853	18.2781443	9.7698765	28.0480208	11.9041189	39.9521397	25.4961771	65.4483168	90.5134654	155.9617822
2012	5.7956741	18.3476824	9.8064897	28.1541721	11.9487995	40.1029716	25.5922926	65.6952642	90.8557454	156.5510096
2013	5.8427059	18.4957768	9.8885484	28.3843252	12.0489270	40.4332522	25.8094188	66.2426710	91.6313713	157.8740423
2014	5.8790058	18.6144185	9.9508765	28.5652950	12.1248840	40.6901790	25.9730700	66.6632490	92.2140772	158.8773262
2015	5.8807938	18.6148347	9.9547582	28.5695929	12.1296642	40.6992571	25.9842202	66.6834773	92.2553458	158.9388231
2016	5.8829655	18.6256796	9.9595517	28.5852313	12.1354388	40.7206701	25.9979734	66.7186435	92.3063620	159.0250055
2017	6.0333510	19.1029879	10.2208309	29.3238188	12.4541298	41.7779486	26.6879706	68.4659192	94.7691713	163.2350905
2018	6.0328285	19.1027289	10.2197458	29.3224747	12.4528227	41.7752974	26.6849591	68.4602565	94.7582926	163.2185491
2019	6.0374582	19.1136181	10.2283109	29.3419290	12.4632324	41.8051614	26.7080599	68.5132213	94.8417813	163.3550026
2020	5.9768413	18.9269099	10.1229623	29.0498722	12.3347236	41.3845958	26.4298305	67.8144263	93.8487478	161.6631741
2021	5.9772052	18.9270202	10.1234742	29.0504944	12.3353098	41.3858042	26.4309629	67.8167671	93.8522767	161.6690438
2022	5.9786338	18.9275331	10.1261831	29.0537162	12.3386329	41.3923491	26.4383439	67.8306930	93.8792806	161.7099736
2023	5.9797717	18.9353633	10.1281672	29.0635305	12.3411470	41.4046775	26.4437168	67.8483943	93.8983310	161.7467253
2024	5.9751341	18.9156871	10.1192619	29.0349490	12.3302550	41.3652040	26.4191826	67.7843866	93.8090017	161.5933883
2025	5.9815121	18.9384537	10.1313496	29.0698033	12.3448999	41.4147032	26.4521333	67.8668365	93.9285301	161.7953666
2026	5.9650103	18.8853094	10.1024170	28.9877264	12.3096402	41.2973666	26.3755118	67.6728784	93.6546325	161.3275109
2027	5.9658293	18.8886890	10.1038698	28.9925588	12.3114821	41.3040409	26.3795403	67.6835812	93.6692970	161.3528782
2028	5.9657986	18.8885855	10.1038782	28.9924637	12.3113803	41.3038440	26.3794228	67.6832668	93.6687714	161.3520382
2029	5.9675063	18.8960948	10.1075866	29.0036814	12.3159640	41.3196454	26.3902012	67.7098466	93.7091211	161.4189677
2030	5.9607225	18.8728199	10.0951443	28.9679642	12.3008021	41.2687663	26.3564780	67.6252443	93.5869831	161.2122274
2031	5.9625080	18.8786795	10.0983284	28.9770079	12.3046746	41.2816825	26.3651492	67.6468317	93.6180218	161.2648535
2032	5.9611845	18.8734160	10.0958770	28.9692930	12.3016882	41.2709812	26.3585215	67.6295027	93.5945111	161.2240138
2033	5.9618510	18.8763552	10.0972340	28.9735892	12.3033576	41.2769468	26.3622903	67.6392371	93.6078461	161.2470832
2034	5.9676802	18.8935534	10.1073521	29.0009055	12.3157005	41.3166060	26.3890449	67.7056509	93.7034972	161.4091481
2035	5.9695797	18.8815821	10.1106797	28.9922618	12.3197189	41.3119807	26.3976583	67.7096390	93.7343989	161.4440379

TABLE B-17

Unit Variable OMP&R Component of Transportation Charge (Continued)

(in dollars per acre-foot)

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	Reach 18A Alamo Powerplant		Reach 22B Pearblossom Pumping Plant		Reach 23 Mojave Siphon Powerplant		Reach 26A Devil Canyon Powerplant		Reach 29A Oso 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
	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]	[30]
1961	0	0	0	0	0	0	0	0	0	0
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	0	13.2911672	14.2519509	27.5431181	0	27.5431181	-2.3717647	25.1713534	1.4212193	14.7123865
1973	0	13.2935877	4.4326545	17.7262422	0	17.7262422	-8.4298618	9.2963804	1.0210537	14.3146414
1974	0	12.3310443	3.4431782	15.7742225	0	15.7742225	-5.1043660	10.6698565	0.9241725	13.2552168
1975	0	12.2903070	3.1739313	15.4642383	0	15.4642383	-5.6510611	9.8131772	0.9362286	13.2265356
1976	0	13.8603906	3.9391330	17.7995236	0	17.7995236	-6.4449941	11.3545295	0.8622774	14.7226680
1977	0	17.7795472	3.4988957	21.2784429	0	21.2784429	-11.6274558	9.6509871	0.9076172	18.6871644
1978	0	13.0941202	4.1377503	17.2318705	0	17.2318705	-8.1314274	9.1004431	0.7314697	13.8255899
1979	0	17.4990130	5.1961178	22.6951308	0	22.6951308	-9.5825772	13.1125536	0.9504526	18.4494656
1980	0	19.2077469	4.3918283	23.5995752	0	23.5995752	-8.3797007	15.2198745	1.4269064	20.6346533
1981	0	18.6456877	3.9979411	22.6436288	0	22.6436288	-6.7421980	15.9014308	1.5649076	20.2105953
1982	0	18.2133525	3.6618080	21.8751605	0	21.8751605	-6.9205064	14.9546541	1.4942612	19.7076137
1983	0	10.1871139	1.6396483	11.8267622	0	11.8267622	-23.8742905	-12.0475283	1.4680919	11.6552058
1984	0	14.2912024	2.3683525	16.6595549	0	16.6595549	-29.7599667	-13.1004118	1.7215519	16.0127543
1985	0	21.4398332	3.5285410	24.9683742	0	24.9683742	-30.7609808	-5.7926066	2.2280617	23.6678949
1986	-2.3474750	34.2107272	5.9820629	40.1927901	0	40.1927901	-29.2492016	10.9435885	3.2193040	39.7775062
1987	-2.5789688	30.4559834	5.2013463	35.6573297	0	35.6573297	-30.5130346	5.1442951	3.1321092	36.1670614
1988	-1.3964797	29.6327652	4.8534324	34.4861976	0	34.4861976	-29.5480148	4.9381828	3.0033046	34.0325495
1989	-1.1042953	38.4017614	6.3977078	44.7994692	0	44.7994692	-28.3706997	16.4287695	3.5195192	43.0255759
1990	-1.0672075	52.0122790	8.9876109	60.9998899	0	60.9998899	-28.8762479	32.1236420	3.6812973	56.7607838
1991	-2.0169138	36.2551165	6.1611008	42.4162173	0	42.4162173	-42.9791408	-0.5629235	2.3903808	40.6624111
1992	-1.0747401	40.0530127	6.9767571	47.0297698	0	47.0297698	-27.8508796	19.1788902	3.4796321	44.6073849
1993	-0.9723592	79.4620757	14.2095654	93.6716411	0	93.6716411	-27.8918411	65.7798000	6.0971244	86.5315593
1994	-0.9954291	85.3083817	15.3049655	100.6133472	0	100.6133472	-27.8686263	72.7447209	6.5373416	92.8411524
1995	-3.6402961	109.1028212	20.0590381	129.1618593	-8.0212368	121.1406225	-28.6069022	92.5337203	8.3973076	121.1404249
1996	-3.6123714	106.1704644	19.5432445	125.7137089	-8.4626696	117.2510393	-28.4925312	88.7585081	8.1757993	117.9586351
1997	-3.5827128	109.5781197	20.0699421	129.6480618	-8.5848255	121.0632363	-28.4232173	92.6400190	8.3646646	121.5254971
1998	-3.6311379	109.2934516	20.0624484	129.3559000	-8.8912300	120.4646700	-28.3338452	92.1308248	8.3773856	121.3019751
1999	-3.6175166	110.7106230	20.4304503	131.1410733	-8.5204719	122.6206014	-28.4263214	94.1942800	8.5169053	122.8450449
2000	-3.6126517	121.3297942	22.3449622	143.6747564	-8.8971754	134.7775810	-28.3182181	106.4593629	9.2809927	134.2234386
2001	-3.6150825	121.5111272	22.3800643	143.8911915	-8.7321200	135.1590715	-28.3609799	106.7980916	9.2909443	134.4171540
2002	-3.6128401	122.7564393	22.6040518	145.3604911	-8.7358568	136.6246343	-28.3547895	108.2698448	9.3820435	135.7513229
2003	-3.6037557	123.8186331	22.7945690	146.6132021	-8.8156921	137.7975100	-28.3278295	109.4696805	9.4563932	136.8787820
2004	-3.6156282	125.7618033	23.1470030	148.9088063	-8.9055993	140.0032070	-28.3086857	111.6945213	9.5969962	138.9744277
2005	-3.6182730	139.6728150	25.6566752	165.3294902	-9.0258178	156.3036724	-28.2779982	128.0256742	10.5991321	153.8902201
2006	-3.6164280	139.7763094	25.6767977	165.4531071	-8.9485470	156.5045601	-28.2937283	128.2108318	10.6058244	153.9985618
2007	-3.6155808	140.7401208	25.8506779	166.5907987	-8.9315733	157.6592254	-28.2980370	129.3611884	10.6749133	155.0306149
2008	-3.6181020	141.8537375	26.0518445	167.9055820	-8.9851366	158.9204454	-28.2822258	130.6382196	10.7553904	156.2272299
2009	-3.6116319	142.7376554	26.2103426	168.9479980	-8.8412298	160.1067682	-28.3256881	131.7810801	10.8183504	157.1676377
2010	-3.6063022	145.2045946	26.6558166	171.8604112	-9.0248253	162.8355859	-28.2761034	134.5594825	10.9976999	159.8085967
2011	-3.5932382	152.3685440	27.9474057	180.3159497	-8.8030467	171.5129030	-28.3275197	143.1853833	11.5115946	167.4733768
2012	-3.5935274	152.9574822	28.0534905	181.0109727	-8.7039853	172.3069874	-28.3574392	143.9495482	11.5535733	168.1045829
2013	-3.5919117	154.2821306	28.2923036	182.5744342	-8.7290995	173.8453347	-28.3509637	145.4943710	11.6489967	169.5230390
2014	-3.5881971	155.2891291	28.4734715	183.7626006	-8.7961739	174.9664267	-28.3298014	146.6366253	11.7197504	170.5970766
2015	-3.6030375	155.3357856	28.4848266	183.8206122	-9.0058121	174.8148001	-28.2681964	146.5466037	11.7255469	170.6643700
2016	-3.6104106	155.4145949	28.4992023	183.9137972	-8.9809174	174.9328798	-28.2849523	146.6479275	11.7319262	170.7569317
2017	-3.6034166	159.6316739	29.2590507	188.8907246	-8.9740190	179.9167056	-28.2798687	151.6368369	12.0339692	175.2690597
2018	-3.6000227	159.6185264	29.2560486	188.8745750	-8.9908231	179.8837519	-28.2731695	151.6105824	12.0323196	175.2508687
2019	-3.5983759	159.7566267	29.2804092	189.0370359	-8.8938416	180.1431943	-28.3019652	151.8412291	12.0439540	175.3989566
2020	-3.6098462	158.0533279	28.9747716	187.0280995	-9.0244777	178.0036218	-28.2664587	149.7371631	11.9208603	173.5840344
2021	-3.6100423	158.0590015	28.9757657	187.0347672	-8.9908266	178.0439406	-28.2664189	149.7775217	11.9216175	173.5906613
2022	-3.6058322	158.1041414	28.9839119	187.0880533	-9.0445893	178.0434640	-28.2532531	149.7902109	11.9248718	173.6348454
2023	-3.6038937	158.1428316	28.9897505	187.1325821	-9.0631718	178.0694103	-28.2446400	149.8247703	11.9273987	173.6741240
2024	-3.6041044	157.9892839	28.9632199	186.9525038	-8.9984308	177.9540730	-28.2549157	149.6991573	11.9161788	173.5095671
2025	-3.5865585	158.2088081	28.9989680	187.2077761	-9.0013815	178.2063946	-28.2619982	149.9443964	11.9309568	173.7263234
2026	-3.5847465	157.7427644	28.9145812	186.6573456	-9.0442951	177.6130505	-28.2507030	149.3623475	11.8974765	173.2249874
2027	-3.5832061	157.7696721	28.9190031	186.6886752	-9.0471343	177.6415409	-28.2506625	149.3908784	11.8992759	173.2521541
2028	-3.5849698	157.7670684	28.9188061	186.6858745	-9.0447157	177.6411588	-28.2519415	149.3892173	11.8994078	173.2514460
2029	-3.5907944	157.8281733	28.9300103	186.7581836	-9.0653486	177.6928350	-28.2523537	149.4404813	11.9045148	173.3234825
2030	-3.6122091	157.6000183	28.8934172	186.4934355	-8.9742385	177.5191970	-28.2746287	149.2445683	11.8893359	173.1015633
2031	-3.6091408	157.6557127	28.9029124	186.5586251	-9.0534754	177.5051497	-28.2530408	149.2521089	11.8931114	173.1579649
2032	-3.6044174	157.6195964	28.8956768	186.5152732	-9.0366196	177.4786536	-28.2562093	149.2224443	11.8901506	173.1141644
2033	-3.6096292	157.6374540	28.8996441	186.5370981	-9.0111465	177.5259516	-28.2635794	149.2623722	11.8920684	173.1391516
2034	-3.6116001	157.7975480	28.9294268	186.7269748	-8.9204885	177.8064863	-28.2871471	149.5193392	11.9033322	173.3124803
2035	-3.6083571	157.8356808	28.9374643	186.7731451	-8.6382677	178.1348774	-28.3521293	149.7827481	11.9097885	173.3538264

TABLE B-17

Unit Variable OMP&R Component of Transportation Charge (Continued)

(in dollars per acre-foot)

Calendar Year	CALIFORNIA AQUEDUCT (continued)							
	Reach 29G Warne Powerplant		Reach 29J Castaic Powerplant		Reach 31A Las Perillas and Badger Hill Pumping Plants		Reach 33A Devil's Den, Bluestone, and Polonio Pass 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
	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	1.5014866	4.1182219	0	0
1969	0	0	0	0	1.2624065	3.0719381	0	0
1970	0	0	0	0	1.6309699	3.3588478	0	0
1971	0	0	0	0	1.4985537	2.7919286	0	0
1972	0	14.7123865	-2.9350830	11.7773035	1.7489056	3.2074977	0	0
1973	0	14.3146414	-6.8099448	7.5046966	1.4609575	2.9992858	0	0
1974	0	13.2552168	-7.4013274	5.8538894	1.4255635	2.8964935	0	0
1975	0	13.2265356	-6.5604921	6.6660435	1.0379624	2.5944238	0	0
1976	0	14.7226680	-6.7213324	8.0013356	1.5465478	3.2570573	0	0
1977	0	18.6871644	-30.4985994	-11.8114350	1.7573375	4.1392042	0	0
1978	0	13.8255899	-9.0130187	4.8125712	1.9022180	3.9335509	0	0
1979	0	18.4494656	-19.0478097	-0.5983441	1.5336852	4.3289836	0	0
1980	0	20.6346533	-20.5438586	0.0907947	1.5124754	3.6860982	0	0
1981	0	20.2105953	-11.3026541	8.9079412	1.5414290	4.7260935	0	0
1982	-2.1714430	17.5361707	-9.5987314	7.9374393	1.7581649	4.3394482	0	0
1983	-9.1823408	2.4728650	-36.3879457	-33.9150807	-0.1078911	1.1488392	0	0
1984	-15.1336305	0.8791238	-6.9190778	-6.0399540	0.7991110	2.6848918	0	0
1985	-14.7796535	8.8882414	-40.0895690	-31.2013276	1.2479239	3.8280939	0	0
1986	-14.3284894	25.4490168	-28.1596198	-2.7106030	2.2592345	7.1960566	0	0
1987	-14.8417287	21.3253327	-27.0537384	-5.7284057	1.9189179	6.7182016	0	0
1988	-14.6563039	19.3762456	-25.6856807	-6.3094351	1.7877473	6.2843379	0	0
1989	-14.4231503	28.6024256	-25.3986130	3.2038126	2.4103646	7.5675818	0	0
1990	-14.1850383	42.5757455	-26.0776141	16.4981314	3.5238611	9.8228509	0	0
1991	-20.1565009	20.5059102	-34.6755679	-14.1696577	24.7092246	32.7648063	0	0
1992	-14.2397757	30.3676092	-26.0130351	4.3545741	2.6758856	9.0678790	0	0
1993	-14.1643495	72.3672098	-25.0418459	47.3253639	5.5178952	15.7427372	0	0
1994	-14.1623569	78.6787955	-25.0071905	53.6716050	5.9400159	16.6465138	0	0
1995	-15.2911022	105.8493227	-24.9906129	80.8587098	7.7627482	21.5179312	0	0
1996	-15.2084228	102.7502123	-24.9514305	77.7987818	6.2096331	19.5927118	23.3811821	42.9738939
1997	-15.1401009	106.3853962	-24.8790786	81.5063176	7.7752478	21.9814476	48.5865278	70.5679754
1998	-15.2464827	106.0554924	-24.9078132	81.1476792	7.7721164	21.7525069	48.5613171	70.3138240
1999	-15.1979361	107.6471088	-24.8940773	82.7530315	7.9175390	21.5020488	49.7327980	71.2348468
2000	-15.2072693	119.0161693	-24.8926317	94.1235376	8.6714426	23.4611438	55.8066708	79.2678146
2001	-15.1770211	119.2401329	-24.8846860	94.3554469	8.6856001	23.4921970	55.9207360	79.4129330
2002	-15.1931535	120.5581694	-24.8831685	95.6750009	8.7731961	23.7204869	56.6264081	80.3468950
2003	-15.1912193	121.6875627	-24.8826965	96.8048662	8.8469854	23.9182375	57.2208240	81.1390615
2004	-15.1798697	123.7945580	-24.8796411	98.9149169	8.9875600	24.2729593	58.3533042	82.6262635
2005	-15.1807943	138.7094258	-24.8772950	113.8321308	9.9777702	26.8360115	66.3328888	93.1689003
2006	-15.1749953	138.8235665	-24.8758372	113.9477293	9.9850864	26.8506808	66.3918367	93.2425175
2007	-15.1755689	139.8550460	-24.8720449	114.9830011	10.0533143	27.0282413	66.9414777	93.9697190
2008	-15.1746950	141.0525349	-24.8719072	116.1806277	10.1328640	27.2323859	67.5824135	94.8147994
2009	-15.1772710	141.9903667	-24.8724518	117.1179149	10.1947253	27.3949773	68.0807536	95.4757309
2010	-15.1725895	144.6360072	-24.8716180	119.7641892	10.3722133	27.8454221	69.5106120	97.3560341
2011	-15.1725920	152.3007848	-24.8716787	127.4291061	10.8800813	29.1582256	73.6020912	102.7603168
2012	-15.1748016	152.9297813	-24.8721001	128.0576812	10.9214106	29.2690930	73.9350793	103.2041723
2013	-15.1761306	154.3469084	-24.8724289	129.4744795	11.0155343	29.5113111	74.6932866	104.2045977
2014	-15.1727790	155.4242976	-24.8716175	130.5526801	11.0858366	29.7002551	75.2596970	104.9599521
2015	-15.1768328	155.4875372	-24.8725291	130.6150081	11.0911420	29.7059767	75.3024289	105.0084056
2016	-15.1757203	155.5812114	-24.8722589	130.7089525	11.0976890	29.7233686	75.3551769	105.0785455
2017	-15.1756789	160.0933808	-24.8722165	135.2211643	11.3961461	30.4991340	77.7596118	108.2587458
2018	-15.1729879	160.0778808	-24.8715564	135.2063244	11.3947879	30.4975168	77.7486593	108.2461761
2019	-15.1823611	160.2165955	-24.8737737	135.3428218	11.4050858	30.5187039	77.8316261	108.3503300
2020	-15.1728737	158.4111607	-24.8714213	133.5397394	11.2847426	30.2116525	76.8621286	107.0737811
2021	-15.1754166	158.4152447	-24.8721833	133.5430614	11.2851140	30.2121342	76.8651080	107.0772422
2022	-15.1750444	158.4598010	-24.8719743	133.5878267	11.2884777	30.2160108	76.8921772	107.1081880
2023	-15.1757609	158.4983631	-24.8721137	133.6262494	11.2907855	30.2261488	76.9108050	107.1369538
2024	-15.1772566	158.3323105	-24.8725503	133.4597602	11.2796494	30.1953365	76.8210567	107.0163932
2025	-15.1739514	158.5523720	-24.8718554	133.6805166	11.2944940	30.2329477	76.9406407	107.1735884
2026	-15.1754665	158.0495209	-24.8721510	133.1773699	11.2612077	30.1465171	76.6725307	106.8190478
2027	-15.1754919	158.0766622	-24.8721927	133.2044695	11.2630328	30.1517218	76.6872145	106.8389363
2028	-15.1767211	158.0747249	-24.8724594	133.2022655	11.2629585	30.1515440	76.6866186	106.8381626
2029	-15.1752246	158.1482579	-24.8721578	133.2761001	11.2681685	30.1642633	76.7285986	106.8928619
2030	-15.1770705	157.9244928	-24.8724161	133.0520767	11.2530639	30.1258838	76.6068865	106.7327703
2031	-15.1765570	157.9814079	-24.8722997	133.1091082	11.2568732	30.1355527	76.6375734	106.7731261
2032	-15.1761941	157.9379703	-24.8722411	133.0657292	11.2539976	30.1274136	76.6144483	106.7418619
2033	-15.1778919	157.9612597	-24.8725673	133.0886924	11.2556636	30.1320188	76.6278552	106.7598740
2034	-15.1730767	158.1394036	-24.8715988	133.2678048	11.2672718	30.1608252	76.7213773	106.8822025
2035	-15.1939007	158.1599257	-24.8768533	133.2830724	11.2709963	30.1525784	76.7513407	106.9039191

TABLE B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(in dollars)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA	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]
1961	0	0	0	0	0	0	0	0	0	0
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	29,898	120,985	341,769	492,652	0	0	0
1969	8,551	0	8,551	31,859	3,904	298,968	334,731	0	0	0
1970	13,598	0	13,598	49,688	0	431,442	481,130	0	0	0
1971	10,609	0	10,609	23,842	28,329	416,328	468,499	0	0	0
1972	14,434	0	14,434	54,839	144,669	524,207	723,715	0	0	0
1973	14,449	0	14,449	18,397	15,590	547,808	581,795	0	0	0
1974	17,473	0	17,473	9,499	29	636,187	645,715	0	0	0
1975	14,779	0	14,779	22,317	4,765	425,285	452,367	0	0	0
1976	20,856	0	20,856	97,875	121,693	502,768	722,336	0	0	0
1977	22,635	0	22,635	82,578	123,044	497,792	703,414	0	0	0
1978	21,692	0	21,692	74,911	39,986	652,861	767,758	0	0	0
1979	16,237	0	16,237	136,993	77,085	652,117	866,195	0	0	0
1980	19,945	0	19,945	98,836	64,953	518,020	681,809	0	0	0
1981	23,841	0	23,841	126,888	141,961	569,996	838,845	0	0	0
1982	12,159	0	12,159	88,298	42,497	587,133	717,928	0	0	0
1983	2,670	0	2,670	11,310	7,492	205,828	224,630	0	0	0
1984	4,507	0	4,507	25,782	12,685	334,437	372,904	0	0	0
1985	9,981	0	9,981	87,387	110,254	510,218	707,859	0	0	0
1986	15,406	0	15,406	116,769	136,250	968,578	1,221,597	0	0	0
1987	27,269	0	27,269	231,212	250,810	869,292	1,351,314	0	0	0
1988	32,352	27,260	59,612	240,455	311,521	818,842	1,370,818	0	0	0
1989	33,147	73,042	106,189	315,172	312,948	1,081,536	1,709,656	0	0	0
1990	62,116	108,232	170,348	543,710	521,803	1,511,843	2,577,356	0	0	0
1991	7,314	52,802	60,116	140,231	188,465	420,201	748,897	0	(17,571)	(17,571)
1992	24,350	42,709	67,059	221,296	262,110	590,616	1,074,022	0	0	0
1993	123,697	218,632	342,329	895,988	986,907	2,336,158	4,219,053	0	0	0
1994	144,898	249,386	394,284	1,009,736	1,060,224	2,524,342	4,594,302	0	0	0
1995	187,141	314,566	501,707	1,405,743	1,405,743	3,347,005	6,158,491	0	0	0
1996	194,620	329,769	524,389	1,434,875	1,369,653	3,261,078	6,065,606	1,074,348	1,954,710	3,029,058
1997	212,587	343,907	556,494	1,562,301	1,426,449	3,396,306	6,385,056	1,764,199	3,209,855	4,974,054
1998	225,259	349,504	574,763	1,551,348	1,416,448	3,372,496	6,340,292	1,757,846	3,198,294	4,956,140
1999	241,954	361,086	603,040	1,550,527	1,415,698	3,370,712	6,336,937	1,780,871	3,240,188	5,021,059
2000	280,881	401,220	682,101	1,695,544	1,548,105	3,685,963	6,929,612	1,981,695	3,605,575	5,587,270
2001	294,788	402,120	696,908	1,698,070	1,550,413	3,691,458	6,939,941	1,985,323	3,612,177	5,597,500
2002	309,419	406,574	715,993	1,714,890	1,565,770	3,728,022	7,008,682	2,008,672	3,654,660	5,663,332
2003	325,867	410,417	736,284	1,729,307	1,578,932	3,759,362	7,067,601	2,028,477	3,690,691	5,719,168
2004	344,797	417,420	762,217	1,755,965	1,603,272	3,817,314	7,176,551	2,065,657	3,758,338	5,823,995
2005	398,839	490,968	889,807	1,946,198	1,776,964	4,230,867	7,954,029	2,329,222	4,237,881	6,567,103
2006	410,741	491,850	902,591	1,947,383	1,778,045	4,233,442	7,958,870	2,331,063	4,241,230	6,572,293
2007	427,765	495,682	923,447	1,960,508	1,790,029	4,261,974	8,012,511	2,349,243	4,274,307	6,623,550
2008	448,289	500,126	948,415	1,975,709	1,803,908	4,295,019	8,074,636	2,370,370	4,312,746	6,683,116
2009	465,483	503,690	969,173	1,987,662	1,814,822	4,321,003	8,123,487	2,386,893	4,342,809	6,729,702
2010	488,759	517,090	1,005,849	2,021,515	1,845,731	4,394,597	8,261,843	2,433,901	4,428,336	6,862,237
2011	532,046	543,042	1,075,088	2,118,872	1,934,622	4,606,242	8,659,736	2,569,008	4,674,156	7,243,164
2012	550,484	545,670	1,096,154	2,126,955	1,942,002	4,623,815	8,692,772	2,580,104	4,694,345	7,274,449
2013	575,618	550,934	1,126,552	2,144,957	1,958,440	4,662,951	8,766,348	2,605,115	4,739,851	7,344,966
2014	599,827	555,163	1,154,990	2,158,721	1,971,006	4,692,871	8,822,598	2,623,998	4,774,208	7,398,206
2015	621,488	560,683	1,182,171	2,159,410	1,971,635	4,694,370	8,825,415	2,625,211	4,776,413	7,401,624
2016	641,579	561,517	1,203,096	2,160,738	1,972,848	4,697,255	8,830,841	2,626,963	4,779,603	7,406,566
2017	679,656	577,389	1,257,045	2,218,122	2,025,242	4,822,006	9,065,370	2,706,469	4,924,258	7,630,727
2018	700,485	577,920	1,278,405	2,217,941	2,025,077	4,821,613	9,064,631	2,706,155	4,923,685	7,629,840
2019	722,508	579,240	1,301,748	2,219,690	2,026,674	4,825,415	9,071,779	2,708,758	4,928,423	7,637,181
2020	737,084	573,700	1,310,784	2,196,816	2,005,789	4,775,687	8,978,292	2,676,845	4,870,359	7,547,204
2021	740,747	573,914	1,314,661	2,196,857	2,005,826	4,775,777	8,978,460	2,676,931	4,870,515	7,547,446
2022	740,968	574,085	1,315,053	2,197,291	2,006,223	4,776,722	8,980,236	2,677,704	4,871,924	7,549,628
2023	741,119	574,203	1,315,322	2,197,928	2,006,804	4,778,103	8,982,835	2,678,424	4,873,232	7,551,656
2024	740,389	573,637	1,314,026	2,195,655	2,004,728	4,773,163	8,973,546	2,675,409	4,867,748	7,543,157
2025	741,363	574,391	1,315,754	2,198,515	2,007,340	4,779,380	8,985,235	2,679,340	4,874,897	7,554,237
2026	739,178	572,698	1,311,876	2,192,108	2,001,490	4,765,450	8,959,048	2,670,475	4,858,771	7,529,246
2027	739,297	572,793	1,312,090	2,192,485	2,001,834	4,766,271	8,960,590	2,670,973	4,859,676	7,530,649
2028	739,293	572,787	1,312,080	2,192,470	2,001,820	4,766,240	8,960,530	2,670,954	4,859,641	7,530,595
2029	739,634	573,053	1,312,687	2,193,477	2,002,740	4,768,427	8,964,644	2,672,322	4,862,129	7,534,451
2030	738,644	572,285	1,310,929	2,190,574	2,000,090	4,762,119	8,952,783	2,668,319	4,854,847	7,523,166
2031	738,894	572,479	1,311,373	2,191,303	2,000,754	4,763,701	8,955,758	2,669,328	4,856,683	7,526,011
2032	738,706	572,332	1,311,038	2,190,714	2,000,217	4,762,422	8,953,353	2,668,547	4,855,260	7,523,807
2033	738,815	572,417	1,311,232	2,191,054	2,000,528	4,763,162	8,954,744	2,668,997	4,856,080	7,525,077
2034	739,576	573,007	1,312,583	2,193,224	2,002,509	4,767,879	8,963,612	2,672,055	4,861,644	7,533,699
2035	739,820	573,197	1,313,017	2,193,114	2,002,408	4,767,638	8,963,160	2,672,598	4,862,631	7,535,229
TOTAL	23,440,361	21,730,588	45,170,949	87,417,831	80,990,369	200,044,585	368,452,785	97,168,782	176,775,205	273,943,987

TABLE B-18

Variable OMP&R Component of Transportation Charge for Each Contractor (Continued)

(in dollars)

Calenda Year	SAN JOAQUIN VALLEY AREA								
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	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]
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	68,978	5,176	0	0	440,922	2,355	4,760	65,680	587,871
1969	56,774	101	0	0	321,387	181	3,338	17,956	399,737
1970	69,819	6,811	0	0	470,866	0	5,595	16,550	569,641
1971	53,097	7,747	0	0	769,055	4,785	6,353	158,419	999,456
1972	61,907	8,452	0	0	1,123,600	2,042	7,375	376,900	1,580,276
1973	33,931	4,615	0	0	764,825	2,308	3,017	77,630	886,326
1974	49,114	4,413	0	46,752	671,406	2,207	3,114	106,332	883,338
1975	63,122	4,670	0	34,574	842,482	2,490	3,920	134,257	1,085,515
1976	70,851	5,131	0	94,653	965,096	2,737	4,910	100,597	1,243,975
1977	26,565	1,758	0	84,875	498,624	3,644	2,602	43,067	661,135
1978	107,201	923	0	188,010	1,594,321	4,248	6,294	24,483	1,925,480
1979	107,742	4,861	0	193,697	2,365,059	5,591	13,137	433,610	3,123,697
1980	89,119	1,943	0	122,020	1,736,941	4,782	7,797	150,511	2,113,113
1981	130,571	18,659	0	261,402	2,402,447	7,325	9,003	265,722	3,095,129
1982	105,833	932	0	138,849	2,289,483	4,517	6,719	47,885	2,594,218
1983	53,914	0	0	14,271	931,021	4,462	3,304	1,265	1,008,237
1984	85,049	0	0	177,721	1,916,688	5,846	6,905	10,830	2,203,039
1985	119,336	13,409	0	237,504	2,657,680	8,773	9,137	283,280	3,329,119
1986	248,070	5,776	0	395,164	5,061,928	18,267	18,100	391,761	6,139,066
1987	222,149	12,119	0	580,793	4,878,929	19,197	19,679	446,736	6,179,602
1988	215,810	16,975	0	564,102	4,782,504	17,986	14,495	431,070	6,042,942
1989	293,280	15,472	0	673,557	6,270,992	20,629	21,970	659,401	7,955,301
1990	228,628	8,056	0	851,955	4,908,571	12,598	13,094	359,483	6,382,385
1991	7,468	1,780	0	314,294	93,906	0	868	17,561	435,877
1992	184,409	9,588	0	473,269	3,768,558	12,784	12,442	378,726	4,839,776
1993	589,973	30,674	0	1,462,662	12,400,159	40,900	41,069	1,211,644	15,777,081
1994	617,765	32,119	0	1,534,080	13,041,813	42,826	42,537	1,268,720	16,579,860
1995	793,674	41,266	0	1,972,627	16,791,728	55,021	54,254	1,629,989	21,338,559
1996	772,204	40,149	0	1,919,425	16,188,519	53,532	52,954	1,585,895	20,612,678
1997	819,698	42,619	0	2,055,146	17,765,949	56,825	56,897	1,683,434	22,480,568
1998	806,669	41,941	0	2,023,763	17,536,897	55,922	55,595	1,656,677	22,177,464
1999	783,826	40,753	0	1,970,174	17,195,630	54,338	52,937	1,609,764	21,707,422
2000	853,365	44,369	0	2,145,257	18,734,506	59,159	57,651	1,752,580	23,646,887
2001	854,340	44,419	0	2,147,734	18,757,123	59,227	57,715	1,754,582	23,675,140
2002	862,459	44,842	0	2,168,181	18,937,029	59,789	58,259	1,771,254	23,901,813
2003	869,611	45,214	0	2,186,161	19,094,118	60,285	58,748	1,785,944	24,100,081
2004	881,968	45,856	0	2,217,320	19,369,709	61,142	59,580	1,811,320	24,446,895
2005	972,721	50,574	0	2,445,852	21,379,808	67,433	65,739	1,997,701	26,979,828
2006	973,145	50,597	0	2,446,951	21,390,476	67,462	65,757	1,998,573	26,992,961
2007	979,454	50,925	0	2,462,835	21,530,111	67,900	66,184	2,011,529	27,168,938
2008	986,642	51,299	0	2,480,949	21,689,815	68,398	66,669	2,026,294	27,370,066
2009	992,454	51,601	0	2,495,577	21,818,177	68,801	67,062	2,038,230	27,531,902
2010	1,008,205	52,419	0	2,535,263	22,168,304	69,893	68,137	2,070,575	27,972,796
2011	1,054,649	54,834	0	2,652,254	23,198,286	73,113	71,271	2,165,960	29,270,367
2012	1,058,661	55,043	0	2,662,337	23,286,357	73,391	71,546	2,174,200	29,381,535
2013	1,067,206	55,487	0	2,683,868	23,476,084	73,983	72,123	2,191,750	29,620,501
2014	1,074,052	55,843	0	2,701,073	23,626,267	74,458	72,592	2,205,808	29,810,093
2015	1,074,076	55,844	0	2,701,176	23,628,675	74,459	72,584	2,205,858	29,812,672
2016	1,074,702	55,877	0	2,702,742	23,642,123	74,503	72,633	2,207,143	29,829,723
2017	1,102,242	57,309	0	2,772,091	24,251,896	76,412	74,497	2,263,704	30,598,151
2018	1,102,227	57,308	0	2,772,041	24,251,098	76,411	74,498	2,263,673	30,597,256
2019	1,102,855	57,340	0	2,773,655	24,266,328	76,455	74,534	2,264,964	30,616,131
2020	1,092,083	56,781	0	2,746,492	24,026,289	75,707	73,815	2,242,839	30,314,006
2021	1,092,089	56,781	0	2,746,512	24,026,615	75,708	73,814	2,242,852	30,314,371
2022	1,092,118	56,783	0	2,746,615	24,028,474	75,711	73,809	2,242,913	30,316,423
2023	1,092,571	56,806	0	2,747,727	24,037,384	75,741	73,847	2,243,841	30,327,917
2024	1,091,435	56,747	0	2,744,888	24,013,011	75,663	73,761	2,241,509	30,297,014
2025	1,092,749	56,816	0	2,748,193	24,042,053	75,754	73,855	2,244,207	30,333,627
2026	1,089,682	56,656	0	2,740,472	23,974,204	75,541	73,646	2,237,909	30,248,110
2027	1,089,877	56,666	0	2,740,959	23,978,358	75,554	73,660	2,238,310	30,253,384
2028	1,089,872	56,665	0	2,740,945	23,978,238	75,554	73,660	2,238,297	30,253,231
2029	1,090,305	56,689	0	2,742,033	23,987,773	75,584	73,693	2,239,187	30,265,264
2030	1,088,962	56,618	0	2,738,653	23,958,063	75,491	73,599	2,236,430	30,227,816
2031	1,089,300	56,637	0	2,739,505	23,965,562	75,515	73,622	2,237,123	30,237,264
2032	1,088,996	56,621	0	2,738,746	23,959,035	75,494	73,600	2,236,499	30,228,991
2033	1,089,166	56,630	0	2,739,169	23,962,685	75,505	73,613	2,236,848	30,233,616
2034	1,090,158	56,681	0	2,741,677	23,985,000	75,574	73,677	2,238,886	30,261,653
2035	1,089,468	56,645	0	2,740,050	23,974,441	75,526	73,598	2,237,467	30,247,195
TOTAL	45,330,411	2,373,110	0	112,421,292	985,841,461	3,121,414	3,091,219	92,442,594	1,244,621,501

TABLE B-18

Variable OMP&R Component of Transportation Charge for Each Contractor (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley–East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley 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]
1961	0	0	0	0	0	0	0	0	0	0
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	30,401	0	0	0	0	0	0	0	0
1969	0	30,627	0	0	0	0	0	0	0	0
1970	0	39,429	0	0	0	0	0	0	0	0
1971	0	34,871	0	0	0	0	0	0	0	0
1972	779	44,601	0	12,781	0	4,492	1,516	0	32,093	0
1973	286	28,247	102,811	6,895	159,535	3,854	0	0	301,444	0
1974	15,558	28,096	100,954	9,891	157,742	4,932	221	0	177,172	6,529
1975	99,182	27,760	108,250	12,758	170,106	6,391	0	0	136,060	53,482
1976	385,090	38,108	135,276	17,835	213,595	8,163	0	0	139,356	68,933
1977	199,168	21,006	0	23,598	0	1,973	1,702	0	239,663	86,821
1978	580,256	44,693	173,766	20,833	263,648	2,723	0	0	36,902	70,719
1979	1,058,567	82,845	228,381	28,596	340,428	2,327	90,780	0	236	3,803
1980	1,390,776	51,281	256,858	29,240	401,192	3,668	94,398	0	0	16,513
1981	1,480,002	111,339	274,101	33,627	430,230	23,680	90,575	0	254,758	57,548
1982	915,967	130,644	291,510	27,080	459,378	0	229,690	0	125,753	188,414
1983	335,776	(306,836)	172,044	10,775	272,017	388	0	0	(72,213)	(8,843)
1984	466,780	(35,114)	262,688	18,792	416,489	14	0	0	(72,786)	(100,295)
1985	794,647	(340,611)	424,188	35,506	674,147	0	0	33,402	(42,808)	(29,125)
1986	1,110,104	57,962	731,909	60,530	1,165,591	5,577	0	105,917	70,269	103,461
1987	1,039,479	(13,194)	692,858	65,930	1,123,205	32,892	605	163,823	45,016	54,684
1988	1,009,854	(46,791)	712,210	69,179	1,172,532	12,417	311	52,450	62,403	44,187
1989	1,739,402	180,411	359,347	97,215	599,649	37,288	8,960	345,961	341,423	210,928
1990	2,455,382	428,510	1,409,098	111,445	2,324,095	90,866	0	447,722	604,919	534,825
1991	311,103	(31,037)	293,944	36,140	484,817	18,925	136,621	141,904	(2,060)	(3,039)
1992	1,501,588	130,216	382,354	91,708	630,636	45,781	564,357	264,351	306,862	172,611
1993	5,628,219	1,598,162	1,519,513	201,394	2,506,209	182,763	3,372,179	1,136,307	2,302,293	1,184,036
1994	6,313,587	1,944,252	1,680,403	226,380	2,771,573	196,209	3,622,081	1,284,745	2,764,300	1,309,404
1995	8,438,449	3,095,650	2,137,529	290,738	3,525,535	250,937	6,153,943	1,697,640	3,793,882	1,665,608
1996	8,570,505	3,168,694	2,050,322	296,059	3,381,699	244,192	5,956,354	1,834,625	3,905,377	1,597,653
1997	9,199,521	3,572,102	2,139,985	314,764	3,529,585	252,029	6,150,012	1,895,701	4,400,586	1,667,521
1998	9,175,623	3,554,705	2,128,223	313,208	3,510,184	251,374	6,119,606	1,890,777	4,699,041	1,658,356
1999	9,294,599	3,616,381	2,175,886	318,813	3,588,803	254,635	6,229,126	1,915,293	5,180,687	1,695,498
2000	11,647,659	4,719,636	2,459,212	404,332	4,056,102	279,060	6,846,700	2,099,006	6,387,561	2,129,187
2001	11,665,069	4,731,119	2,467,037	405,477	4,069,007	279,476	6,866,081	2,102,142	6,407,885	2,135,961
2002	11,784,618	4,796,743	2,501,033	409,873	4,125,081	282,339	6,940,531	2,123,686	6,496,191	2,165,396
2003	11,886,588	4,852,944	2,528,750	413,393	4,170,796	284,781	7,000,114	2,142,062	6,568,181	2,189,393
2004	12,073,133	4,957,823	2,580,144	420,009	4,255,562	289,251	7,112,162	2,175,678	6,701,670	2,233,889
2005	16,202,045	6,169,702	2,957,391	597,861	4,877,778	321,248	7,940,226	2,416,340	11,522,309	2,726,947
2006	16,214,051	6,175,966	2,961,671	598,630	4,884,833	321,485	7,950,431	2,418,131	11,538,973	2,730,891
2007	16,325,854	6,232,077	2,988,243	603,047	4,928,662	323,703	8,009,089	2,434,803	11,642,508	2,755,393
2008	16,455,033	6,296,991	3,017,743	607,871	4,977,315	326,263	8,073,159	2,454,069	11,757,441	2,782,594
2009	16,557,569	6,347,792	3,044,143	612,409	5,020,859	328,295	8,133,424	2,469,363	11,860,297	2,806,938
2010	19,747,825	6,491,219	3,108,325	773,469	5,126,716	333,972	8,272,048	2,512,040	13,805,803	3,027,588
2011	21,087,807	6,906,658	3,307,582	814,687	5,455,362	350,448	8,712,855	2,635,976	14,690,821	3,221,672
2012	21,169,315	6,940,727	3,325,235	818,458	5,484,478	351,802	8,753,195	2,646,164	14,769,223	3,238,866
2013	21,352,646	7,017,516	3,360,921	825,765	5,543,335	354,850	8,831,342	2,669,081	14,927,722	3,273,623
2014	21,492,015	7,075,954	3,387,306	831,090	5,586,855	357,164	8,888,294	2,686,502	15,044,917	3,299,325
2015	21,498,474	7,079,335	3,385,225	926,517	5,583,426	357,272	8,880,592	2,687,308	15,035,681	3,487,809
2016	21,509,381	7,084,426	3,387,570	927,145	5,587,285	357,454	8,886,589	2,688,672	15,046,077	3,490,220
2017	22,093,024	7,328,987	3,502,810	953,559	5,777,364	367,152	9,139,769	2,761,628	15,557,940	3,608,956
2018	22,091,204	7,328,183	3,502,205	953,384	5,776,363	367,122	9,138,094	2,761,401	15,555,248	3,608,331
2019	22,110,317	7,335,580	3,507,532	954,760	5,785,152	367,440	9,151,274	2,763,790	15,578,911	3,613,823
2020	21,874,581	7,237,855	3,458,929	1,014,620	5,704,987	363,523	9,042,583	2,734,322	15,363,035	3,743,430
2021	21,875,365	7,238,034	3,459,861	1,014,850	5,706,524	363,536	9,044,633	2,734,421	15,367,174	3,744,438
2022	21,881,614	7,240,460	3,460,153	1,014,848	5,707,008	363,639	9,044,609	2,735,201	15,368,475	3,744,756
2023	21,886,967	7,242,543	3,460,952	1,014,997	5,708,323	363,729	9,045,925	2,735,871	15,372,023	3,745,620
2024	21,865,718	7,233,520	3,458,050	1,014,337	5,703,540	363,376	9,040,067	2,733,215	15,359,134	3,742,478
2025	21,896,099	7,245,484	3,463,714	1,033,596	5,712,881	363,880	9,052,886	2,737,013	15,384,294	3,943,538
2026	21,831,598	7,218,213	3,450,271	1,030,156	5,690,704	362,810	9,022,744	2,728,950	15,324,577	3,928,231
2027	21,835,323	7,219,682	3,450,929	1,030,321	5,691,791	362,870	9,024,190	2,729,416	15,327,504	3,928,981
2028	21,834,963	7,219,563	3,450,891	1,030,319	5,691,730	362,864	9,024,172	2,729,370	15,327,335	3,928,937
2029	21,843,419	7,223,564	3,452,075	1,030,619	5,693,682	363,004	9,026,795	2,730,427	15,332,593	3,930,284
2030	21,811,842	7,211,422	3,447,550	1,029,612	5,686,220	362,481	9,017,977	2,726,480	15,312,492	4,104,225
2031	21,819,551	7,214,513	3,447,724	1,029,531	5,686,506	362,608	9,017,262	2,727,444	15,313,265	4,104,434
2032	21,814,552	7,212,164	3,447,039	1,029,376	5,685,375	362,526	9,015,916	2,726,819	15,310,223	4,103,617
2033	21,817,023	7,213,406	3,447,962	1,029,650	5,686,897	362,566	9,018,319	2,727,128	15,314,318	4,104,715
2034	21,839,182	7,223,114	3,453,898	1,031,278	5,696,687	362,935	9,032,569	2,729,898	15,340,685	4,111,782
2035	21,844,458	7,223,944	3,459,982	1,033,183	5,706,723	363,023	9,049,252	2,730,557	15,367,711	4,313,745
TOTAL	778,046,131	262,804,269	137,494,466	33,044,739	226,504,529	14,348,437	346,868,905	106,554,992	516,110,825	134,060,245

TABLE B-18

Variable OMP&R Component of Transportation Charge for Each Contractor (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				South Bay 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		
	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]
1961	0	0	0	0	0	0	0	0	0	0
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	30,401	0	0	0	0	0	1,117,913
1969	0	0	0	30,627	0	0	0	0	0	773,646
1970	0	0	0	39,429	0	0	0	0	0	1,103,798
1971	0	0	0	34,871	0	0	0	0	0	1,513,435
1972	0	847,235	0	943,497	0	0	0	0	0	3,261,922
1973	0	1,083,333	0	1,686,405	0	0	0	0	0	3,168,975
1974	0	1,872,299	0	2,373,394	0	0	0	0	0	3,919,920
1975	0	3,886,921	0	4,500,910	0	0	0	0	0	6,053,571
1976	0	5,485,263	0	6,491,619	0	0	0	0	0	8,478,786
1977	0	(796,688)	0	(222,757)	0	0	0	0	0	1,164,427
1978	0	3,678,838	0	4,872,378	0	0	0	0	0	7,587,308
1979	0	4,019,308	0	5,855,271	0	0	0	0	0	9,861,400
1980	0	5,367,081	0	7,611,007	0	0	0	0	0	10,425,874
1981	0	10,504,656	0	13,260,516	0	0	0	0	0	17,218,331
1982	0	7,633,402	0	10,001,838	0	0	0	0	0	13,326,143
1983	0	(8,479,547)	0	(8,076,439)	0	0	0	0	0	(6,840,902)
1984	0	(5,323,574)	0	(4,367,006)	0	0	0	0	0	(1,786,556)
1985	0	(15,240,205)	0	(13,690,859)	0	0	0	0	0	(9,643,900)
1986	0	1,197,705	0	4,609,025	0	0	0	0	0	11,985,094
1987	0	(2,426,153)	0	779,145	0	0	0	0	0	8,337,330
1988	0	(2,649,652)	0	439,100	0	0	0	0	0	7,912,472
1989	0	11,200,904	0	15,121,488	0	0	0	0	0	24,892,634
1990	0	31,147,145	205,897	39,759,904	0	0	0	0	0	48,889,993
1991	0	(4,517,747)	20,260	(3,110,169)	0	0	0	0	0	(1,882,850)
1992	0	10,357,715	75,920	14,524,099	0	0	0	0	0	20,504,956
1993	0	113,254,481	361,837	133,247,393	0	0	0	0	0	153,585,856
1994	0	126,148,558	393,394	148,654,886	0	0	0	0	0	170,223,332
1995	0	173,488,706	529,247	205,067,864	0	0	0	0	0	233,066,621
1996	0	166,395,455	513,750	197,914,685	0	0	0	0	0	228,146,416
1997	516,006	174,010,370	1,754,521	209,402,703	0	0	0	0	0	243,798,875
1998	513,169	173,152,923	1,747,493	208,714,682	0	0	0	0	0	242,763,341
1999	524,661	176,796,039	1,779,530	213,369,951	0	0	0	0	0	247,038,409
2000	676,018	200,476,147	2,006,935	244,187,555	0	0	0	0	0	281,033,425
2001	678,167	201,039,158	2,011,533	244,858,112	0	0	0	0	0	281,767,601
2002	687,512	203,830,970	2,037,915	248,181,888	0	0	0	0	0	285,471,708
2003	695,132	206,166,915	2,060,512	250,959,561	0	0	0	0	0	288,582,695
2004	709,259	210,515,012	2,102,696	256,126,288	0	0	0	0	0	294,335,946
2005	1,081,817	241,798,621	2,401,030	301,013,315	0	0	0	0	0	343,404,082
2006	1,083,381	242,094,001	2,403,333	301,375,777	0	0	0	0	0	343,802,492
2007	1,093,100	244,280,438	2,424,020	304,040,937	0	0	0	0	0	346,769,383
2008	1,103,893	246,761,211	2,447,973	307,061,556	0	0	0	0	0	350,137,789
2009	1,113,550	248,832,319	2,466,721	309,593,679	0	0	0	0	0	352,947,943
2010	1,419,602	254,274,693	2,519,642	321,412,942	0	0	0	0	0	365,515,667
2011	1,510,606	270,561,014	2,672,941	341,928,429	0	0	0	0	0	388,176,784
2012	1,518,667	271,947,920	2,685,513	343,649,563	0	0	0	0	0	390,094,473
2013	1,534,965	274,913,491	2,713,851	347,319,108	0	0	0	0	0	394,177,475
2014	1,547,019	277,140,171	2,735,412	350,072,024	0	0	0	0	0	397,257,911
2015	1,985,706	277,127,883	2,736,662	350,771,890	0	0	0	0	0	397,993,772
2016	1,987,080	277,323,514	2,738,540	351,013,953	0	0	0	0	0	398,284,179
2017	2,054,679	286,830,574	2,828,784	362,805,226	0	0	0	0	0	411,356,519
2018	2,054,324	286,790,409	2,828,484	362,754,752	0	0	0	0	0	411,324,884
2019	2,057,449	287,150,044	2,831,225	363,207,297	0	0	0	0	0	411,834,136
2020	2,493,123	283,251,173	2,795,152	359,077,313	0	0	0	0	0	407,227,599
2021	2,591,152	283,291,327	2,795,221	359,226,536	0	0	0	0	0	407,381,474
2022	2,591,371	283,352,386	2,796,117	359,300,637	0	0	0	0	0	407,461,977
2023	2,591,969	283,426,183	2,796,885	359,391,987	0	0	0	0	0	407,569,717
2024	2,589,796	283,128,223	2,793,559	359,025,013	0	0	0	0	0	407,152,756
2025	2,594,038	283,594,399	2,797,970	359,819,792	0	0	0	0	0	408,008,645
2026	2,583,969	282,511,023	2,787,909	358,471,155	0	0	0	0	0	406,519,435
2027	2,584,464	282,566,829	2,788,451	358,540,751	0	0	0	0	0	406,597,464
2028	2,584,432	282,562,883	2,788,408	358,535,867	0	0	0	0	0	406,592,303
2029	2,585,319	282,691,015	2,789,883	358,692,679	0	0	0	0	0	406,769,725
2030	2,581,931	282,265,784	2,785,405	358,343,421	0	0	0	0	0	406,358,115
2031	2,582,061	282,335,785	2,786,543	358,427,227	0	0	0	0	0	406,457,633
2032	2,581,548	282,260,915	2,785,676	358,335,746	0	0	0	0	0	406,352,935
2033	2,582,239	282,322,443	2,786,136	358,412,802	0	0	0	0	0	406,437,471
2034	2,586,685	282,753,072	2,789,714	358,951,499	0	0	0	0	0	407,023,046
2035	2,591,241	283,008,003	2,790,046	359,481,868	0	0	0	0	0	407,540,469
TOTAL	69,441,100	10,697,270,719	101,688,646	13,424,238,003	0	0	0	0	0	15,356,427,225

TABLE B-19

Total Transportation Charge for Each Contractor

(in dollars)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA	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]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	11,750	43,787	0	55,537	0	0	0
1963	0	0	0	151,158	190,471	449,513	791,142	0	0	0
1964	0	0	0	170,825	277,767	623,434	1,072,026	8,923	17,668	26,591
1965	0	0	0	245,752	404,792	1,160,811	1,811,355	14,709	28,507	43,216
1966	18,099	0	18,099	271,872	422,243	1,415,979	2,110,094	24,023	45,898	69,921
1967	41,651	0	41,651	347,164	502,177	1,686,718	2,536,059	42,377	79,930	122,307
1968	128,844	0	128,844	392,238	604,128	1,988,659	2,985,025	68,520	128,340	196,860
1969	255,007	0	255,007	447,199	540,048	2,086,868	3,074,115	123,604	230,094	353,698
1970	277,846	0	277,846	460,933	533,301	2,206,448	3,200,682	136,697	254,337	391,034
1971	227,777	0	227,777	421,846	552,853	2,173,591	3,148,290	137,859	256,562	394,421
1972	225,283	0	225,283	509,384	679,260	2,324,122	3,512,766	144,078	268,152	412,230
1973	221,398	31,440	252,838	473,900	550,134	2,342,330	3,366,364	141,119	262,742	403,861
1974	240,810	33,015	273,825	497,233	565,336	2,510,072	3,572,641	142,355	265,071	407,426
1975	237,786	36,373	274,159	545,595	606,475	2,413,642	3,565,712	158,935	295,703	454,638
1976	271,627	40,926	312,553	635,894	735,558	2,504,228	3,875,680	268,704	498,415	767,119
1977	293,967	45,194	339,161	599,180	714,345	2,480,222	3,793,747	279,524	518,825	798,349
1978	274,215	49,283	323,498	653,261	693,340	2,789,733	4,136,334	287,250	533,240	820,490
1979	289,831	53,452	343,283	716,663	737,055	2,816,827	4,270,545	286,143	531,316	817,459
1980	311,216	67,886	379,102	833,422	867,202	3,032,478	4,733,102	312,642	580,334	892,976
1981	347,619	87,579	435,198	795,749	880,256	2,922,513	4,598,518	335,618	622,813	958,431
1982	441,013	107,124	548,137	832,825	854,235	3,222,015	4,909,075	336,005	623,642	959,647
1983	355,869	151,541	507,410	851,074	906,578	3,866,295	5,623,947	362,084	671,798	1,033,882
1984	467,072	224,654	691,726	1,133,937	1,099,620	5,730,808	7,964,365	394,790	732,191	1,126,981
1985	734,649	364,957	1,099,606	1,593,739	1,804,485	6,615,413	10,013,637	443,544	822,194	1,265,738
1986	1,081,618	693,703	1,775,321	1,413,151	1,538,050	6,911,406	9,862,607	430,948	799,086	1,230,034
1987	1,770,072	1,561,964	3,332,036	1,910,730	2,030,793	6,739,442	10,680,965	432,891	842,459	1,275,350
1988	2,230,596	2,352,799	4,583,395	1,900,575	2,216,274	6,388,639	10,505,488	478,823	979,967	1,458,790
1989	2,449,338	3,439,138	5,888,476	1,806,317	1,870,121	5,929,612	9,606,050	489,278	1,141,113	1,630,391
1990	2,735,050	3,447,136	6,182,186	2,169,964	2,214,826	6,822,640	11,207,430	578,500	1,200,171	1,778,671
1991	2,756,182	3,580,825	6,337,007	1,764,329	2,031,269	5,503,378	9,298,976	621,128	1,471,840	2,092,968
1992	2,672,691	3,681,868	6,354,559	2,287,700	2,483,427	6,677,999	11,449,126	778,135	1,482,792	2,260,927
1993	2,799,890	3,906,763	6,706,653	2,970,013	3,171,483	8,436,613	14,578,109	982,926	1,890,559	2,873,485
1994	2,801,718	3,990,800	6,792,518	3,087,689	3,225,306	8,614,225	14,927,220	1,752,187	3,469,305	5,221,492
1995	2,866,947	4,104,530	6,971,477	3,500,016	3,552,295	9,362,181	16,414,492	3,880,908	7,612,575	11,493,483
1996	2,874,392	4,116,704	6,991,096	3,530,465	3,488,587	9,199,965	16,219,017	10,844,542	22,449,733	33,294,275
1997	2,920,724	4,149,142	7,069,866	3,699,579	3,559,010	9,372,572	16,631,161	11,234,497	23,106,994	34,341,491
1998	2,921,097	4,155,048	7,076,145	3,660,271	3,522,470	9,283,101	16,465,842	12,061,812	24,662,841	36,724,653
1999	2,931,752	4,142,094	7,073,846	3,619,960	3,485,482	9,194,395	16,299,837	12,246,813	25,528,049	37,774,862
2000	2,968,140	4,171,438	7,139,578	3,715,184	3,572,438	9,401,490	16,689,112	12,374,958	25,761,726	38,136,684
2001	2,984,694	4,169,148	7,153,842	3,706,827	3,564,809	9,383,329	16,654,965	12,362,645	25,739,333	38,101,978
2002	2,999,153	4,167,775	7,166,928	3,703,210	3,561,507	9,375,477	16,640,194	12,356,082	25,727,458	38,083,540
2003	3,013,738	4,162,976	7,176,714	3,687,824	3,547,461	9,342,041	16,577,326	12,332,247	25,684,142	38,016,389
2004	3,031,421	4,163,066	7,194,487	3,689,911	3,549,368	9,346,592	16,585,871	12,333,479	25,686,479	38,019,958
2005	3,078,021	4,229,065	7,307,086	3,827,219	3,674,750	9,645,208	17,147,177	12,519,881	26,026,317	38,546,198
2006	3,089,939	4,226,635	7,316,574	3,817,682	3,666,041	9,624,475	17,108,198	12,506,013	26,001,092	38,507,105
2007	3,103,987	4,223,011	7,326,998	3,806,217	3,655,574	9,599,561	17,061,352	12,488,192	25,968,713	38,456,905
2008	3,120,462	4,218,615	7,339,077	3,792,277	3,642,851	9,569,265	17,004,393	12,466,650	25,929,575	38,396,225
2009	3,134,981	4,216,071	7,351,052	3,784,043	3,635,332	9,551,372	16,970,747	12,453,616	25,905,907	38,359,523
2010	3,150,242	4,218,381	7,368,623	3,779,056	3,630,782	9,540,552	16,950,390	12,443,783	25,888,133	38,331,916
2011	3,191,599	4,240,177	7,431,776	3,858,838	3,703,637	9,714,054	17,276,529	12,553,338	26,087,821	38,641,159
2012	3,205,406	4,235,759	7,441,165	3,844,026	3,690,113	9,681,859	17,215,998	12,530,902	26,047,029	38,577,931
2013	3,179,751	4,186,402	7,366,153	3,575,277	3,440,345	8,972,641	15,988,263	12,298,640	25,624,508	37,923,148
2014	3,220,785	4,207,112	7,427,897	3,605,863	3,435,166	8,950,461	15,991,490	12,385,055	25,780,352	38,165,407
2015	3,224,164	4,193,974	7,418,138	3,508,504	3,291,806	8,451,462	15,251,772	12,292,508	25,611,657	37,904,165
2016	3,219,101	4,187,724	7,406,825	3,468,144	3,241,478	8,231,046	14,940,668	12,251,852	25,537,250	37,789,102
2017	3,230,151	4,200,718	7,430,869	3,482,718	3,253,006	8,215,959	14,951,683	12,296,051	25,617,240	37,913,291
2018	3,170,990	4,201,243	7,372,233	3,440,907	3,211,819	8,093,015	14,745,741	12,281,388	25,590,007	37,871,395
2019	3,149,273	4,202,606	7,351,879	3,404,480	3,177,944	7,994,979	14,577,403	12,280,286	25,587,786	37,868,072
2020	3,159,989	4,196,712	7,356,701	3,367,574	3,141,985	7,905,950	14,415,509	12,246,134	25,525,425	37,771,559
2021	3,161,449	4,196,922	7,358,371	3,364,587	3,138,882	7,899,082	14,402,551	12,244,853	25,522,981	37,767,834
2022	3,160,318	4,197,111	7,357,429	3,364,429	3,138,377	7,895,800	14,398,606	12,244,631	25,522,442	37,767,073
2023	3,159,479	4,165,806	7,325,285	3,364,471	3,138,336	7,894,005	14,396,812	12,244,882	25,522,833	37,767,715
2024	3,159,776	4,166,993	7,326,769	3,372,352	3,145,398	7,910,290	14,428,040	12,257,101	25,545,000	37,802,101
2025	3,144,706	4,157,918	7,302,624	3,353,695	3,127,851	7,867,742	14,349,288	12,230,177	25,495,965	37,726,142
2026	3,137,795	4,151,572	7,289,367	3,346,395	3,121,159	7,851,614	14,319,168	12,113,804	25,281,274	37,395,078
2027	3,134,969	4,147,405	7,282,374	3,345,039	3,119,736	7,846,849	14,311,624	12,111,521	25,276,600	37,388,121
2028	3,131,691	4,143,310	7,275,001	3,342,666	3,117,421	7,840,013	14,300,100	12,104,869	25,264,165	37,369,034
2029	3,128,502	4,139,422	7,267,924	3,340,044	3,114,979	7,833,289	14,288,312	12,104,042	25,262,494	37,366,536
2030	3,117,732	4,124,176	7,241,908	3,334,804	3,110,121	7,821,297	14,266,222	12,097,391	25,250,181	37,347,572
2031	3,104,497	4,104,686	7,209,183	3,328,676	3,104,446	7,807,347	14,240,469	12,088,901	25,234,404	37,323,305
2032	3,092,692	4,084,986	7,177,678	3,329,805	3,105,431	7,809,412	14,244,648	12,091,776	25,239,611	37,331,387
2033	3,064,902	4,040,658	7,105,560	3,329,985	3,105,553	7,809,459	14,244,997	12,094,522	25,244,622	37,339,144
2034	3,001,676	3,968,170	6,969,846	3,325,286	3,101,022	7,797,450	14,223,758	12,096,048	25,247,308	37,343,356
2035	2,873,601	3,828,069	6,701,670	3,317,375	3,093,732	7,779,265	14,190,372	12,094,816	25,244,972	37,339,788
TOTAL	153,673,418	198,451,750	352,125,168	177,938,742	174,225,495	476,052,589	828,216,826	503,535,925	1,046,388,058	1,549,923,983

TABLE B-19

Total Transportation Charge for Each Contractor (Continued)

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA								
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
				Municipal and Industrial	Agri-cultural				
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]
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	2,729	0	0	0	0	0	2,729
1965	0	0	6,040	73,706	0	0	0	0	79,746
1966	0	0	12,060	137,578	0	0	0	0	149,638
1967	0	0	26,303	268,087	0	0	0	0	294,390
1968	182,102	9,593	54,674	446,119	1,535,330	12,882	11,595	207,627	2,459,922
1969	177,703	9,700	87,677	525,877	2,373,495	11,495	10,600	352,228	3,548,775
1970	199,480	16,465	94,778	574,839	2,892,274	11,623	13,136	290,152	4,092,747
1971	195,373	17,424	95,799	606,768	3,793,409	16,571	14,438	445,046	5,184,828
1972	217,114	18,228	98,896	632,511	4,920,986	13,999	20,739	1,067,221	6,989,694
1973	199,810	14,363	97,657	640,155	4,870,068	14,265	11,746	404,760	6,252,824
1974	277,795	14,332	98,569	699,154	5,165,728	14,357	12,830	590,713	6,873,478
1975	343,688	15,274	106,811	716,513	6,277,160	15,367	14,515	720,077	8,209,405
1976	300,216	15,820	108,194	775,207	6,630,054	15,736	16,192	558,715	8,420,134
1977	262,352	12,934	112,675	798,901	6,801,318	17,187	13,979	506,013	8,525,359
1978	349,067	11,789	115,636	889,206	8,222,237	17,492	18,013	498,703	10,122,143
1979	379,632	15,660	114,369	896,774	9,355,975	18,828	24,911	946,368	11,752,517
1980	400,969	14,029	126,069	890,254	9,917,037	19,403	24,377	718,778	12,110,916
1981	465,045	31,991	134,096	1,078,539	11,347,964	23,611	23,097	904,472	14,008,815
1982	457,463	15,085	136,052	1,003,034	12,130,875	21,632	22,491	742,494	14,529,126
1983	625,165	16,663	149,897	1,031,169	15,405,573	37,447	31,053	429,744	17,726,711
1984	912,059	17,315	165,391	2,033,602	23,505,935	53,245	59,765	790,975	27,538,287
1985	1,117,743	91,098	188,578	2,387,906	28,323,987	69,520	72,326	2,220,676	34,471,834
1986	1,278,448	36,871	182,347	2,404,279	31,082,512	80,808	78,301	2,213,329	37,356,895
1987	1,155,494	54,999	181,680	2,894,735	29,928,404	80,024	78,982	2,317,524	36,691,842
1988	1,131,817	65,647	193,458	2,801,841	29,663,429	75,190	62,919	2,256,521	36,250,822
1989	1,139,314	51,181	187,403	2,439,131	29,289,057	66,145	68,669	2,437,428	35,678,328
1990	1,186,540	48,953	221,395	2,839,535	30,821,836	64,697	66,202	2,399,915	37,649,073
1991	609,515	26,928	231,248	2,361,627	17,714,183	26,974	27,570	1,246,534	22,244,579
1992	1,116,124	48,867	290,424	2,797,696	30,092,158	63,728	62,089	2,275,881	36,746,967
1993	1,519,015	69,813	317,103	3,707,889	38,518,754	92,218	91,506	3,103,253	47,419,551
1994	1,550,370	71,446	306,905	3,803,237	39,049,204	94,843	93,678	3,167,699	48,137,382
1995	1,714,102	79,941	301,814	4,229,118	42,448,026	106,664	104,631	3,503,599	52,487,895
1996	1,686,923	78,550	295,764	4,155,772	41,554,751	104,999	102,990	3,448,263	51,428,012
1997	1,734,156	80,993	314,215	4,295,737	43,268,652	108,180	106,767	3,544,997	53,453,697
1998	1,708,079	79,645	311,653	4,230,646	42,709,297	106,410	104,773	3,491,612	52,742,115
1999	1,672,322	77,789	310,906	4,147,092	42,088,729	103,983	101,188	3,418,219	51,920,228
2000	1,718,870	80,206	311,221	4,264,194	43,120,993	107,197	104,327	3,513,768	53,220,776
2001	1,714,763	79,992	311,223	4,253,860	43,030,723	106,912	104,049	3,505,332	53,106,854
2002	1,713,366	79,920	311,257	4,250,320	42,999,609	106,812	103,948	3,502,454	53,067,686
2003	1,706,621	79,570	311,288	4,233,274	42,848,263	106,344	103,499	3,488,600	52,877,459
2004	1,707,546	79,617	311,344	4,235,610	42,870,548	106,406	103,555	3,490,489	52,905,115
2005	1,773,935	83,066	311,748	4,402,666	44,344,956	110,991	108,039	3,626,776	54,762,177
2006	1,769,350	82,827	311,748	4,391,140	44,244,327	110,672	107,721	3,617,360	54,635,145
2007	1,764,195	82,560	311,775	4,378,130	44,129,534	110,315	107,372	3,606,768	54,490,649
2008	1,757,795	82,227	311,808	4,361,995	43,987,674	109,868	106,938	3,593,623	54,311,928
2009	1,754,198	82,040	311,834	4,352,903	43,907,257	109,618	106,696	3,586,229	54,210,775
2010	1,751,864	81,916	311,904	4,346,999	43,856,398	109,454	106,546	3,581,421	54,146,502
2011	1,790,282	83,913	312,110	4,443,730	44,711,036	112,109	109,123	3,660,297	55,222,600
2012	1,783,615	83,565	312,128	4,426,890	44,561,920	111,646	108,676	3,646,597	55,035,037
2013	1,710,136	79,746	312,165	4,241,709	42,929,001	106,550	103,723	3,495,686	52,978,716
2014	1,741,383	81,370	309,465	4,320,403	43,622,005	108,716	105,835	3,559,856	53,849,033
2015	1,713,352	79,912	306,155	4,176,098	43,000,799	106,772	103,936	3,502,286	52,989,310
2016	1,703,426	79,398	300,138	4,087,199	42,779,745	106,084	103,273	3,481,900	52,641,163
2017	1,725,633	80,551	286,019	4,012,578	43,272,776	107,617	104,768	3,527,492	53,117,434
2018	1,725,616	80,550	263,286	3,895,192	43,271,921	99,096	104,769	3,527,456	52,967,886
2019	1,726,267	80,583	254,806	3,836,955	43,287,697	98,633	104,807	3,528,792	52,918,540
2020	1,715,393	80,018	252,949	3,776,709	43,044,751	97,632	104,085	3,506,470	52,578,007
2021	1,715,392	80,017	251,843	3,754,759	43,044,888	97,490	104,083	3,506,466	52,554,938
2022	1,715,434	80,020	251,227	3,744,809	43,047,033	97,427	104,079	3,506,553	52,546,582
2023	1,715,905	80,043	250,802	3,741,564	43,056,353	97,427	104,118	3,507,518	52,553,730
2024	1,719,757	80,244	250,275	3,749,158	43,142,815	97,677	104,368	3,515,433	52,659,727
2025	1,711,396	79,810	249,719	3,725,624	42,956,890	97,073	103,810	3,498,260	52,422,582
2026	1,708,298	79,649	249,436	3,715,776	42,888,167	96,823	103,601	3,491,901	52,333,651
2027	1,708,498	79,659	248,795	3,713,275	42,892,374	96,792	103,615	3,492,306	52,335,314
2028	1,708,492	79,658	246,356	3,711,207	42,892,253	96,770	103,615	3,492,293	52,330,644
2029	1,708,929	79,682	246,042	3,709,204	42,901,921	96,738	103,648	3,493,191	52,339,355
2030	1,707,575	79,611	245,749	3,702,705	42,871,820	96,576	103,554	3,490,408	52,297,998
2031	1,707,914	79,630	244,159	3,685,199	42,879,418	96,209	103,577	3,491,109	52,287,215
2032	1,707,609	79,614	244,136	3,686,613	42,872,805	96,198	103,555	3,490,477	52,281,007
2033	1,707,780	79,623	243,848	3,682,383	42,876,502	96,080	103,568	3,490,830	52,280,614
2034	1,708,781	79,674	243,243	3,678,423	42,899,109	96,003	103,632	3,492,889	52,301,754
2035	1,708,088	79,638	242,507	3,667,602	42,888,456	95,718	103,553	3,491,462	52,277,024
TOTAL	88,392,449	4,129,505	15,823,773	208,571,089	2,209,631,134	5,279,968	5,338,129	178,220,284	2,715,386,331

TABLE B-19

Total Transportation Charge for Each Contractor (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley–East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley 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]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,386	0	0	0	0	0	0	0	51,831	0
1964	62,984	27,499	14,455	4,378	37,231	1,145	28,492	8,221	82,967	35,056
1965	118,817	53,103	25,141	7,207	40,844	2,086	50,410	15,250	135,316	35,409
1966	216,165	101,445	44,811	12,501	73,283	3,761	90,562	27,728	232,920	61,574
1967	418,215	211,185	86,271	23,514	141,660	7,298	175,487	54,119	434,117	115,778
1968	737,186	478,875	152,937	41,577	251,605	12,891	311,202	95,618	783,447	209,268
1969	1,060,713	725,384	225,676	61,326	371,562	18,724	458,858	138,286	1,207,826	322,285
1970	1,379,247	905,530	315,780	89,846	520,168	25,270	633,048	185,137	1,781,147	468,350
1971	1,707,039	1,089,598	433,248	128,572	713,897	31,887	857,218	231,646	2,542,405	660,497
1972	2,024,052	1,305,514	562,427	181,441	926,946	42,457	1,111,253	274,997	3,393,626	866,355
1973	2,114,330	1,323,750	696,764	183,960	1,138,475	43,539	1,174,136	287,724	3,976,686	948,006
1974	2,177,886	1,383,005	712,285	193,538	1,165,339	45,270	1,205,921	292,482	4,003,812	991,990
1975	2,354,468	1,450,976	753,208	206,305	1,233,164	48,548	1,272,523	304,697	4,164,534	1,092,496
1976	2,707,527	1,446,814	799,768	215,352	1,308,863	51,521	1,314,931	314,105	4,305,177	1,146,488
1977	2,650,344	1,516,122	695,614	226,310	1,146,604	47,406	1,386,503	329,804	4,559,602	1,210,681
1978	2,966,325	1,599,958	876,236	231,268	1,421,558	47,170	1,386,151	322,107	4,465,746	1,213,444
1979	3,520,829	1,634,221	944,097	238,224	1,520,179	48,455	1,513,259	332,901	4,428,138	1,153,988
1980	4,068,235	1,717,075	1,033,581	259,691	1,681,559	53,408	1,632,320	360,900	4,841,489	1,270,954
1981	4,394,198	1,962,494	1,103,799	271,308	1,797,954	77,657	1,751,191	392,081	5,226,871	1,358,356
1982	3,962,946	2,067,078	1,158,856	281,482	1,889,196	56,241	1,954,485	408,906	5,436,843	1,570,740
1983	5,158,573	2,341,871	1,748,313	334,023	2,832,446	69,594	2,026,426	496,217	6,040,329	1,561,778
1984	7,153,488	3,469,897	2,814,221	443,963	4,532,927	75,666	2,247,102	552,500	7,032,651	2,320,311
1985	8,912,377	3,751,890	3,637,435	542,192	5,850,995	79,559	2,368,074	736,023	7,760,626	2,385,839
1986	8,797,641	4,323,756	4,051,780	577,802	6,521,258	102,497	2,461,355	1,001,189	7,859,816	3,049,630
1987	8,819,578	4,194,107	3,912,979	603,572	6,378,695	211,823	2,471,104	1,030,993	9,114,087	3,020,383
1988	8,264,690	4,237,461	3,891,344	612,720	6,409,419	127,144	2,514,114	792,054	9,358,184	2,799,242
1989	8,658,096	4,125,441	2,917,164	583,693	4,847,651	169,000	2,484,560	1,435,377	8,876,018	2,912,256
1990	10,152,732	4,793,481	4,292,751	657,074	7,114,128	237,983	2,713,043	1,666,101	10,045,211	3,538,577
1991	6,490,223	3,254,048	2,851,698	578,307	4,702,628	183,583	3,449,594	1,360,004	8,769,634	3,045,983
1992	10,316,226	5,172,233	3,172,924	775,359	5,232,433	251,374	4,921,386	1,605,107	11,321,820	3,598,641
1993	14,643,388	6,594,407	4,394,770	788,756	7,247,668	392,209	8,567,232	2,551,910	13,927,842	4,733,751
1994	15,481,005	7,083,086	4,567,636	815,967	7,532,785	406,803	8,835,261	2,741,812	14,543,610	4,870,685
1995	17,607,704	8,295,579	4,985,774	866,917	8,222,447	457,588	12,106,130	3,150,750	15,801,815	5,229,307
1996	17,743,253	8,403,367	4,836,038	870,091	7,975,474	448,412	11,805,883	3,348,831	15,600,583	5,054,711
1997	18,488,597	9,046,992	4,939,260	929,111	8,145,739	454,909	11,968,237	3,400,586	16,900,827	5,243,201
1998	18,289,470	8,847,113	4,856,149	898,690	8,008,651	449,715	11,817,003	3,361,632	16,899,474	5,118,564
1999	18,275,107	8,869,538	4,860,160	896,709	8,015,273	449,413	11,833,999	3,359,312	17,430,914	5,109,188
2000	20,792,046	10,079,222	5,052,905	996,451	8,333,174	465,658	12,240,415	3,481,380	18,757,830	5,582,754
2001	20,734,505	10,076,800	5,042,565	998,675	8,316,121	464,276	12,212,929	3,471,009	18,791,168	5,584,418
2002	20,713,498	10,049,137	5,035,591	996,586	8,304,618	463,773	12,199,676	3,467,204	18,752,672	5,574,813
2003	20,610,362	9,993,450	4,990,403	974,678	8,230,074	461,302	12,131,113	3,448,599	18,355,875	5,486,446
2004	20,627,981	10,015,999	5,023,742	1,011,559	8,285,083	461,722	12,137,854	3,451,741	19,013,274	5,615,984
2005	24,959,404	11,151,296	5,287,613	1,189,710	8,720,298	485,041	12,742,395	3,626,941	24,321,212	6,015,820
2006	24,882,163	11,118,443	5,267,996	1,183,468	8,687,935	483,507	12,706,405	3,615,422	24,193,281	5,988,162
2007	24,789,333	11,071,803	5,243,500	1,176,269	8,647,531	481,670	12,659,358	3,601,584	24,044,265	5,955,679
2008	24,676,000	11,015,945	5,226,778	1,184,802	8,619,959	479,425	12,598,143	3,584,690	24,170,540	5,975,948
2009	24,610,553	10,980,095	5,192,614	1,157,014	8,563,591	478,128	12,571,661	3,574,936	23,661,086	5,874,516
2010	27,864,200	10,963,961	5,198,528	1,348,092	8,573,358	477,402	12,543,625	3,569,432	25,979,461	6,127,058
2011	29,075,643	11,309,470	5,370,245	1,389,531	8,856,581	491,008	12,911,083	3,671,676	26,840,737	6,313,585
2012	28,929,710	11,246,880	5,332,339	1,370,951	8,794,060	488,587	12,852,893	3,653,452	26,486,521	6,241,621
2013	27,335,378	10,589,912	5,025,706	1,309,697	8,274,916	462,652	12,174,258	3,458,368	25,103,624	5,935,771
2014	27,963,172	10,842,331	5,124,577	1,312,780	8,451,993	472,434	12,427,976	3,532,344	25,308,076	5,987,477
2015	27,317,442	10,565,284	5,006,526	1,398,442	8,257,292	461,691	12,139,470	3,451,579	24,993,590	6,104,800
2016	27,006,644	10,429,923	4,949,546	1,389,267	8,163,313	456,469	12,007,941	3,412,422	24,810,111	6,055,016
2017	27,272,300	10,517,486	5,000,198	1,398,392	8,246,877	460,728	12,127,388	3,444,602	25,000,886	6,092,841
2018	27,016,532	10,310,340	4,943,241	1,381,429	8,152,932	456,190	12,014,354	3,411,041	24,671,282	6,007,288
2019	26,733,805	10,103,907	4,898,705	1,387,191	8,079,504	451,039	11,888,077	3,373,490	24,699,434	5,984,830
2020	26,199,906	9,859,185	4,734,639	1,384,655	7,808,892	440,908	11,612,149	3,299,686	23,302,035	5,851,912
2021	25,943,731	9,688,270	4,641,181	1,361,952	7,654,763	435,490	11,416,557	3,262,173	22,825,221	5,720,019
2022	25,818,748	9,582,525	4,585,065	1,342,490	7,562,221	433,133	11,310,178	3,245,279	22,372,593	5,611,407
2023	25,774,758	9,568,865	4,576,199	1,346,741	7,547,596	432,253	11,277,541	3,239,136	22,395,187	5,607,181
2024	25,841,599	9,556,334	4,575,910	1,334,559	7,547,118	433,340	11,305,572	3,247,397	22,163,424	5,562,777
2025	25,643,179	9,470,496	4,532,258	1,345,502	7,475,122	430,011	11,202,686	3,222,461	22,023,232	5,717,204
2026	25,565,391	9,428,812	4,510,143	1,341,000	7,438,651	428,680	11,152,215	3,212,610	21,914,236	5,686,676
2027	25,557,016	9,417,271	4,503,518	1,338,879	7,427,725	428,525	11,139,506	3,211,496	21,861,243	5,673,042
2028	25,546,474	9,396,727	4,498,820	1,337,561	7,419,978	428,327	11,130,119	3,210,081	21,830,935	5,665,070
2029	25,539,568	9,378,107	4,505,514	1,348,337	7,431,026	428,201	11,124,734	3,209,172	22,020,614	5,700,973
2030	25,489,575	9,317,053	4,484,306	1,331,008	7,396,039	427,368	11,107,250	3,202,936	21,709,603	5,816,619
2031	25,402,049	9,230,479	4,465,791	1,328,716	7,365,506	425,843	11,062,482	3,191,615	21,669,585	5,801,227
2032	25,404,954	9,196,907	4,467,474	1,329,007	7,368,278	425,887	11,066,286	3,191,965	21,673,787	5,802,599
2033	25,328,592	9,153,138	4,458,224	1,331,274	7,353,033	424,602	11,037,768	3,182,326	21,712,513	5,804,866
2034	25,245,771	9,139,693	4,441,230	1,323,552	7,325,004	423,207	11,011,255	3,171,872	21,569,192	5,770,369
2035	25,173,453	9,100,589	4,460,054	1,355,237	7,356,070	421,901	10,996,986	3,162,896	22,124,060	6,069,125
TOTAL	1,155,312,475	480,720,028	252,018,994	60,688,200	414,986,936	21,502,384	549,138,751	158,732,120	1,074,460,326	288,689,655

TABLE B-19

Total Transportation Charge for Each Contractor (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				South Bay 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		
	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	55,537
1963	0	692,178	0	777,395	0	0	0	0	55,830	1,624,367
1964	21,778	1,262,872	9,395	1,596,473	0	0	0	0	84,105	2,781,924
1965	21,906	2,184,551	17,799	2,707,839	0	0	405	405	129,207	4,771,768
1966	38,033	3,907,132	33,486	4,843,401	0	0	565	565	148,564	7,340,282
1967	71,409	7,707,275	68,275	9,514,603	0	0	563	563	204,947	12,714,520
1968	129,125	15,343,056	143,036	18,689,823	0	0	565	565	279,651	24,740,690
1969	199,094	23,191,328	215,563	28,196,625	0	0	3,197	3,197	349,657	35,781,074
1970	290,113	30,667,864	274,055	37,535,555	0	0	15,147	15,147	386,754	45,899,765
1971	410,000	40,024,070	342,980	49,173,057	0	0	16,029	16,029	376,318	58,520,720
1972	537,970	53,024,778	422,922	64,674,738	0	0	17,403	17,403	401,833	76,233,947
1973	588,787	57,354,082	436,278	70,266,517	0	0	17,364	17,364	376,313	80,936,081
1974	612,269	61,860,856	456,213	75,100,866	0	0	17,507	17,507	399,290	86,645,033
1975	645,490	66,842,602	479,060	80,848,071	0	0	18,436	18,436	408,510	93,778,931
1976	669,204	68,572,597	476,252	83,328,599	0	0	17,507	17,507	431,101	97,152,693
1977	697,436	66,324,837	507,755	81,299,018	0	0	18,262	18,262	423,856	95,197,752
1978	709,955	73,008,388	523,882	88,772,188	0	0	17,411	17,411	427,091	104,619,155
1979	713,782	72,756,559	527,123	89,331,755	0	0	20,609	20,609	447,131	106,983,299
1980	778,915	80,027,050	571,985	98,297,162	0	0	17,791	17,791	507,956	116,939,005
1981	806,434	90,965,598	636,931	110,744,872	0	0	21,223	21,223	517,378	131,284,435
1982	857,760	93,537,173	673,692	113,855,398	0	0	28,334	28,334	515,940	135,345,657
1983	955,361	102,039,963	800,917	126,405,811	0	0	16,957	16,957	554,929	151,869,647
1984	1,070,973	139,646,205	867,699	172,227,603	0	0	18,023	18,023	562,787	210,129,772
1985	1,123,436	173,620,141	910,303	211,678,890	0	0	19,980	19,980	683,289	259,232,974
1986	1,149,878	193,392,589	938,376	234,227,567	0	0	19,977	19,977	621,948	285,094,349
1987	1,160,628	179,260,735	911,776	221,090,460	0	0	19,979	19,979	688,075	273,778,707
1988	1,189,487	190,461,106	904,897	231,561,862	0	0	19,986	19,986	707,377	285,087,720
1989	1,183,312	194,609,548	932,861	233,734,977	0	0	20,060	20,060	762,547	287,320,829
1990	1,295,353	234,681,583	1,209,271	282,397,288	0	0	20,079	20,079	817,311	340,052,038
1991	1,322,624	179,146,156	1,128,776	216,283,258	0	0	20,126	20,126	809,125	257,086,039
1992	1,506,926	248,973,130	1,382,566	298,230,125	0	0	20,175	20,175	909,758	355,971,637
1993	1,585,810	358,507,967	1,706,724	425,642,434	0	0	20,313	20,313	899,364	498,139,909
1994	1,579,234	373,872,040	1,738,839	444,068,763	0	0	20,459	20,459	882,679	520,050,513
1995	1,601,203	421,789,845	1,864,349	501,999,408	0	0	20,459	20,459	888,169	590,275,383
1996	1,529,823	407,995,796	1,814,700	487,426,962	0	0	20,459	20,459	876,652	596,256,473
1997	2,433,918	419,136,754	3,813,298	504,901,429	0	0	20,459	20,459	890,722	617,308,825
1998	2,368,026	410,421,710	3,738,824	495,075,021	0	0	20,459	20,459	886,192	608,990,427
1999	2,360,686	411,757,830	3,746,580	496,964,709	0	0	20,459	20,459	879,619	610,933,560
2000	2,540,746	426,747,626	3,890,058	518,960,265	0	0	20,459	20,459	880,686	635,047,560
2001	2,545,792	426,829,839	3,886,053	518,954,150	0	0	20,459	20,459	880,703	634,872,951
2002	2,541,314	425,308,807	3,876,519	517,284,208	0	0	20,459	20,459	880,825	633,143,840
2003	2,492,424	421,968,804	3,853,853	512,997,383	0	0	20,459	20,459	880,932	628,546,662
2004	2,576,423	424,330,575	3,861,612	516,413,549	0	0	20,459	20,459	881,126	632,020,565
2005	2,960,323	447,164,200	4,075,406	552,699,659	0	0	20,459	20,459	882,510	671,365,266
2006	2,946,194	445,205,398	4,062,849	550,341,223	0	0	20,459	20,459	882,519	668,811,223
2007	2,930,084	443,287,412	4,045,619	547,934,107	0	0	20,459	20,459	882,615	666,173,085
2008	2,949,984	441,436,872	4,024,931	545,944,017	0	0	20,459	20,459	882,727	663,898,826
2009	2,886,675	439,916,694	4,011,876	543,479,439	0	0	20,459	20,459	882,813	661,274,808
2010	3,261,865	439,737,546	4,005,696	549,650,224	0	0	20,459	20,459	883,060	667,351,174
2011	3,354,258	453,211,500	4,132,848	566,928,165	0	0	20,459	20,459	883,769	686,404,457
2012	3,312,048	450,419,544	4,109,831	563,238,437	0	0	20,459	20,459	883,828	682,412,855
2013	3,168,120	424,528,880	3,867,464	531,234,746	0	0	20,459	20,459	840,755	646,352,240
2014	3,178,965	433,655,949	3,961,059	542,219,133	0	0	20,459	20,459	813,893	658,487,312
2015	3,601,073	423,194,075	3,860,198	530,351,462	0	0	20,054	20,054	783,794	644,718,695
2016	3,573,185	419,359,962	3,812,237	525,426,036	0	0	19,893	19,893	766,830	638,990,517
2017	3,591,915	422,705,108	3,850,096	529,708,817	0	0	19,896	19,896	727,263	643,869,253
2018	3,538,840	415,821,844	3,785,378	521,510,691	0	0	19,893	19,893	651,783	635,139,622
2019	3,527,533	409,114,807	3,715,828	513,958,150	0	0	17,262	17,262	587,809	627,279,115
2020	3,797,660	398,004,218	3,627,354	499,923,199	0	0	5,312	5,312	567,327	612,617,614
2021	3,814,522	389,285,778	3,567,732	489,617,389	0	0	4,484	4,484	563,551	602,269,118
2022	3,746,653	382,903,553	3,531,342	482,045,187	0	0	3,096	3,096	562,919	594,680,892
2023	3,745,081	380,614,348	3,528,332	479,653,218	0	0	3,096	3,096	562,250	592,262,106
2024	3,717,106	378,954,424	3,526,235	477,765,795	0	0	3,094	3,094	561,821	590,547,347
2025	3,689,923	376,213,897	3,495,216	474,461,187	0	0	3,092	3,092	560,384	586,825,299
2026	3,670,577	373,960,870	3,480,322	471,790,183	0	0	3,091	3,091	559,918	583,690,456
2027	3,662,095	373,494,762	3,476,551	471,191,629	0	0	3,089	3,089	559,080	583,071,231
2028	3,657,144	372,878,703	3,470,417	470,470,356	0	0	3,087	3,087	557,998	582,306,220
2029	3,680,882	373,281,879	3,463,373	471,112,380	0	0	3,085	3,085	556,533	582,934,125
2030	3,639,511	370,345,517	3,441,074	467,707,859	0	0	3,084	3,084	555,151	579,419,794
2031	3,630,504	367,514,051	3,409,777	464,497,625	0	0	3,083	3,083	552,138	576,113,018
2032	3,631,317	366,503,193	3,397,448	463,459,102	0	0	3,081	3,081	552,479	575,049,382
2033	3,633,561	365,126,347	3,381,484	461,927,728	0	0	3,080	3,080	551,776	573,452,899
2034	3,611,956	364,349,589	3,376,484	460,759,174	0	0	3,079	3,079	548,197	572,149,164
2035	3,680,810	363,128,135	3,364,249	460,393,565	0	0	3,078	3,078	543,950	571,449,447
TOTAL	154,703,201	20,179,072,650	169,454,239	24,959,479,959	0	0	1,043,621	1,043,621	45,747,687	30,451,923,575

TABLE B-20A

Calculation of Delta Water Rates

(Values in millions of dollars [$] or millions of acre-feet [AF] discounted to 1992 at 4.621 percent per annum)

Procedure	Capital Cost Component [1]		Minimum Operation, Maintenance, Power and Replacement Component (a [2]		Total Delta Water Rate [3]	
Commencing in 1993						
Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Project Water Entitlements during the Project Repayment Period.	$2,575.64 (b	159.02 AF	$1,373.32 (c	159.02 AF	$3,948.96	159.02 AF
Less, Project Power Revenues to be Realized During the Project Repayment Period.	-923.77		-313.23		-1237.00	
Less, Delta Water Charges Paid and Project Water Entitlements, Prior to 1993.	-709.08 (d	-81.24 AF	-404.68	-81.24 AF	-1113.76	-81.24 AF
TOTAL	$942.79	77.78 AF	$655.41	77.78 AF	$1,598.20	77.78 AF
Rate Applicable in 1993 (e	$12.12 per acre-foot		$8.43 per acre-foot		$20.55 per acre-foot	
Commencing in 1994						
Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Project Water Entitlements during the Project Repayment Period.	$2,589.12 (b	159.02 AF	$1,412.45 (c	159.02 AF	$4,001.57	159.02 AF
Less, Project Power Revenues to be Realized during the Project Repayment Period.	-923.77		-313.23		-1237.00	
Less, Delta Water Charges Paid and Project Water Entitlements, Prior to 1994.	-757.13	-85.20 AF	-438.08	-85.20 AF	-1195.21	-85.20 AF
TOTAL	$908.22	73.82 AF	$661.14	73.82 AF	$1,569.36	73.82 AF
Rate Applicable 1994 through 2035 e)	$12.30 per acre-foot		$8.96 per acre-foot		$21.26 per acre-foot	

a) 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.

b) 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 $6,678,320 for settlement as to the magnitude of Project Capital costs incurred during the 1961 through 1978 period.

c) Includes conservation power costs and credits at San Luis.

d) Applying all Delta Water Charges paid prior to 1970 to reimburse Capital costs (the charge was not divided into components until 1970).

e) Minimum replacement component costs for 1993, deleted in the 1993 Delta Water Rate, are included in the rate commencing in 1994.

TABLE B-20B

Delta Water Rates by Facility

(in dollars per acre-foot)

Item	Capital Cost Component	Minimum Operation, Maintenance, Power and Replacement Component	Total Delta Water Rate
	[1]	[2]	[3]
Initial Conservation Facilities			
Oroville Division			
Water Supply and power costs (a	19.66	8.94	28.60
Less, Oroville Power Revenues	-11.88	-4.03	-15.91
Subtotal	7.78	4.91	12.69
Delta Facilities (b	6.20	3.10	9.30
California Aqueduct, portion			
Reach 1	1.29	1.71	3.00
Reach 2A	0.75	0.32	1.07
Reach 2B	0.38	0.13	0.51
Reach 3	0.27	0.09	0.36
Subtotal	2.69	2.25	4.94
San Luis Facilities	3.94	3.37	7.31
Planning and preoperating costs through 1991	1.16	0.00	1.16
Less, Capital Cost Credits	-0.54	0.00	-0.54
Less, Delta Water Charges paid prior to 1993	-9.11	-5.20	-14.31
Rate applicable in 1993 c)	12.12	8.43	20.55

a) Includes revenue received from non-contractors.

b) Includes (1) Delta Facility planning costs, (2) Delta Studies costs, and (3) Suisun Marsh Facilities Costs.

c) The replacement component may be included in future years.

TABLE B-21

Total Delta Water Charge for Each Contractor

(in dollars)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA	Total	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County	Santa Barbara County	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
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	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	273,208	1,005,955	1,516,934	0	0	0
1980	0	18,325	18,325	272,717	307,426	1,090,867	1,671,010	12,396	3,479	15,875
1981	0	25,440	25,440	415,564	469,768	1,589,984	2,475,316	18,068	10,414	28,482
1982	0	34,917	34,917	457,988	519,053	1,679,289	2,656,330	38,166	99,788	137,954
1983	0	12,035	12,035	316,703	359,775	1,114,795	1,791,273	38,004	68,902	106,906
1984	0	22,453	22,453	334,587	380,914	1,132,448	1,847,949	57,909	105,498	163,407
1985	0	22,001	22,001	381,970	435,728	1,244,939	2,062,637	106,103	192,937	299,040
1986	35,358	21,767	57,125	423,378	485,372	1,330,615	2,239,365	151,206	275,347	426,553
1987	0	22,984	22,984	430,024	493,786	1,304,900	2,228,710	185,355	336,664	522,019
1988	88,878	150,466	239,344	464,114	533,731	1,361,400	2,359,245	239,792	436,607	676,399
1989	102,688	305,328	408,016	513,853	591,760	1,491,833	2,597,446	331,518	602,402	933,920
1990	112,723	355,132	467,855	534,787	616,676	1,537,512	2,688,975	417,802	760,166	1,177,968
1991	129,296	395,515	524,811	603,028	681,067	1,667,194	2,951,289	443,403	806,745	1,250,148
1992	158,879	489,808	648,687	729,545	808,579	1,945,453	3,483,577	506,628	921,780	1,428,408
1993	174,458	536,936	711,394	780,848	850,713	2,013,766	3,645,327	513,716	934,675	1,448,391
1994	194,224	597,022	791,246	850,459	892,982	2,126,147	3,869,588	531,537	967,099	1,498,636
1995	207,937	728,205	936,142	892,982	892,982	2,126,147	3,912,111	531,537	967,099	1,498,636
1996	221,651	803,684	1,025,335	935,505	892,982	2,126,147	3,954,634	531,537	967,099	1,498,636
1997	235,258	813,251	1,048,509	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
1998	248,972	823,032	1,072,004	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
1999	262,154	832,812	1,094,966	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2000	277,462	842,380	1,119,842	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2001	290,538	852,160	1,142,698	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2002	301,594	861,940	1,163,534	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2003	314,670	871,720	1,186,390	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2004	327,427	881,288	1,208,715	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2005	340,184	882,351	1,222,535	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2006	349,751	883,414	1,233,165	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2007	361,445	884,477	1,245,922	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2008	375,265	885,540	1,260,805	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2009	386,959	886,603	1,273,562	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2010	398,653	887,667	1,286,320	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2011	412,473	888,730	1,301,203	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2012	424,166	889,793	1,313,959	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2013	437,986	890,856	1,328,842	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2014	451,806	891,919	1,343,725	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2015	465,626	892,982	1,358,608	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2016	478,383	892,982	1,371,365	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2017	491,140	892,982	1,384,122	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2018	503,897	892,982	1,396,879	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2019	516,654	892,982	1,409,636	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2020	529,411	892,982	1,422,393	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2021	531,537	892,982	1,424,519	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2022	531,537	892,982	1,424,519	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2023	531,537	892,982	1,424,519	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2024	531,537	892,982	1,424,519	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2025	531,537	892,982	1,424,519	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2026	531,537	892,982	1,424,519	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2027	531,537	892,982	1,424,519	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2028	531,537	892,982	1,424,519	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2029	531,537	892,982	1,424,519	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2030	531,537	892,982	1,424,519	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2031	531,537	892,982	1,424,519	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2032	531,537	892,982	1,424,519	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2033	531,537	892,982	1,424,519	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2034	531,537	892,982	1,424,519	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
2035	531,537	892,982	1,424,519	978,028	892,982	2,126,147	3,997,157	531,537	967,099	1,498,636
TOTAL	18,581,021	38,944,573	57,525,594	48,972,857	47,008,624	118,345,246	214,326,727	25,384,620	46,173,562	71,558,182

TABLE B-21

Total Delta Water Charge for Each Contractor (Continued)

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA								
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
				Municipal and Industrial	Agri-cultural				
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]
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	40,695	10,469	0	0	165,522	3,177	8,073	98,608	326,544
1969	61,267	3,281	0	0	337,686	4,200	8,805	102,478	517,717
1970	104,405	19,950	0	0	964,915	8,645	17,290	228,095	1,343,300
1971	129,596	21,720	0	0	1,377,772	9,412	20,272	264,260	1,823,032
1972	160,756	24,113	0	0	2,175,835	11,253	43,131	905,057	3,320,145
1973	195,541	26,664	0	386,638	2,373,167	13,333	27,553	373,307	3,396,203
1974	224,202	27,909	0	446,545	2,781,595	13,954	29,770	445,138	3,969,113
1975	329,688	27,413	0	481,560	3,041,048	14,620	33,702	827,591	4,755,622
1976	414,245	29,388	0	549,549	3,931,785	15,673	35,966	877,151	5,853,757
1977	312,532	28,195	0	569,545	4,071,218	15,977	40,289	626,210	5,663,966
1978	342,208	31,588	0	674,939	4,950,959	20,006	41,065	666,516	6,727,281
1979	395,523	34,294	0	772,757	5,901,986	22,863	45,725	771,613	7,944,761
1980	555,341	37,679	0	881,371	6,984,026	27,272	70,658	933,481	9,489,828
1981	740,789	54,204	0	1,351,487	11,140,730	41,556	77,692	1,373,168	14,779,626
1982	782,396	57,248	0	1,518,993	12,703,436	47,707	85,873	1,530,443	16,726,096
1983	543,462	38,004	0	1,057,789	9,141,315	35,471	58,273	78,506	10,952,820
1984	580,379	13,572	0	1,333,200	9,741,623	39,893	61,770	756,132	12,526,569
1985	667,740	42,441	0	1,540,611	11,403,920	48,100	69,320	644,383	14,416,515
1986	745,447	45,362	0	2,213,919	12,425,873	55,946	77,115	1,469,725	17,033,387
1987	762,180	44,485	0	1,766,065	13,410,817	59,314	77,108	1,503,601	17,623,570
1988	827,669	46,411	0	1,916,790	14,707,763	61,882	83,540	1,633,680	19,277,735
1989	921,621	49,728	0	2,125,033	16,312,361	66,304	92,825	1,821,693	21,389,565
1990	964,288	50,136	0	1,998,766	17,276,959	66,848	95,259	1,980,383	22,432,639
1991	1,023,374	53,208	0	2,121,239	18,335,590	70,944	101,096	2,101,729	23,807,180
1992	1,169,299	60,795	0	2,423,711	20,950,102	81,061	115,511	2,401,419	27,201,898
1993	1,185,656	61,646	0	2,457,617	21,243,179	82,195	117,127	2,435,013	27,582,433
1994	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
1995	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
1996	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
1997	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
1998	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
1999	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2000	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2001	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2002	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2003	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2004	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2005	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2006	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2007	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2008	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2009	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2010	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2011	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2012	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2013	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2014	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2015	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2016	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2017	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2018	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2019	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2020	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2021	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2022	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2023	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2024	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2025	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2026	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2027	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2028	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2029	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2030	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2031	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2032	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2033	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2034	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
2035	1,226,787	63,784	0	2,542,872	21,980,112	85,046	121,190	2,519,485	28,539,276
TOTAL	65,705,353	3,618,831	0	135,388,748	1,151,015,886	4,509,538	6,624,788	132,667,750	1,499,530,894

TABLE B-21

Total Delta Water Charge for Each Contractor (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley–East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley 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]
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	13,060	0	0	0	0	0	0	0	0
1969	0	17,804	0	0	0	0	0	0	0	0
1970	0	37,905	0	0	0	0	0	0	0	0
1971	0	48,508	0	0	0	0	0	0	0	0
1972	160,756	74,751	41,797	4,662	64,303	1,367	67,518	13,021	369,739	85,202
1973	222,207	107,163	51,552	7,279	79,994	2,577	95,104	26,131	54,908	14,338
1974	279,090	143,266	59,539	10,791	93,030	3,721	121,869	39,631	465,150	114,427
1975	319,822	166,307	63,964	13,250	100,515	4,752	140,722	50,989	479,733	119,705
1976	431,018	207,673	74,449	17,045	117,550	6,269	174,366	67,591	538,772	137,142
1977	469,922	226,502	79,144	19,079	122,180	6,861	189,848	77,255	540,410	139,097
1978	600,180	274,819	97,313	24,428	147,413	9,687	236,913	98,345	631,768	165,313
1979	720,173	320,077	115,033	29,836	171,470	11,889	284,640	117,285	714,457	189,760
1980	857,818	376,845	134,920	35,949	210,736	14,256	337,177	138,590	811,952	215,694
1981	1,355,100	592,631	218,713	57,637	343,292	22,946	534,813	211,396	1,237,658	330,644
1982	1,551,434	664,082	254,298	66,408	400,739	26,335	313,057	235,100	1,341,923	364,482
1983	1,110,994	472,521	184,283	47,759	291,367	19,002	434,517	163,925	943,775	252,096
1984	450,405	509,602	202,914	52,247	321,718	20,719	472,282	174,500	1,003,760	266,383
1985	565,881	591,346	240,344	61,540	381,970	24,474	551,734	200,605	1,152,983	308,405
1986	635,066	659,259	275,347	70,160	438,498	27,822	625,994	223,785	1,285,253	350,799
1987	652,450	676,176	288,131	73,104	467,095	29,064	648,002	228,654	1,319,729	364,779
1988	711,641	742,582	319,496	80,756	525,996	32,024	711,641	248,146	1,438,752	402,232
1989	2,083,593	830,453	362,565	91,333	605,021	36,301	803,932	276,155	1,607,864	454,180
1990	2,207,667	869,029	386,049	96,930	636,731	38,438	848,974	289,119	1,696,277	481,308
1991	2,454,678	961,298	409,704	102,869	675,746	40,793	900,994	306,835	1,819,725	510,800
1992	2,804,695	1,098,371	468,125	117,538	772,102	46,610	1,029,469	350,587	2,079,203	583,636
1993	2,843,931	1,113,736	474,673	119,182	782,903	47,262	1,043,871	355,491	2,108,290	591,801
1994	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
1995	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
1996	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
1997	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
1998	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
1999	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2000	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2001	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2002	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2003	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2004	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2005	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2006	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2007	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2008	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2009	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2010	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2011	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2012	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2013	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2014	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2015	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2016	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2017	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2018	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2019	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2020	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2021	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2022	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2023	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2024	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2025	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2026	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2027	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2028	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2029	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2030	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2031	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2032	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2033	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2034	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
2035	2,942,588	1,152,372	491,140	123,317	810,062	48,901	1,080,083	367,824	2,181,427	612,330
TOTAL	147,077,217	60,195,390	25,430,233	6,379,096	41,772,973	2,527,011	55,930,923	19,341,744	115,262,015	32,160,083

TABLE B-21

Total Delta Water Charge for Each Contractor (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				South Bay 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		
	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]
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	241,150
1968	0	0	0	13,060	0	1,050	875	1,925	0	583,631
1969	0	0	0	17,804	0	1,225	929	2,154	0	827,578
1970	0	0	0	37,905	0	3,848	1,995	5,843	0	2,160,886
1971	0	0	0	48,508	0	4,546	3,186	7,732	0	2,696,792
1972	0	2,043,211	0	2,926,327	0	4,929	3,778	8,707	0	7,206,052
1973	0	2,317,893	0	2,979,146	0	7,059	4,444	11,503	0	7,456,998
1974	0	4,231,933	0	5,562,447	0	8,336	4,931	13,267	0	10,683,514
1975	0	5,073,286	0	6,533,045	0	9,416	5,117	14,533	0	12,440,851
1976	0	6,422,167	0	8,194,042	0	7,004	5,780	12,784	0	15,299,760
1977	0	7,104,278	0	8,974,576	0	16,917	5,827	22,744	0	15,869,924
1978	0	9,016,389	0	11,302,568	0	12,635	6,844	19,479	0	19,425,531
1979	0	10,935,192	0	13,609,812	0	16,575	7,773	24,348	0	23,095,855
1980	84,294	13,102,796	12,396	16,333,423	0	19,834	8,801	28,635	0	27,557,096
1981	140,930	20,910,099	36,136	25,991,995	0	21,682	13,370	35,052	0	43,335,911
1982	167,929	23,998,560	57,248	29,441,595	0	16,117	14,694	30,811	0	49,027,703
1983	124,148	17,203,307	50,672	21,298,366	0	15,202	10,134	25,336	0	34,186,736
1984	138,982	18,766,458	64,344	22,444,314	20,590	15,442	10,681	46,713	0	37,051,405
1985	166,935	22,050,974	84,882	26,382,073	24,050	16,976	12,166	53,192	0	43,235,458
1986	195,056	25,089,658	120,965	29,997,662	31,753	18,145	13,457	63,355	0	49,817,447
1987	207,598	26,095,043	148,284	31,198,109	37,071	17,794	13,642	68,507	0	51,663,899
1988	233,604	28,781,238	201,116	34,429,224	46,722	18,565	14,852	80,139	0	57,062,086
1989	268,530	32,505,376	265,215	40,190,518	61,184	19,891	16,576	97,651	0	65,617,116
1990	289,119	33,616,369	334,242	41,790,252	63,506	20,055	17,381	100,942	0	68,658,631
1991	306,835	35,676,185	354,722	44,521,184	170,267	21,283	19,155	210,705	0	73,265,317
1992	350,587	40,763,329	405,303	50,869,555	194,545	24,318	22,697	241,560	0	83,873,685
1993	355,491	41,333,579	410,973	51,581,183	197,267	24,658	23,836	245,761	0	85,214,489
1994	367,824	42,767,455	425,229	53,370,552	197,267	25,514	25,514	248,295	0	88,317,593
1995	367,824	42,767,455	425,229	53,370,552	197,267	25,514	26,577	249,358	0	88,506,075
1996	367,824	42,767,455	425,229	53,370,552	197,267	25,514	27,640	250,421	0	88,638,854
1997	367,824	42,767,455	425,229	53,370,552	197,267	25,514	28,703	251,484	0	88,705,614
1998	367,824	42,767,455	425,229	53,370,552	197,267	25,514	29,766	252,547	0	88,730,172
1999	367,824	42,767,455	425,229	53,370,552	197,267	25,514	30,829	253,610	0	88,754,197
2000	367,824	42,767,455	425,229	53,370,552	197,267	25,514	32,105	254,886	0	88,780,349
2001	367,824	42,767,455	425,229	53,370,552	197,267	584,691	33,381	815,339	0	89,363,658
2002	367,824	42,767,455	425,229	53,370,552	197,267	584,691	34,656	816,614	0	89,385,769
2003	367,824	42,767,455	425,229	53,370,552	197,267	584,691	35,932	817,890	0	89,409,901
2004	367,824	42,767,455	425,229	53,370,552	197,267	584,691	37,208	819,166	0	89,433,502
2005	367,824	42,767,455	425,229	53,370,552	197,267	584,691	38,483	820,441	0	89,448,597
2006	367,824	42,767,455	425,229	53,370,552	197,267	584,691	39,972	821,930	0	89,460,716
2007	367,824	42,767,455	425,229	53,370,552	197,267	584,691	41,460	823,418	0	89,474,961
2008	367,824	42,767,455	425,229	53,370,552	197,267	584,691	42,948	824,906	0	89,491,332
2009	367,824	42,767,455	425,229	53,370,552	197,267	584,691	44,436	826,394	0	89,505,577
2010	367,824	42,767,455	425,229	53,370,552	197,267	584,691	45,925	827,883	0	89,519,824
2011	367,824	42,767,455	425,229	53,370,552	197,267	584,691	47,626	829,584	0	89,536,408
2012	367,824	42,767,455	425,229	53,370,552	197,267	584,691	49,327	831,285	0	89,550,865
2013	367,824	42,767,455	425,229	53,370,552	197,267	584,691	51,240	833,198	0	89,567,661
2014	367,824	42,767,455	425,229	53,370,552	197,267	584,691	53,154	835,112	0	89,584,458
2015	367,824	42,767,455	425,229	53,370,552	197,267	584,691	55,280	837,238	0	89,601,467
2016	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,616,350
2017	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,629,107
2018	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,641,864
2019	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,654,621
2020	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,667,378
2021	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,669,504
2022	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,669,504
2023	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,669,504
2024	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,669,504
2025	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,669,504
2026	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,669,504
2027	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,669,504
2028	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,669,504
2029	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,669,504
2030	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,669,504
2031	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,669,504
2032	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,669,504
2033	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,669,504
2034	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,669,504
2035	367,824	42,767,455	425,229	53,370,552	197,267	584,691	57,406	839,364	0	89,669,504
TOTAL	18,478,646	2,223,270,430	20,406,116	2,768,231,877	9,132,169	21,006,285	2,263,203	32,401,657	0	4,643,574,931

TABLE B-22

Total Water System Revenue Bond Surcharge for Each Contractor

(in dollars)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA	Total	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County	Santa Barbara County	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0
1988	36,888	51,291	88,179	32,209	38,210	126,672	197,091	16,621	30,887	47,508
1989	73,556	104,930	178,486	65,325	77,891	256,675	399,891	40,433	74,806	115,239
1990	64,850	95,278	160,128	60,501	80,631	235,408	376,540	44,036	81,591	125,627
1991	98,609	143,740	242,349	97,180	127,546	366,679	591,405	69,827	130,219	200,046
1992	131,376	196,667	328,043	139,051	179,500	507,345	825,896	95,255	177,501	272,756
1993	146,878	223,975	370,853	160,367	203,936	566,085	930,388	110,339	206,360	316,699
1994	146,200	225,934	372,134	165,420	203,853	567,883	937,156	141,585	270,578	412,163
1995	145,190	240,239	385,429	170,179	201,112	559,811	931,102	217,956	430,764	648,720
1996	144,527	255,117	399,644	175,344	198,852	553,075	927,271	294,847	591,979	886,826
1997	145,982	256,155	402,137	176,764	198,440	551,783	926,987	301,713	609,487	911,200
1998	146,857	256,181	403,038	177,484	197,248	548,325	923,057	307,369	624,536	931,905
1999	148,546	257,628	406,174	179,187	197,153	547,915	924,255	314,718	643,020	957,738
2000	150,224	259,052	409,276	180,876	197,036	547,444	925,356	322,059	661,499	983,558
2001	151,672	260,060	411,732	180,260	196,340	545,426	922,026	321,440	660,266	981,706
2002	153,937	261,211	415,148	180,416	196,496	545,798	922,710	322,078	661,607	983,685
2003	156,177	262,308	418,485	180,532	196,609	546,052	923,193	322,647	662,807	985,454
2004	156,367	259,990	416,357	178,306	194,170	539,218	911,694	319,025	655,395	974,420
2005	158,423	260,805	419,228	178,234	194,078	538,903	911,215	319,254	655,896	975,150
2006	160,715	262,001	422,716	178,421	194,268	539,371	912,060	319,949	657,353	977,302
2007	163,076	263,298	426,374	178,675	194,530	540,039	913,244	320,763	659,056	979,819
2008	165,154	264,133	429,287	178,612	194,449	539,751	912,812	321,012	659,597	980,609
2009	167,401	265,233	432,634	178,729	194,561	540,003	913,293	321,582	660,797	982,379
2010	169,690	266,391	436,081	178,882	194,714	540,367	913,963	322,220	662,139	984,359
2011	172,448	267,032	439,480	178,909	194,666	539,913	913,488	322,964	663,698	986,662
2012	175,362	267,894	443,256	179,082	194,776	539,895	913,753	323,976	665,806	989,782
2013	178,133	268,515	446,648	179,092	194,708	539,383	913,183	324,696	667,317	992,013
2014	181,194	269,551	450,745	179,376	194,937	539,691	914,004	325,917	669,856	995,773
2015	184,133	270,380	454,513	179,519	195,013	539,574	914,106	326,889	671,882	998,771
2016	187,153	271,305	458,458	179,722	195,155	539,634	914,511	327,975	674,145	1,002,120
2017	190,182	272,218	462,400	179,916	195,284	539,659	914,859	329,048	676,380	1,005,428
2018	193,028	272,850	465,878	179,921	195,209	539,116	914,246	329,779	677,914	1,007,693
2019	196,235	273,968	470,203	180,244	195,478	539,522	915,244	331,099	680,658	1,011,757
2020	199,172	274,686	473,858	180,300	195,457	539,127	914,884	331,935	682,406	1,014,341
2021	202,241	275,565	477,806	180,461	195,549	539,038	915,048	332,966	684,556	1,017,522
2022	205,349	276,476	481,825	180,638	195,658	538,998	915,294	334,034	686,783	1,020,817
2023	305,625	406,651	712,276	265,074	286,993	790,099	1,342,166	491,263	1,010,095	1,501,358
2024	202,189	265,900	468,089	172,923	187,142	514,875	874,940	321,195	660,444	981,639
2025	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
TOTAL	5,954,739	9,124,608	15,079,347	6,166,131	6,867,648	19,128,552	32,162,331	10,240,464	20,900,080	31,140,544

TABLE B-22

Total Water System Revenue Bond Surcharge for Each Contractor (Continued)

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA								
				Kern County Water Agency					
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Municipal and Industrial	Agri-cultural	County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]
1971	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0
1988	43,035	2,098	0	84,892	916,572	2,822	3,611	84,520	1,137,550
1989	89,334	4,199	0	175,229	1,879,267	5,626	7,427	175,939	2,337,021
1990	84,041	3,809	0	453,379	1,492,333	5,118	6,878	171,890	2,217,448
1991	127,952	5,805	0	559,058	2,434,518	7,833	10,533	261,682	3,407,381
1992	175,382	7,989	0	705,314	3,355,135	10,792	14,466	358,689	4,627,767
1993	194,969	8,893	0	443,880	4,059,486	12,026	16,121	398,854	5,134,229
1994	191,733	8,748	0	437,257	3,990,992	11,849	15,861	392,242	5,048,682
1995	188,749	8,612	0	430,827	3,927,604	11,678	15,621	386,149	4,969,240
1996	186,216	8,496	0	425,426	3,873,595	11,534	15,418	380,979	4,901,664
1997	185,952	8,486	0	424,834	3,867,295	11,520	15,401	380,448	4,893,936
1998	184,958	8,443	0	422,572	3,845,803	11,460	15,324	378,422	4,866,982
1999	184,991	8,446	0	422,659	3,845,684	11,464	15,332	378,499	4,867,075
2000	185,004	8,449	0	422,700	3,845,146	11,467	15,338	378,535	4,866,639
2001	184,423	8,420	0	421,366	3,832,779	11,433	15,293	377,352	4,851,066
2002	184,614	8,429	0	421,802	3,836,602	11,445	15,310	377,748	4,855,950
2003	184,766	8,436	0	422,147	3,839,597	11,455	15,323	378,062	4,859,786
2004	182,518	8,334	0	417,011	3,792,744	11,316	15,138	373,468	4,800,529
2005	182,477	8,332	0	416,914	3,791,727	11,314	15,135	373,387	4,799,286
2006	182,700	8,343	0	417,424	3,796,225	11,328	15,155	373,850	4,805,025
2007	182,992	8,356	0	418,089	3,802,129	11,347	15,180	374,450	4,812,543
2008	182,960	8,355	0	418,015	3,801,315	11,345	15,178	374,390	4,811,558
2009	183,111	8,362	0	418,359	3,804,298	11,355	15,191	374,703	4,815,379
2010	183,300	8,371	0	418,790	3,808,079	11,367	15,208	375,095	4,820,210
2011	183,621	8,385	0	410,382	3,814,753	11,380	15,235	375,753	4,819,509
2012	184,093	8,407	0	402,260	3,824,575	11,402	15,275	376,721	4,822,733
2013	184,399	8,420	0	393,721	3,830,947	11,414	15,301	377,350	4,821,552
2014	184,989	8,447	0	385,728	3,843,212	11,444	15,350	378,559	4,827,729
2015	185,436	8,467	0	377,372	3,852,516	11,464	15,388	379,476	4,830,119
2016	185,947	8,490	0	369,084	3,863,158	11,489	15,431	380,525	4,834,124
2017	186,451	8,512	0	360,714	3,873,627	11,513	15,473	381,557	4,837,847
2018	186,760	8,526	0	351,913	3,880,070	11,525	15,499	382,192	4,836,485
2019	187,402	8,555	0	343,675	3,893,419	11,557	15,553	383,508	4,843,669
2020	187,769	8,571	0	334,868	3,901,058	11,573	15,584	384,261	4,843,684
2021	188,246	8,593	0	326,199	3,910,977	11,595	15,624	385,239	4,846,473
2022	188,743	8,615	0	317,501	3,921,319	11,618	15,666	386,259	4,849,721
2023	277,427	12,663	0	452,610	5,763,831	17,066	23,028	567,752	7,114,377
2024	181,283	8,274	0	286,544	3,766,354	11,145	15,048	370,996	4,639,644
2025	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0
TOTAL	6,548,743	299,136	0	14,710,515	135,378,741	405,079	542,897	13,389,501	171,274,612

TABLE B-22

Total Water System Revenue Bond Surcharge for Each Contractor (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley–East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley 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]
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0
1988	81,377	72,318	34,229	9,695	56,339	2,728	70,906	20,564	191,436	50,534
1989	309,973	148,786	70,827	19,989	117,714	5,671	146,402	42,172	391,651	104,150
1990	291,440	138,318	66,869	18,753	110,224	5,331	137,561	39,311	364,910	97,431
1991	461,792	218,364	102,588	28,854	169,102	8,145	210,978	60,111	565,173	149,606
1992	626,359	365,239	139,225	39,251	229,495	10,989	286,389	81,269	765,839	203,126
1993	692,210	402,542	153,117	43,280	252,397	12,116	315,027	89,680	842,926	223,689
1994	681,910	396,766	150,975	42,869	248,868	11,935	310,440	88,339	835,122	221,670
1995	671,324	390,664	148,618	42,246	244,982	11,748	305,566	86,962	825,963	219,268
1996	662,342	385,495	146,616	41,724	241,682	11,590	301,421	85,793	818,776	217,389
1997	661,098	384,685	146,309	41,634	241,176	11,567	300,805	85,628	816,967	216,917
1998	657,258	382,365	145,428	41,381	239,724	11,499	299,009	85,127	811,950	215,593
1999	657,071	382,169	145,355	41,358	239,604	11,495	298,874	85,099	811,447	215,467
2000	656,811	381,932	145,266	41,330	239,457	11,490	298,706	85,061	810,853	215,318
2001	654,631	380,655	144,773	41,188	238,648	11,453	297,701	84,775	808,092	214,589
2002	655,245	381,013	144,905	41,226	238,864	11,464	297,974	84,853	808,819	214,784
2003	655,718	381,288	145,005	41,255	239,029	11,472	298,182	84,913	809,371	214,933
2004	647,679	376,613	143,223	40,748	236,091	11,331	294,519	83,871	799,417	212,292
2005	647,467	376,491	143,172	40,734	236,006	11,327	294,416	83,842	799,124	212,216
2006	648,197	376,915	143,329	40,779	236,264	11,339	294,741	83,936	799,993	212,449
2007	649,167	377,480	143,540	40,839	236,610	11,356	295,175	84,060	801,159	212,761
2008	648,989	377,377	143,496	40,827	236,538	11,353	295,088	84,036	800,908	212,696
2009	649,460	377,651	143,596	40,856	236,702	11,361	295,295	84,096	801,458	212,844
2010	650,067	378,004	143,726	40,893	236,915	11,371	295,564	84,173	802,175	213,037
2011	650,066	377,963	143,676	40,874	236,834	11,370	295,488	84,166	801,738	212,937
2012	650,594	378,229	143,744	40,889	236,945	11,378	295,652	84,227	801,951	213,009
2013	650,529	378,150	143,679	40,866	236,840	11,375	295,546	84,211	801,430	212,887
2014	651,457	378,648	143,834	40,906	237,095	11,390	295,891	84,323	802,130	213,089
2015	651,875	378,849	143,876	40,913	237,165	11,397	296,004	84,370	802,198	213,123
2016	652,512	379,177	143,966	40,934	237,313	11,406	296,215	84,445	802,532	213,228
2017	653,111	379,483	144,047	40,952	237,447	11,416	296,409	84,515	802,818	213,320
2018	653,025	379,390	143,976	40,927	237,332	11,413	296,291	84,496	802,257	213,188
2019	654,092	379,968	144,160	40,975	237,635	11,430	296,697	84,626	803,112	213,431
2020	654,193	379,983	144,130	40,962	237,586	11,431	296,663	84,632	802,776	213,359
2021	654,668	380,216	144,183	40,972	237,673	11,438	296,798	84,685	802,897	213,408
2022	655,207	380,485	144,249	40,986	237,783	11,446	296,962	84,747	803,092	213,476
2023	961,313	558,180	211,563	60,104	348,745	16,791	435,581	124,329	1,177,604	313,053
2024	627,017	364,031	137,941	39,184	227,386	10,951	284,030	81,086	767,643	204,086
2025	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
TOTAL	23,037,244	13,305,882	5,111,211	1,452,153	8,426,210	404,763	10,514,966	2,996,529	28,457,707	7,558,353

TABLE B-22

Total Water System Revenue Bond Surcharge for Each Contractor (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				South Bay 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		
	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0
1988	30,414	3,345,930	22,943	3,989,413	1,691	699	1,081	3,471	0	5,463,212
1989	63,360	6,914,298	52,095	8,387,088	3,808	1,385	2,190	7,383	0	11,425,108
1990	59,899	6,360,905	55,124	7,746,076	3,993	1,260	2,023	7,276	0	10,633,095
1991	91,972	9,738,012	84,183	11,888,880	15,470	1,934	3,153	20,557	0	16,350,618
1992	124,847	13,142,613	113,570	16,128,211	21,299	2,662	4,370	28,331	0	22,211,004
1993	137,459	14,476,079	125,219	17,765,741	23,801	2,976	4,930	31,707	0	24,549,617
1994	136,218	14,291,615	123,430	17,540,157	23,425	2,928	4,940	31,293	0	24,341,585
1995	134,753	14,091,237	121,549	17,294,880	23,080	2,885	4,988	30,953	0	24,260,324
1996	133,610	13,924,507	119,958	17,090,903	22,791	2,848	5,047	30,686	0	24,236,994
1997	133,318	13,894,496	119,710	17,054,310	22,772	2,846	5,174	30,792	0	24,219,362
1998	132,502	13,809,928	118,991	16,950,755	22,664	2,833	5,281	30,778	0	24,106,515
1999	132,423	13,802,121	118,934	16,941,417	22,681	2,835	5,416	30,932	0	24,127,591
2000	132,329	13,792,785	118,864	16,930,202	22,696	2,837	5,552	31,085	0	24,146,116
2001	131,881	13,745,809	118,462	16,872,657	22,629	64,824	5,694	93,147	0	24,132,334
2002	132,000	13,758,094	118,569	16,887,810	22,656	64,901	5,882	93,439	0	24,158,742
2003	132,091	13,767,407	118,650	16,899,314	22,678	64,963	6,069	93,710	0	24,179,942
2004	130,468	13,597,999	117,191	16,691,442	22,405	64,182	6,176	92,763	0	23,887,205
2005	130,421	13,592,938	117,148	16,685,302	22,403	64,177	6,355	92,935	0	23,883,116
2006	130,564	13,607,643	117,276	16,703,425	22,434	64,265	6,544	93,243	0	23,913,771
2007	130,755	13,627,387	117,447	16,727,736	22,473	64,377	6,736	93,586	0	23,953,302
2008	130,715	13,623,046	117,411	16,722,480	22,473	64,375	6,916	93,764	0	23,950,510
2009	130,805	13,632,311	117,492	16,733,927	22,494	64,437	7,104	94,035	0	23,971,647
2010	130,923	13,644,428	117,597	16,748,873	22,521	64,513	7,294	94,328	0	23,997,814
2011	130,858	13,638,424	117,564	16,741,958	22,561	64,627	7,352	94,540	0	23,995,637
2012	130,899	13,643,495	117,627	16,748,639	22,619	64,794	7,417	94,830	0	24,012,993
2013	130,821	13,636,089	117,583	16,740,006	22,657	64,903	7,475	95,035	0	24,008,437
2014	130,941	13,649,462	117,717	16,756,883	22,730	65,112	7,545	95,387	0	24,040,521
2015	130,959	13,652,104	117,760	16,760,593	22,786	65,271	7,610	95,667	0	24,053,769
2016	131,020	13,659,279	117,841	16,769,868	22,849	65,452	7,677	95,978	0	24,075,059
2017	131,073	13,665,630	117,916	16,778,137	22,911	65,631	7,745	96,287	0	24,094,958
2018	130,989	13,657,591	117,866	16,768,741	22,950	65,741	7,804	96,495	0	24,089,538
2019	131,135	13,673,658	118,025	16,788,944	23,029	65,968	7,878	96,875	0	24,126,692
2020	131,087	13,669,455	118,009	16,784,266	23,074	66,098	7,941	97,113	0	24,128,146
2021	131,113	13,673,057	118,060	16,789,168	23,133	66,267	8,009	97,409	0	24,143,426
2022	131,152	13,677,921	118,123	16,795,629	23,195	66,444	8,078	97,717	0	24,161,003
2023	192,323	20,058,709	173,258	24,631,553	34,094	97,665	11,943	143,702	0	35,445,432
2024	125,376	13,077,140	112,974	16,058,845	22,279	63,820	7,850	93,949	0	23,117,106
2025	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
TOTAL	4,643,473	485,213,602	4,172,136	595,294,229	786,204	1,623,735	231,239	2,641,178	0	847,592,241

TABLE B-23

Total Transportation and Delta Water Charge for Each Contractor

(in dollars)

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA	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]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	11,750	43,787	0	55,537	0	0	0
1963	0	0	0	151,158	190,471	449,513	791,142	0	0	0
1964	0	0	0	170,825	277,767	623,434	1,072,026	8,923	17,668	26,591
1965	0	0	0	245,752	404,792	1,160,811	1,811,355	14,709	28,507	43,216
1966	18,099	0	18,099	271,872	422,243	1,415,979	2,110,094	24,023	45,898	69,921
1967	41,651	0	41,651	361,164	552,227	1,863,818	2,777,209	42,377	79,930	122,307
1968	128,844	0	128,844	411,394	633,829	2,181,904	3,227,127	68,520	128,340	196,860
1969	255,007	0	255,007	477,523	584,144	2,302,351	3,364,018	123,604	230,094	353,698
1970	277,846	0	277,846	541,841	641,031	2,791,648	3,974,520	136,697	254,337	391,034
1971	227,777	0	227,777	479,166	675,933	2,810,711	3,965,810	137,859	256,562	394,421
1972	225,283	0	225,283	609,052	823,137	3,031,450	4,463,639	144,078	268,152	412,230
1973	221,398	31,440	252,838	594,780	717,233	3,124,497	4,436,510	141,119	262,742	403,861
1974	240,810	33,015	273,825	634,917	747,675	3,328,736	4,711,328	142,355	265,071	407,426
1975	237,786	36,373	274,159	691,799	793,799	3,217,765	4,703,363	158,935	295,703	454,638
1976	271,627	40,926	312,553	804,383	944,210	3,366,264	5,114,857	268,704	498,415	767,119
1977	293,967	45,194	339,161	772,111	922,990	3,307,284	5,002,385	279,524	518,825	798,349
1978	274,215	49,283	323,498	859,639	936,571	3,716,327	5,512,537	287,250	533,240	820,490
1979	289,831	53,452	343,283	954,434	1,010,263	3,822,782	5,787,479	286,143	531,316	817,459
1980	311,216	86,211	397,427	1,106,139	1,174,628	4,123,345	6,404,112	325,038	583,813	908,851
1981	347,619	113,019	460,638	1,211,313	1,350,024	4,512,497	7,073,834	353,686	633,227	986,913
1982	441,013	142,041	583,054	1,290,813	1,373,288	4,901,304	7,565,405	374,171	723,430	1,097,601
1983	355,869	163,576	519,445	1,167,777	1,266,353	4,981,090	7,415,220	400,088	740,700	1,140,788
1984	467,072	247,107	714,179	1,468,524	1,480,534	6,863,256	9,812,314	452,699	837,689	1,290,388
1985	734,649	386,958	1,121,607	1,975,709	2,240,213	7,860,352	12,076,274	549,647	1,015,131	1,564,778
1986	1,116,976	715,470	1,832,446	1,836,529	2,023,422	8,242,021	12,101,972	582,154	1,074,433	1,656,587
1987	1,770,072	1,584,948	3,355,020	2,340,754	2,524,579	8,044,342	12,909,675	618,246	1,179,123	1,797,369
1988	2,356,362	2,554,556	4,910,918	2,396,898	2,788,215	7,876,711	13,061,824	735,236	1,447,461	2,182,697
1989	2,625,582	3,849,396	6,474,978	2,385,495	2,539,772	7,678,120	12,603,387	861,229	1,818,321	2,679,550
1990	2,912,623	3,897,546	6,810,169	2,765,252	2,912,133	8,595,560	14,272,945	1,040,338	2,041,928	3,082,266
1991	2,984,087	4,120,080	7,104,167	2,464,537	2,839,882	7,537,251	12,841,670	1,134,358	2,408,804	3,543,162
1992	2,962,946	4,368,343	7,331,289	3,156,296	3,471,506	9,130,797	15,758,599	1,380,018	2,582,073	3,962,091
1993	3,121,226	4,667,674	7,788,900	3,911,228	4,226,132	11,016,464	19,153,824	1,606,981	3,031,594	4,638,575
1994	3,142,142	4,813,756	7,955,898	4,103,568	4,322,141	11,308,255	19,733,964	2,425,309	4,706,982	7,132,291
1995	3,220,074	5,072,974	8,293,048	4,563,177	4,646,389	12,048,139	21,257,705	4,630,401	9,010,438	13,640,839
1996	3,240,570	5,175,505	8,416,075	4,641,314	4,580,421	11,879,187	21,100,922	11,670,926	24,008,811	35,679,737
1997	3,301,964	5,218,548	8,520,512	4,854,371	4,650,432	12,050,502	21,555,305	12,067,747	24,683,580	36,751,327
1998	3,316,926	5,234,261	8,551,187	4,815,783	4,612,700	11,957,573	21,386,056	12,900,718	26,254,476	39,155,194
1999	3,342,452	5,232,534	8,574,986	4,777,175	4,575,617	11,868,457	21,221,249	13,093,068	27,138,168	40,231,236
2000	3,395,826	5,272,870	8,668,696	4,874,088	4,662,456	12,075,081	21,611,625	13,228,554	27,390,324	40,618,878
2001	3,426,904	5,281,368	8,708,272	4,865,115	4,654,131	12,054,902	21,574,148	13,215,622	27,366,698	40,582,320
2002	3,454,684	5,290,926	8,745,610	4,861,654	4,650,985	12,047,422	21,560,061	13,209,697	27,356,164	40,565,861
2003	3,484,585	5,297,004	8,781,589	4,846,384	4,637,052	12,014,240	21,497,676	13,186,431	27,314,048	40,500,479
2004	3,515,215	5,304,344	8,819,559	4,846,245	4,636,520	12,011,957	21,494,722	13,184,041	27,308,973	40,493,014
2005	3,576,628	5,372,221	8,948,849	4,983,481	4,761,810	12,310,258	22,055,549	13,370,672	27,649,312	41,019,984
2006	3,600,405	5,372,050	8,972,455	4,974,131	4,753,291	12,289,993	22,017,415	13,357,499	27,625,544	40,983,043
2007	3,628,508	5,370,786	8,999,294	4,962,920	4,743,086	12,265,747	21,971,753	13,340,492	27,594,868	40,935,360
2008	3,660,881	5,368,288	9,029,169	4,948,917	4,730,282	12,235,163	21,914,362	13,319,199	27,556,271	40,875,470
2009	3,689,341	5,367,907	9,057,248	4,940,800	4,722,875	12,217,522	21,881,197	13,306,735	27,533,803	40,840,538
2010	3,718,585	5,372,439	9,091,024	4,935,966	4,718,478	12,207,066	21,861,510	13,297,540	27,517,371	40,814,911
2011	3,776,520	5,395,939	9,172,459	5,015,775	4,791,285	12,380,114	22,187,174	13,407,839	27,718,618	41,126,457
2012	3,804,934	5,393,446	9,198,380	5,001,136	4,777,871	12,347,901	22,126,908	13,386,415	27,679,934	41,066,349
2013	3,795,870	5,345,773	9,141,643	4,732,397	4,528,035	11,638,171	20,898,603	13,154,873	27,258,924	40,413,797
2014	3,853,785	5,368,582	9,222,367	4,763,267	4,523,085	11,616,299	20,902,651	13,242,509	27,417,307	40,659,816
2015	3,873,923	5,357,336	9,231,259	4,666,051	4,379,801	11,117,183	20,163,035	13,150,934	27,250,638	40,401,572
2016	3,884,637	5,352,011	9,236,648	4,625,894	4,329,615	10,896,827	19,852,336	13,111,364	27,178,494	40,289,858
2017	3,911,473	5,365,918	9,277,391	4,640,662	4,341,272	10,881,765	19,863,699	13,156,636	27,260,719	40,417,355
2018	3,867,915	5,367,075	9,234,990	4,598,856	4,300,010	10,758,278	19,657,144	13,142,704	27,235,020	40,377,724
2019	3,862,162	5,369,556	9,231,718	4,562,752	4,266,404	10,660,648	19,489,804	13,142,922	27,235,543	40,378,465
2020	3,888,572	5,364,380	9,252,952	4,525,902	4,230,424	10,571,224	19,327,550	13,109,606	27,174,930	40,284,536
2021	3,895,227	5,365,469	9,260,696	4,523,076	4,227,413	10,564,267	19,314,756	13,109,356	27,174,636	40,283,992
2022	3,897,204	5,366,569	9,263,773	4,523,095	4,227,017	10,560,945	19,311,057	13,110,202	27,176,324	40,286,526
2023	3,996,641	5,465,439	9,462,080	4,607,573	4,318,311	10,810,251	19,736,135	13,267,682	27,500,027	40,767,709
2024	3,893,502	5,325,875	9,219,377	4,523,303	4,225,522	10,551,312	19,300,137	13,109,833	27,172,543	40,282,376
2025	3,676,243	5,050,900	8,727,143	4,331,723	4,020,833	9,993,889	18,346,445	12,761,714	26,463,064	39,224,778
2026	3,669,332	5,044,554	8,713,886	4,324,423	4,014,141	9,977,761	18,316,325	12,645,341	26,248,373	38,893,714
2027	3,666,506	5,040,387	8,706,893	4,323,067	4,012,718	9,972,996	18,308,781	12,643,058	26,243,699	38,886,757
2028	3,663,228	5,036,292	8,699,520	4,320,694	4,010,403	9,966,160	18,297,257	12,636,406	26,231,264	38,867,670
2029	3,660,039	5,032,404	8,692,443	4,318,072	4,007,961	9,959,436	18,285,469	12,635,579	26,229,593	38,865,172
2030	3,649,269	5,017,158	8,666,427	4,312,832	4,003,103	9,947,444	18,263,379	12,628,928	26,217,280	38,846,208
2031	3,636,034	4,997,668	8,633,702	4,306,704	3,997,428	9,933,494	18,237,626	12,620,438	26,201,503	38,821,941
2032	3,624,229	4,977,968	8,602,197	4,307,833	3,998,413	9,935,559	18,241,805	12,623,313	26,206,710	38,830,023
2033	3,596,439	4,933,640	8,530,079	4,308,013	3,998,535	9,935,606	18,242,154	12,626,059	26,211,721	38,837,780
2034	3,533,213	4,861,152	8,394,365	4,303,314	3,994,004	9,923,597	18,220,915	12,627,585	26,214,407	38,841,992
2035	3,405,138	4,721,051	8,126,189	4,295,403	3,986,714	9,905,412	18,187,529	12,626,353	26,212,071	38,838,424
TOTAL	178,209,178	246,520,931	424,730,109	233,077,730	228,101,767	613,526,387	1,074,705,884	539,161,009	1,113,461,700	1,652,622,709

TABLE B-23

Total Transportation and Delta Water Charge for Each Contractor (Continued)

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA								
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
				Municipal and Industrial	Agri-cultural				
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]
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	2,729	0	0	0	0	0	2,729
1965	0	0	6,040	73,706	0	0	0	0	79,746
1966	0	0	12,060	137,578	0	0	0	0	149,638
1967	0	0	26,303	268,087	0	0	0	0	294,390
1968	222,797	20,062	54,674	446,119	1,700,852	16,059	19,668	306,235	2,786,466
1969	238,970	12,981	87,677	525,877	2,711,181	15,695	19,405	454,706	4,066,492
1970	303,885	36,415	94,778	574,839	3,857,189	20,268	30,426	518,247	5,436,047
1971	324,969	39,144	95,799	606,768	5,171,181	25,983	34,710	709,306	7,007,860
1972	377,870	42,341	98,896	632,511	7,096,821	25,252	63,870	1,972,278	10,309,839
1973	395,351	41,027	97,657	1,026,793	7,243,235	27,598	39,299	778,067	9,649,027
1974	501,997	42,241	98,569	1,145,699	7,947,323	28,311	42,600	1,035,851	10,842,591
1975	673,376	42,687	106,811	1,198,073	9,318,208	29,987	48,217	1,547,668	12,965,027
1976	714,461	45,208	108,194	1,324,756	10,561,839	31,409	52,158	1,435,866	14,273,891
1977	574,884	41,129	112,675	1,368,446	10,872,536	33,164	54,268	1,132,223	14,189,325
1978	691,275	43,377	115,636	1,564,145	13,173,196	37,498	59,078	1,165,219	16,849,424
1979	775,155	49,954	114,369	1,669,531	15,257,961	41,691	70,636	1,717,981	19,697,278
1980	956,310	51,708	126,069	1,771,625	16,901,063	46,675	95,035	1,652,259	21,600,744
1981	1,205,834	86,195	134,096	2,430,026	22,488,694	65,167	100,789	2,277,640	28,788,441
1982	1,239,859	72,333	136,052	2,522,027	24,834,311	69,339	108,364	2,272,937	31,255,222
1983	1,168,627	54,667	149,897	2,088,958	24,546,888	72,918	89,326	508,250	28,679,531
1984	1,492,438	30,887	165,391	3,366,802	33,247,558	93,138	121,535	1,547,107	40,064,856
1985	1,785,483	133,539	188,578	3,928,517	39,727,907	117,620	141,646	2,865,059	48,888,349
1986	2,023,895	82,233	182,347	4,618,198	43,508,385	136,754	155,416	3,683,054	54,390,282
1987	1,917,674	99,484	181,680	4,660,800	43,339,221	139,338	156,090	3,821,125	54,315,412
1988	2,002,521	114,156	193,458	4,803,523	45,287,764	139,894	150,070	3,974,721	56,666,107
1989	2,150,269	105,108	187,403	4,739,393	47,480,685	138,075	168,921	4,435,060	59,404,914
1990	2,234,869	102,898	221,395	5,291,680	49,591,128	136,663	168,339	4,552,188	62,299,160
1991	1,760,841	85,941	231,248	5,041,924	38,484,291	105,751	139,199	3,609,945	49,459,140
1992	2,460,805	117,651	290,424	5,926,721	54,397,395	155,581	192,066	5,035,989	68,576,632
1993	2,899,640	140,352	317,103	6,609,386	63,821,419	186,439	224,754	5,937,120	80,136,213
1994	2,968,890	143,978	306,905	6,783,366	65,020,308	191,738	230,729	6,079,426	81,125,340
1995	3,129,638	152,337	301,814	7,202,817	68,355,742	203,388	241,442	6,409,233	85,996,411
1996	3,099,926	150,830	295,764	7,124,070	67,408,458	201,579	239,598	6,348,727	84,868,952
1997	3,146,895	153,263	314,215	7,263,443	69,116,059	204,746	243,358	6,444,930	86,886,909
1998	3,119,824	151,872	311,653	7,196,090	68,535,212	202,916	241,287	6,389,519	86,148,373
1999	3,084,100	150,019	310,906	7,112,623	67,914,525	200,493	237,710	6,316,203	85,326,579
2000	3,130,661	152,439	311,221	7,229,766	68,946,251	203,710	240,855	6,411,788	86,626,691
2001	3,125,973	152,196	311,223	7,218,098	68,843,614	203,391	240,532	6,402,169	86,497,196
2002	3,124,767	152,133	311,257	7,214,994	68,816,323	203,303	240,448	6,399,687	86,462,912
2003	3,118,174	151,790	311,288	7,198,293	68,667,972	202,845	240,012	6,386,147	86,276,521
2004	3,116,851	151,735	311,344	7,195,493	68,643,404	202,768	239,883	6,383,442	86,244,920
2005	3,183,199	155,182	311,748	7,362,452	70,116,795	207,351	244,364	6,519,648	88,100,739
2006	3,178,837	154,954	311,748	7,351,436	70,020,664	207,046	244,066	6,510,695	87,979,446
2007	3,173,974	154,700	311,775	7,339,091	69,911,775	206,708	243,742	6,500,703	87,842,468
2008	3,167,542	154,366	311,808	7,322,882	69,769,101	206,259	243,306	6,487,498	87,662,762
2009	3,164,096	154,186	311,834	7,314,134	69,691,667	206,019	243,077	6,480,417	87,565,430
2010	3,161,951	154,071	311,904	7,308,661	69,644,589	205,867	242,944	6,476,001	87,505,988
2011	3,200,690	156,082	312,110	7,396,984	70,505,901	208,535	245,548	6,555,535	88,581,385
2012	3,194,495	155,756	312,128	7,372,022	70,366,607	208,094	245,141	6,542,803	88,397,046
2013	3,121,322	151,950	312,165	7,178,302	68,740,060	203,010	240,214	6,392,521	86,339,544
2014	3,153,159	153,601	309,465	7,249,003	69,445,329	205,206	242,375	6,457,900	87,216,038
2015	3,125,575	152,163	306,155	7,096,342	68,833,427	203,282	240,514	6,401,247	86,358,705
2016	3,116,160	151,672	300,138	6,999,155	68,623,015	202,619	239,894	6,381,910	86,014,563
2017	3,138,871	152,847	286,019	6,916,164	69,126,515	204,176	241,431	6,428,534	86,494,557
2018	3,139,163	152,860	263,286	6,789,977	69,132,103	195,667	241,458	6,429,133	86,343,647
2019	3,140,456	152,922	254,806	6,723,502	69,161,228	195,236	241,550	6,431,785	86,301,485
2020	3,129,949	152,373	252,949	6,654,449	68,925,921	194,251	240,859	6,410,216	85,960,967
2021	3,130,425	152,394	251,843	6,623,830	68,935,977	194,131	240,897	6,411,190	85,940,687
2022	3,130,964	152,419	251,227	6,605,182	68,948,464	194,091	240,935	6,412,297	85,935,579
2023	3,220,119	156,490	250,802	6,737,046	70,800,296	199,539	248,336	6,594,755	88,207,383
2024	3,127,827	152,302	250,275	6,578,574	68,889,281	193,868	240,606	6,405,914	85,838,647
2025	2,938,183	143,594	249,719	6,268,496	64,937,002	182,119	225,000	6,017,745	80,961,858
2026	2,935,085	143,433	249,436	6,258,648	64,868,279	181,869	224,791	6,011,386	80,872,927
2027	2,935,285	143,443	248,795	6,256,147	64,872,486	181,838	224,805	6,011,791	80,874,590
2028	2,935,279	143,442	246,356	6,254,079	64,872,365	181,816	224,805	6,011,778	80,869,920
2029	2,935,716	143,466	246,042	6,252,076	64,882,033	181,784	224,838	6,012,676	80,878,631
2030	2,934,362	143,395	245,749	6,245,577	64,851,932	181,622	224,744	6,009,893	80,837,274
2031	2,934,701	143,414	244,159	6,228,071	64,859,530	181,255	224,767	6,010,594	80,826,491
2032	2,934,396	143,398	244,136	6,229,485	64,852,917	181,244	224,745	6,009,962	80,820,283
2033	2,934,567	143,407	243,848	6,225,255	64,856,614	181,126	224,758	6,010,315	80,819,890
2034	2,935,568	143,458	243,243	6,221,295	64,879,221	181,049	224,822	6,012,374	80,841,030
2035	2,934,875	143,422	242,507	6,210,474	64,868,568	180,764	224,743	6,010,947	80,816,300
TOTAL	160,646,545	8,047,472	15,823,773	358,670,352	3,496,025,761	10,194,585	12,505,814	324,277,535	4,386,191,837

TABLE B-23

Annual Surplus and Unscheduled Water Deliveries

(acre-feet)

Calendar Year(a	NORTH BAY AREA			SOUTH BAY AREA			
	NC FC&WCD	SCWA	Area Total	ACFC & WCD, ZONE 7	ACWD	SCVWD	Area Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
1973	0	0	0	0	0	2,499	2,499
1974	0	0	0	0	0	2,934	2,934
1975	0	0	0	0	0	18,470	18,470
1976	0	0	0	3,636	4,147	24,705	32,488
1977	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0
1979	0	0	0	0	0	15,998	15,998
1980(b	0	0	0	0	0	14,278	14,278
1981(b	0	0	0	0	0	18,920	18,920
1982(b	0	0	0	0	0	1,303	1,303
1983	0	0	0	0	0	0	0
1984	0	0	0	0	0	3,663	3,663
1985	0	0	0	0	0	9,638	9,638
1986(c	0	0	0	0	0	2,595	2,595
1987(d	0	0	0	0	0	6,949	6,949
1988	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0
1990(d	0	0	0	0	0	0	0
1991(d	768	2,753	3,521	0	0	0	0
TOTAL	768	2,753	3,521	3,636	4,147	121,952	129,735

Calendar Year(a	SAN JOAQUIN VALLEY AREA						SOUTHERN CALIFORNIA AREA			TOTAL ALL AREAS
	DRWD	EWSID	KCWA	OFWD	TLBWSD	Area Total	CLWA(e	LCID	Area Total	
	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]
1973	13,192	2,814	163,744	1,013	69588	250,351	4,104	80	4,184	257,034
1974	33,391	1,539	299,433	3,471	70961	408,795	4,128	67	4,195	415,924
1975	40,555	3,448	410,820	3,576	135965	594,364	7,495	356	7,851	620,685
1976	30,922	3,457	442,150	3,840	61526	541,895	5,727	0	5,727	580,110
1977	0	0	0	0	0	0	0	0	0	0
1978	7,586	0	8,623	6	0	16,215	0	0	0	16,215
1979	38,545	0	524,247	698	67342	630,832	0	0	0	646,830
1980(b	39,079	0	327,233	718	14817	381,847	6,092	0	6,092	402,217
1981(b	32,327	2,992	624,581	2,788	215926	878,614	10,647	247	10,894	908,428
1982(b	14,463	926	124,736	721	67365	208,211	6,359	0	6,359	215,873
1983	13,019	0	0	0	0	13,019	0	0	0	13,019
1984	19,500	0	230,691	1,644	0	251,835	7,419	0	7,419	262,917
1985	7,636	0	186,486	764	96887	291,773	6,095	0	6,095	307,506
1986(c	903	1,130	14,987	247	12788	30,055	3,970	0	3,970	36,620
1987(d	0	1,876	52,048	255	51206	105,385	2,573	0	2,573	114,907
1988	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0
1990(d	0	0	0	90	0	90	0	0	0	90
1991(d	0	0	0	0	0	0	0	0	0	3,521
TOTAL	291,118	18,182	3,409,779	19,831	864,371	4,603,281	64,609	750	65,359	4,801,896

a) All deliveries are surplus water deliveries unless otherwise indicated.

b) Includes surplus and unscheduled water.

c) Includes 12,270 acre-feet of 1985 surplus water carried over and delivered during January and February 1986. Also includes 22,034 acre-feet of unscheduled water.

d) Unscheduled water only.

e) Devil's Den Water District merged with Castaic Lake Water Agency effective January 1, 1992.

TABLE B-23

Total Transportation and Delta Water Charge for Each Contractor (Continued)

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA					
	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 Area Future Contractor	GRAND TOTAL
	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	3,219	58,756
1963	0	692,178	0	777,395	0	0	0	0	55,830	1,624,367
1964	21,778	1,262,872	9,395	1,596,473	0	0	0	0	84,105	2,781,924
1965	21,906	2,184,551	17,799	2,707,839	0	0	405	405	129,207	4,771,768
1966	38,033	3,907,132	33,486	4,843,401	0	0	565	565	148,564	7,340,282
1967	71,409	7,707,275	68,275	9,514,603	0	0	563	563	204,947	12,955,670
1968	129,125	15,343,056	143,036	18,702,883	0	1,050	1,440	2,490	279,651	25,324,321
1969	199,094	23,191,328	215,563	28,214,429	0	1,225	4,126	5,351	349,657	36,608,652
1970	290,113	30,667,864	274,055	37,573,460	0	3,848	17,142	20,990	386,754	48,060,651
1971	410,000	40,024,070	342,980	49,221,565	0	4,546	19,215	23,761	376,318	61,217,512
1972	537,970	55,067,989	422,922	67,601,065	0	4,929	21,181	26,110	401,833	83,439,999
1973	588,787	59,671,975	436,278	73,245,663	0	7,059	21,808	28,867	376,313	88,393,079
1974	612,269	66,092,789	456,213	80,663,313	0	8,336	22,438	30,774	399,290	97,328,547
1975	645,490	71,915,888	479,060	87,381,116	0	9,416	23,553	32,969	408,510	106,219,782
1976	669,204	74,994,764	476,252	91,522,641	0	7,004	23,287	30,291	431,101	112,452,453
1977	697,436	73,429,115	507,755	90,273,594	0	16,917	24,089	41,006	423,856	111,067,676
1978	709,955	82,024,777	523,882	100,074,756	0	12,635	24,255	36,890	427,091	124,044,686
1979	713,782	83,691,751	527,123	102,941,567	0	16,575	28,382	44,957	447,131	130,079,154
1980	863,209	93,129,846	584,381	114,630,585	0	19,834	26,592	46,426	507,956	144,496,101
1981	947,364	111,875,697	673,067	136,736,867	0	21,682	34,593	56,275	517,378	174,620,346
1982	1,025,689	117,535,733	730,940	143,296,993	0	16,117	43,028	59,145	515,940	184,373,360
1983	1,079,509	119,243,270	851,589	147,704,177	0	15,202	27,091	42,293	554,929	186,056,383
1984	1,209,955	158,412,663	932,043	194,671,917	20,590	15,442	28,704	64,736	562,787	247,181,177
1985	1,290,371	195,671,115	995,185	238,060,963	24,050	16,976	32,146	73,172	683,289	302,468,432
1986	1,344,934	218,482,247	1,059,341	264,225,229	31,753	18,145	33,434	83,332	621,948	334,911,796
1987	1,368,226	205,355,778	1,060,060	252,288,569	37,071	17,794	33,621	88,486	688,075	325,442,606
1988	1,453,505	222,588,274	1,128,956	269,980,499	48,413	19,264	35,919	103,596	707,377	347,613,018
1989	1,515,202	234,029,222	1,250,171	282,312,583	64,992	21,276	38,826	125,094	762,547	364,363,053
1990	1,644,371	274,658,857	1,598,637	331,933,616	67,499	21,315	39,483	128,297	817,311	419,343,764
1991	1,721,431	224,560,353	1,567,681	272,693,322	185,737	23,217	42,434	251,388	809,125	346,701,974
1992	1,982,360	302,879,072	1,901,439	365,227,891	215,844	26,980	47,242	290,066	909,758	462,056,326
1993	2,078,760	414,317,625	2,242,916	494,989,358	221,068	27,634	49,079	297,781	899,364	607,904,015
1994	2,083,276	430,931,110	2,287,498	514,979,472	220,692	28,442	50,913	300,047	882,679	632,709,691
1995	2,103,780	478,648,537	2,411,127	572,664,840	220,347	28,399	52,024	300,770	888,169	703,041,782
1996	2,031,257	464,687,758	2,359,887	557,888,417	220,058	28,362	53,146	301,566	876,652	709,132,321
1997	2,935,060	475,798,705	4,358,237	575,326,291	220,039	28,360	54,336	302,735	890,722	730,233,801
1998	2,868,352	466,999,093	4,283,044	565,396,328	219,931	28,347	55,506	303,784	886,192	721,827,114
1999	2,860,933	468,327,406	4,290,743	567,276,678	219,948	28,349	56,704	305,001	879,619	723,815,348
2000	3,040,899	483,307,866	4,434,151	589,261,019	219,963	28,351	58,116	306,430	880,686	747,974,025
2001	3,045,497	483,343,103	4,429,744	589,197,359	219,896	649,515	59,534	928,945	880,703	748,368,943
2002	3,041,138	481,834,356	4,420,317	587,542,570	219,923	649,592	60,997	930,512	880,825	746,688,351
2003	2,992,339	478,503,666	4,397,732	583,267,249	219,945	649,654	62,460	932,059	880,932	742,136,505
2004	3,074,715	480,696,029	4,404,032	586,475,543	219,672	648,873	63,843	932,388	881,126	745,341,272
2005	3,458,568	503,524,593	4,617,783	622,755,513	219,670	648,868	65,297	933,835	882,510	784,696,979
2006	3,444,582	501,580,496	4,605,354	620,415,200	219,701	648,956	66,975	935,632	882,519	782,185,710
2007	3,428,663	499,682,254	4,588,295	618,032,395	219,740	649,068	68,655	937,463	882,615	779,601,348
2008	3,448,523	497,827,373	4,567,571	616,037,049	219,740	649,066	70,323	939,129	882,727	777,340,668
2009	3,385,304	496,316,460	4,554,597	613,583,918	219,761	649,128	71,999	940,888	882,813	774,752,032
2010	3,760,612	496,149,429	4,548,522	619,769,649	219,788	649,204	73,678	942,670	883,060	780,868,812
2011	3,852,940	509,617,379	4,675,641	637,040,675	219,828	649,318	75,437	944,583	883,769	799,936,502
2012	3,810,771	506,830,494	4,652,687	633,357,628	219,886	649,485	77,203	946,574	883,828	795,976,713
2013	3,666,765	480,932,424	4,410,276	601,345,304	219,924	649,594	79,174	948,692	840,755	759,928,338
2014	3,677,730	490,072,866	4,504,005	612,346,568	219,997	649,803	81,158	950,958	813,893	772,112,291
2015	4,099,856	479,613,634	4,403,187	600,482,607	220,053	649,962	82,944	952,959	783,794	758,373,931
2016	4,072,029	475,786,696	4,355,307	595,566,456	220,116	650,143	84,976	955,235	766,830	752,681,926
2017	4,090,812	479,138,193	4,393,241	599,857,506	220,178	650,322	85,047	955,547	727,263	757,593,318
2018	4,037,653	472,246,890	4,328,473	591,649,984	220,217	650,432	85,103	955,752	651,783	748,871,024
2019	4,026,492	465,555,920	4,259,082	584,117,646	220,296	650,659	82,546	953,501	587,809	741,060,428
2020	4,296,571	454,441,128	4,170,592	570,078,017	220,341	650,789	70,659	941,789	567,327	726,413,138
2021	4,313,459	445,726,290	4,111,021	559,777,109	220,400	650,958	69,899	941,257	563,551	716,082,048
2022	4,245,629	439,348,929	4,074,694	552,211,368	220,462	651,135	68,580	940,177	562,919	708,511,399
2023	4,305,228	443,440,512	4,126,819	557,655,323	231,361	682,356	72,445	986,162	562,250	717,377,042
2024	4,210,306	434,799,019	4,064,438	547,195,192	219,546	648,511	68,350	936,407	561,821	703,333,957
2025	4,057,747	418,981,352	3,920,445	527,831,739	197,267	584,691	60,498	842,456	560,384	676,494,803
2026	4,038,401	416,728,325	3,905,551	525,160,735	197,267	584,691	60,497	842,455	559,918	673,359,960
2027	4,029,919	416,262,217	3,901,780	524,562,181	197,267	584,691	60,495	842,453	559,080	672,740,735
2028	4,024,968	415,646,158	3,895,646	523,840,908	197,267	584,691	60,493	842,451	557,998	671,975,724
2029	4,048,706	416,049,334	3,888,602	524,482,932	197,267	584,691	60,491	842,449	556,533	672,603,629
2030	4,007,335	413,112,972	3,866,303	521,078,411	197,267	584,691	60,490	842,448	555,151	669,089,298
2031	3,998,328	410,281,506	3,835,006	517,868,177	197,267	584,691	60,489	842,447	552,138	665,782,522
2032	3,999,141	409,270,648	3,822,677	516,829,654	197,267	584,691	60,487	842,445	552,479	664,718,886
2033	4,001,385	407,893,802	3,806,713	515,298,280	197,267	584,691	60,486	842,444	551,776	663,122,403
2034	3,979,780	407,117,044	3,801,713	514,129,726	197,267	584,691	60,485	842,443	548,197	661,818,668
2035	4,048,634	405,895,590	3,789,478	513,764,117	197,267	584,691	60,484	842,442	543,950	661,118,951
TOTAL	177,825,320	22,887,556,682	194,032,491	28,323,006,065	9,918,373	22,630,020	3,538,063	36,086,456	45,750,906	35,943,093,966

TABLE B-24

Equivalent Unit Charge for Water Supply for Each Contractor (a

(in dollars per acre-foot)

Project Service Area and Water Supply Contractor	Transportation Charge					Delta Water Charge	Water System Revenue Bond Surcharge	Total Equivalent Unit Charge
	Capital Cost Component	Minimum OMP&R Component	Off-Aqueduct Component	Variable OMP&R Component	Total			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
FEATHER RIVER AREA								
City of Yuba City	0.00	0.00	0.00	0.00	0.00	30.21	2.96	33.17
County of Butte	0.00	0.00	0.00	0.00	0.00	13.22	1.17	14.39
Plumas County Flood Control and Water Conservation District	17.63	2.15	0.00	0.00	19.78	20.41	2.18	42.37
Feather River Area	1.23	0.15	0.00	0.00	1.38	16.87	1.57	19.82
NORTH BAY AREA								
Napa County Flood Control and Water Conservation District	111.83	32.68	3.66	16.64	164.81	14.10	6.12	185.03
Solano County Water Agency	84.61	27.27	3.14	10.86	125.88	22.13	6.23	154.24
North Bay Area	95.33	29.40	3.35	13.13	141.21	18.97	6.19	166.37
SOUTH BAY AREA								
Alameda County Flood Control and Water Conservation District, Zone 7	17.39	24.82	7.52	26.62	76.35	20.14	2.38	98.87
Alameda County Water District	19.16	20.88	6.69	22.32	69.05	18.05	2.34	89.44
Santa Clara Valley Water District	18.16	16.12	6.00	16.84	57.12	13.99	1.81	72.92
South Bay Area	18.22	18.36	6.37	19.38	62.33	15.70	2.00	80.03
SAN JOAQUIN VALLEY AREA								
County of Kings	4.23	3.38	3.22	8.78	19.61	17.24	1.39	38.24
Dudley Ridge Water District	4.96	3.91	2.61	7.75	19.23	15.15	1.33	35.71
Empire West Side Irrigation District	2.70	3.18	2.20	6.83	14.91	15.36	0.99	31.26
Kern County Water Agency	8.92	8.12	4.00	11.26	32.30	17.61	1.90	51.81
Oak Flat Water District	1.94	1.89	1.67	4.84	10.34	14.32	0.98	25.64
Tulare Lake Basin Water Storage District	5.19	4.12	2.53	8.14	19.98	15.80	1.42	37.20
San Joaquin Valley Area	8.27	7.44	3.76	10.71	30.18	17.27	1.81	49.26
CENTRAL COASTAL AREA								
San Luis Obispo County Flood Control and Water Conservation District	285.38	140.99	17.18	90.30	533.85	32.31	13.06	579.22
Santa Barbara County Flood Control and Water Conservation District	331.81	166.09	17.41	90.11	605.42	32.22	14.53	652.17
Central Coastal Area	315.36	157.20	17.33	90.18	580.07	32.25	14.01	626.33
SOUTHERN CALIFORNIA AREA								
Antelope Valley-East Kern Water Agency	39.47	32.22	23.50	97.36	192.55	26.96	4.18	223.69
Castaic Lake Water Agency	46.77	31.91	22.24	58.82	159.74	21.59	4.39	185.72
Coachella Valley Water District	42.16	34.73	38.44	76.02	191.35	18.92	3.61	213.88
Crestline-Lake Arrowhead Water Agency	92.83	69.03	30.05	110.02	301.93	33.96	7.38	343.27
Desert Water Agency	42.84	35.29	38.68	76.91	193.72	19.00	3.67	216.39
Littlerock Creek Irrigation District	38.71	30.76	26.31	103.74	199.52	25.72	3.95	229.19
Mojave Water Agency	68.20	57.74	28.59	141.68	296.21	34.11	6.09	336.41
Palmdale Water District	45.11	35.92	30.21	119.79	231.03	32.51	4.67	268.21
San Bernardino Valley Municipal Water District	118.16	90.10	24.63	101.91	334.80	39.72	8.93	383.45
San Gabriel Valley Municipal Water District	93.74	73.48	33.31	85.92	286.45	33.51	7.26	327.22
San Gorgonio Pass Water Agency	219.52	171.28	15.83	135.74	542.37	65.69	16.81	624.87
The Metropolitan Water District of Southern California	60.04	41.43	32.14	75.67	209.28	23.66	4.89	237.83
Ventura County Flood Control District	80.89	54.34	23.26	115.78	274.27	31.78	7.15	313.20
Southern California Area	60.61	42.75	31.35	78.67	213.38	24.49	4.99	242.86
ALL AREAS	38.87	27.51	18.00	46.35	130.73	20.96	3.58	155.27

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 B-5B), 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, 4.621 percent per annum.

TABLE B-25

Total Transportation and Delta Water Charge for Each Contractor

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley – East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley 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]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,386	0	0	0	0	0	0	0	51,831	0
1964	62,984	27,499	14,455	4,378	37,231	1,145	28,492	8,221	82,967	35,056
1965	118,817	53,103	25,141	7,207	40,844	2,086	50,410	15,250	135,316	35,409
1966	216,165	101,445	44,811	12,501	73,283	3,761	90,562	27,728	232,920	61,574
1967	418,215	211,185	86,271	23,514	141,660	7,298	175,487	54,119	434,117	115,778
1968	737,186	491,935	152,937	41,577	251,605	12,891	311,202	95,618	783,447	209,268
1969	1,060,713	743,188	225,676	61,326	371,562	18,724	458,858	138,286	1,207,826	322,285
1970	1,379,247	943,435	315,780	89,846	520,168	25,270	633,048	185,137	1,781,147	468,350
1971	1,707,039	1,138,106	433,248	128,572	713,897	31,887	857,218	231,646	2,542,405	660,497
1972	2,184,808	1,380,265	604,224	186,103	991,249	43,824	1,178,771	288,018	3,763,365	951,557
1973	2,336,537	1,430,913	748,316	191,239	1,218,469	46,116	1,269,240	313,855	4,031,594	962,344
1974	2,456,976	1,526,271	771,824	204,329	1,258,369	48,991	1,327,790	332,113	4,468,962	1,106,417
1975	2,674,290	1,617,283	817,172	219,555	1,333,679	53,300	1,413,245	355,686	4,644,267	1,212,201
1976	3,138,545	1,654,487	874,217	232,397	1,426,413	57,790	1,489,297	381,696	4,843,949	1,283,630
1977	3,120,266	1,742,624	774,758	245,389	1,268,784	54,267	1,576,351	407,059	5,100,012	1,349,778
1978	3,566,505	1,874,777	973,549	255,696	1,568,971	56,857	1,623,064	420,452	5,097,514	1,378,757
1979	4,241,002	1,954,298	1,059,130	268,060	1,691,649	60,344	1,797,899	450,186	5,142,595	1,343,748
1980	4,926,053	2,093,920	1,168,501	295,640	1,892,295	67,664	1,969,497	499,490	5,653,441	1,486,648
1981	5,749,298	2,555,125	1,322,512	328,945	2,141,246	100,603	2,286,004	603,477	6,464,529	1,689,000
1982	5,514,380	2,731,160	1,413,154	347,890	2,289,935	82,576	2,267,542	644,006	6,778,766	1,935,222
1983	6,269,567	2,814,392	1,932,596	381,782	3,123,813	88,596	2,460,943	660,142	6,984,104	1,813,874
1984	7,603,893	3,979,499	3,017,135	496,210	4,854,645	96,385	2,719,384	727,000	8,036,411	2,586,694
1985	9,478,258	4,343,236	3,877,779	603,732	6,232,965	104,033	2,919,808	936,628	8,913,609	2,694,244
1986	9,432,707	4,983,015	4,327,127	647,962	6,959,756	130,319	3,087,349	1,224,974	9,145,069	3,400,429
1987	9,472,028	4,870,283	4,201,110	676,676	6,845,790	240,887	3,119,106	1,259,647	10,433,816	3,385,162
1988	9,057,708	5,052,361	4,245,069	703,171	6,991,754	161,896	3,296,661	1,060,764	10,988,372	3,252,008
1989	11,051,662	5,104,680	3,350,556	695,015	5,570,386	210,972	3,434,894	1,753,704	10,875,533	3,470,586
1990	12,651,839	5,800,828	4,745,669	772,757	7,861,083	281,752	3,699,578	1,994,531	12,106,398	4,117,316
1991	9,406,693	4,433,710	3,363,990	710,030	5,547,476	232,521	4,561,566	1,726,950	11,154,532	3,706,389
1992	13,747,280	6,635,843	3,780,274	932,148	6,234,030	308,973	6,237,244	2,036,963	14,166,862	4,385,403
1993	18,179,529	8,110,685	5,022,560	951,218	8,282,968	451,587	9,926,130	2,997,081	16,879,058	5,549,241
1994	19,105,503	8,632,224	5,209,751	982,153	8,591,715	467,639	10,225,784	3,197,975	17,560,159	5,704,685
1995	21,221,616	9,838,615	5,625,532	1,052,480	9,277,491	518,237	13,491,779	3,605,536	18,809,205	6,060,905
1996	21,348,183	9,941,234	5,473,794	1,035,132	9,027,218	508,903	13,187,387	3,802,448	18,600,786	5,884,430
1997	22,092,283	10,584,049	5,576,709	1,094,062	9,196,977	515,377	13,349,125	3,854,038	19,899,221	6,072,448
1998	21,889,316	10,381,850	5,492,717	1,063,388	9,058,437	510,115	13,196,095	3,814,583	19,892,851	5,946,487
1999	21,874,766	10,404,079	5,496,655	1,061,384	9,064,939	509,809	13,212,956	3,812,235	20,423,788	5,936,985
2000	24,391,445	11,613,526	5,689,311	1,161,098	9,382,693	526,049	13,619,204	3,934,265	21,750,110	6,410,402
2001	24,331,724	11,609,827	5,678,478	1,163,180	9,364,831	524,630	13,590,713	3,923,608	21,780,687	6,411,337
2002	24,311,331	11,582,522	5,671,636	1,161,129	9,353,544	524,138	13,577,733	3,919,881	21,742,918	6,401,927
2003	24,208,668	11,527,110	5,626,548	1,139,250	9,279,165	521,675	13,509,378	3,901,336	21,346,673	6,313,709
2004	24,218,248	11,544,984	5,658,105	1,175,624	9,331,236	521,954	13,512,456	3,903,436	21,994,118	6,440,606
2005	28,549,459	12,680,159	5,921,925	1,353,761	9,766,366	545,269	14,116,894	4,078,607	27,301,763	6,840,366
2006	28,472,948	12,647,730	5,902,465	1,347,564	9,734,261	543,747	14,081,229	4,067,182	27,174,701	6,812,941
2007	28,381,088	12,601,655	5,878,180	1,340,425	9,694,203	541,927	14,034,616	4,053,468	27,026,851	6,780,770
2008	28,267,577	12,545,694	5,861,414	1,348,946	9,666,559	539,679	13,973,314	4,036,550	27,152,875	6,800,974
2009	28,202,601	12,510,118	5,827,350	1,321,187	9,610,355	538,390	13,947,039	4,026,856	26,643,971	6,699,690
2010	31,456,855	12,494,337	5,833,394	1,512,302	9,620,335	537,674	13,919,272	4,021,429	28,963,063	6,952,425
2011	32,668,297	12,839,805	6,005,061	1,553,722	9,903,477	551,279	14,286,654	4,123,666	29,823,902	7,138,852
2012	32,522,892	12,777,481	5,967,223	1,535,157	9,841,067	548,866	14,228,628	4,105,503	29,469,899	7,066,960
2013	30,928,495	12,120,434	5,660,525	1,473,880	9,321,818	522,928	13,549,887	3,910,403	28,086,481	6,760,988
2014	31,557,217	12,373,351	5,759,551	1,477,003	9,499,150	532,725	13,803,950	3,984,491	28,291,633	6,812,896
2015	30,911,905	12,096,505	5,641,542	1,562,672	9,304,519	521,989	13,515,557	3,903,773	27,977,215	6,930,253
2016	30,601,744	11,961,472	5,584,652	1,553,518	9,210,688	516,776	13,384,239	3,864,691	27,794,070	6,880,574
2017	30,867,999	12,049,341	5,635,385	1,562,661	9,294,386	521,045	13,503,880	3,896,941	27,985,131	6,918,491
2018	30,612,145	11,842,102	5,578,357	1,545,673	9,200,326	516,504	13,390,728	3,863,361	27,654,966	6,832,806
2019	30,330,485	11,636,247	5,534,005	1,551,483	9,127,201	511,370	13,264,857	3,825,940	27,683,973	6,810,591
2020	29,796,687	11,391,540	5,369,909	1,548,934	8,856,540	501,240	12,988,895	3,752,142	26,286,238	6,677,601
2021	29,540,987	11,220,858	5,276,504	1,526,241	8,702,498	495,829	12,793,438	3,714,682	25,809,545	6,545,757
2022	29,416,543	11,115,382	5,220,454	1,506,793	8,610,066	493,480	12,687,223	3,697,850	25,357,112	6,437,213
2023	29,678,659	11,279,417	5,278,902	1,530,162	8,706,403	497,945	12,793,205	3,731,289	25,754,218	6,532,564
2024	29,411,204	11,072,737	5,204,991	1,497,060	8,584,566	493,192	12,669,685	3,696,307	25,112,494	6,379,193
2025	28,585,767	10,622,868	5,023,398	1,468,819	8,285,184	478,912	12,282,769	3,590,285	24,204,659	6,329,534
2026	28,507,979	10,581,184	5,001,283	1,464,317	8,248,713	477,581	12,232,298	3,580,434	24,095,663	6,299,006
2027	28,499,604	10,569,643	4,994,658	1,462,196	8,237,787	477,426	12,219,589	3,579,320	24,042,670	6,285,372
2028	28,489,062	10,549,099	4,989,960	1,460,878	8,230,040	477,228	12,210,202	3,577,905	24,012,362	6,277,400
2029	28,482,156	10,530,479	4,996,654	1,471,654	8,241,088	477,102	12,204,817	3,576,996	24,202,041	6,313,303
2030	28,432,163	10,469,425	4,975,446	1,454,325	8,206,101	476,269	12,187,333	3,570,760	23,891,030	6,428,949
2031	28,344,637	10,382,851	4,956,931	1,452,033	8,175,568	474,744	12,142,565	3,559,439	23,851,012	6,413,557
2032	28,347,542	10,349,279	4,958,614	1,452,324	8,178,340	474,788	12,146,369	3,559,789	23,855,214	6,414,929
2033	28,271,180	10,305,510	4,949,364	1,454,591	8,163,095	473,503	12,117,851	3,550,150	23,893,940	6,417,196
2034	28,188,359	10,292,065	4,932,370	1,446,869	8,135,066	472,108	12,091,338	3,539,696	23,750,619	6,382,699
2035	28,116,041	10,252,961	4,951,194	1,478,554	8,166,132	470,802	12,077,069	3,530,720	24,305,487	6,681,455
TOTAL	1,325,426,936	554,221,300	282,560,438	68,519,449	465,186,119	24,434,158	615,584,640	181,070,393	1,218,180,048	328,408,091

TABLE B-26

Capital Costs of Each Aqueduct Reach to Be Reimbursed Through Capital Cost Component of East Branch Enlargement Transportation Charge

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT							
	MOJAVE DIVISION							
	Reach 18A	Reach 19	Reach 20A	Reach 20B	Reach 21	Reach 22A	Reach 22B	Reach 23B
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1952	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	117,000	0	0	0	0	0	0	0
1980	200,000	0	0	0	0	0	0	74,000
1981	135,000	0	0	0	0	0	0	385,000
1982	1,503,000	0	0	0	0	0	0	1,586,000
1983	2,260,000	0	0	0	0	0	0	2,965,000
1984	735,000	0	0	0	0	0	796,000	1,380,000
1985	93,000	520,000	153,000	625,000	955,000	703,000	1,141,000	146,000
1986	784,000	5,207,000	3,318,000	2,417,000	1,785,000	1,203,000	4,976,000	34,000
1987	11,000	139,000	2,356,000	2,007,000	1,985,000	47,000	21,751,000	43,000
1988	1,000	123,000	2,034,000	2,099,000	2,461,000	40,000	5,326,000	70,000
1989	0	205,000	351,000	354,000	357,000	61,000	10,936,000	229,000
1990	1,000	577,000	809,000	636,000	811,000	194,000	24,411,000	887,000
1991	1,000	280,000	360,000	278,000	357,000	93,000	17,459,000	1,215,000
1992	0	39,000	35,000	38,000	28,000	12,000	13,952,000	7,817,000
1993	0	0	0	0	0	0	241,000	16,081,000
1994	0	0	0	0	0	0	0	9,999,000
1995	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
TOTAL	5,841,000	7,090,000	9,416,000	8,454,000	8,739,000	2,353,000	100,989,000	42,911,000

TABLE B-26

Capital Costs of Each Aqueduct Reach to Be Reimbursed Through Capital Cost Component of East Branch Enlargement Transportation Charge (Continued)

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)							GRAND TOTAL
	MOJAVE DIVISION (continued)			SANTA ANA DIVISION				
	Reach 23C	Reach 24	Total	Reach 25	Reach 26A	Reach 26B	Total	
	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]
1952	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	117,000	0	0	0	0	117,000
1980	0	0	274,000	0	0	0	0	274,000
1981	0	0	520,000	0	0	0	0	520,000
1982	0	0	3,089,000	0	0	0	0	3,089,000
1983	0	0	5,225,000	0	0	0	0	5,225,000
1984	0	0	2,911,000	0	0	50,000	50,000	2,961,000
1985	0	0	4,336,000	0	617,000	39,000	656,000	4,992,000
1986	25,000	0	19,749,000	0	1,926,000	154,000	2,080,000	21,829,000
1987	178,000	0	28,517,000	0	3,699,000	437,000	4,136,000	32,653,000
1988	632,000	0	12,786,000	0	5,736,000	3,329,000	9,065,000	21,851,000
1989	1,130,000	0	13,623,000	0	41,463,000	1,650,000	43,113,000	56,736,000
1990	2,066,000	0	30,392,000	0	31,341,000	1,650,000	32,991,000	63,383,000
1991	4,980,000	0	25,023,000	0	29,334,000	999,000	30,333,000	55,356,000
1992	18,568,000	0	40,489,000	0	28,188,000	299,000	28,487,000	68,976,000
1993	16,301,000	0	32,623,000	0	34,074,000	0	34,074,000	66,697,000
1994	8,039,000	0	18,038,000	0	25,112,000	0	25,112,000	43,150,000
1995	1,103,000	0	1,103,000	0	100,000	0	100,000	1,203,000
1996	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
TOTAL	53,022,000	0	238,815,000	0	201,590,000	8,607,000	210,197,000	449,012,000

TABLE B-27

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed Through Minimum OMP&R Component of East Branch Enlargement Transportation Charge (a

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT MOJAVE DIVISION							
	Reach 18A	Reach 19	Reach 20A	Reach 20B	Reach 21	Reach 22A	Reach 22B	Reach 23B
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	136,700	0
1993	0	0	0	0	0	0	50,600	0
1994	0	0	0	0	0	0	51,850	0
1995	0	0	0	0	0	0	53,130	0
1996	0	0	0	0	0	0	53,130	0
1997	0	0	0	0	0	0	53,130	0
1998	0	0	0	0	0	0	53,130	0
1999	0	0	0	0	0	0	53,130	0
2000	0	0	0	0	0	0	53,130	0
2001	0	0	0	0	0	0	53,130	0
2002	0	0	0	0	0	0	53,130	0
2003	0	0	0	0	0	0	53,130	0
2004	0	0	0	0	0	0	53,130	0
2005	0	0	0	0	0	0	53,130	0
2006	0	0	0	0	0	0	53,130	0
2007	0	0	0	0	0	0	53,130	0
2008	0	0	0	0	0	0	53,130	0
2009	0	0	0	0	0	0	53,130	0
2010	0	0	0	0	0	0	53,130	0
2011	0	0	0	0	0	0	53,130	0
2012	0	0	0	0	0	0	53,130	0
2013	0	0	0	0	0	0	53,130	0
2014	0	0	0	0	0	0	53,130	0
2015	0	0	0	0	0	0	53,130	0
2016	0	0	0	0	0	0	53,130	0
2017	0	0	0	0	0	0	53,130	0
2018	0	0	0	0	0	0	53,130	0
2019	0	0	0	0	0	0	53,130	0
2020	0	0	0	0	0	0	53,130	0
2021	0	0	0	0	0	0	53,130	0
2022	0	0	0	0	0	0	53,130	0
2023	0	0	0	0	0	0	53,130	0
2024	0	0	0	0	0	0	53,130	0
2025	0	0	0	0	0	0	53,130	0
2026	0	0	0	0	0	0	53,130	0
2027	0	0	0	0	0	0	53,130	0
2028	0	0	0	0	0	0	53,130	0
2029	0	0	0	0	0	0	53,130	0
2030	0	0	0	0	0	0	53,130	0
2031	0	0	0	0	0	0	53,130	0
2032	0	0	0	0	0	0	53,130	0
2033	0	0	0	0	0	0	53,130	0
2034	0	0	0	0	0	0	53,130	0
2035	0	0	0	0	0	0	53,130	0
TOTAL	0	0	0	0	0	0	2,417,480	0

a) Presently, this table shows only the estimated incremental minimum OMP&R costs attributable to East Branch Enlargement. Under Article 49(e)(1), the contractors participating in the East Branch Enlargement will also share in the remaining *minimum OMP&R costs of the affected reaches according to a formula* to be developed by DWR in consultation with the affected contractors. Once the formula is developed, subsequent versions of this table will reflect the transfer of a share of the minimum OMP&R costs presently shown in Table B-11.

TABLE B-27

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed Through Minimum OMP&R Component of East Branch Enlargement Transportation Charge (Continued)

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)							TOTAL
	MOJAVE DIVISION (continued)			SANTA ANA DIVISION				
	Reach 23C	Reach 24	Subtotal	Reach 25	Reach 26A	Reach 26B	Subtotal	
	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	136,700	0	178,000	0	178000	314,700
1993	0	0	50,600	0	103,100	0	103100	153,700
1994	191,823	0	243,673	0	81,156	0	81156	324,829
1995	237,195	0	290,325	0	52,920	0	52920	343,245
1996	16,380	0	69,510	0	15,120	0	15120	84,630
1997	16,380	0	69,510	0	15,120	0	15120	84,630
1998	16,380	0	69,510	0	15,120	0	15120	84,630
1999	16,380	0	69,510	0	15,120	0	15120	84,630
2000	16,380	0	69,510	0	15,120	0	15120	84,630
2001	16,380	0	69,510	0	15,120	0	15120	84,630
2002	16,380	0	69,510	0	15,120	0	15120	84,630
2003	16,380	0	69,510	0	15,120	0	15120	84,630
2004	16,380	0	69,510	0	15,120	0	15120	84,630
2005	16,380	0	69,510	0	15,120	0	15120	84,630
2006	16,380	0	69,510	0	15,120	0	15120	84,630
2007	16,380	0	69,510	0	15,120	0	15120	84,630
2008	16,380	0	69,510	0	15,120	0	15120	84,630
2009	16,380	0	69,510	0	15,120	0	15120	84,630
2010	16,380	0	69,510	0	15,120	0	15120	84,630
2011	16,380	0	69,510	0	15,120	0	15120	84,630
2012	16,380	0	69,510	0	15,120	0	15120	84,630
2013	16,380	0	69,510	0	15,120	0	15120	84,630
2014	16,380	0	69,510	0	15,120	0	15120	84,630
2015	16,380	0	69,510	0	15,120	0	15120	84,630
2016	16,380	0	69,510	0	15,120	0	15120	84,630
2017	16,380	0	69,510	0	15,120	0	15120	84,630
2018	16,380	0	69,510	0	15,120	0	15120	84,630
2019	16,380	0	69,510	0	15,120	0	15120	84,630
2020	16,380	0	69,510	0	15,120	0	15120	84,630
2021	16,380	0	69,510	0	15,120	0	15120	84,630
2022	16,380	0	69,510	0	15,120	0	15120	84,630
2023	16,380	0	69,510	0	15,120	0	15120	84,630
2024	16,380	0	69,510	0	15,120	0	15120	84,630
2025	16,380	0	69,510	0	15,120	0	15120	84,630
2026	16,380	0	69,510	0	15,120	0	15120	84,630
2027	16,380	0	69,510	0	15,120	0	15120	84,630
2028	16,380	0	69,510	0	15,120	0	15120	84,630
2029	16,380	0	69,510	0	15,120	0	15120	84,630
2030	16,380	0	69,510	0	15,120	0	15120	84,630
2031	16,380	0	69,510	0	15,120	0	15120	84,630
2032	16,380	0	69,510	0	15,120	0	15120	84,630
2033	16,380	0	69,510	0	15,120	0	15120	84,630
2034	16,380	0	69,510	0	15,120	0	15120	84,630
2035	16,380	0	69,510	0	15,120	0	15120	84,630
TOTAL	1,084,218	0	3,501,698	0	1,019,976	0	1,019,976	4,521,674

TABLE B-28

Capital Costs of East Branch Enlargement Facilities Allocated to Each Contractor

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA							Total
	Antelope Valley–East Kern Water Agency	Coachella Valley Water District	Desert Water Agency	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	The Metropolitan Water District of Southern California	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	11,731	1,010	10,566	466	0	93,227	117,000
1980	0	28,241	4,708	27,495	797	0	212,759	274,000
1981	0	56,134	16,676	61,271	538	0	385,381	520,000
1982	0	326,180	76,872	337,913	5,988	0	2,342,047	3,089,000
1983	0	554,658	138,964	582,070	9,004	0	3,940,304	5,225,000
1984	0	306,514	68,842	314,468	2,928	0	2,268,248	2,961,000
1985	55,475	509,188	74,943	392,980	5,471	25,257	3,928,686	4,992,000
1986	198,387	2,205,969	274,922	1,767,385	46,198	78,842	17,257,297	21,829,000
1987	145,427	3,323,261	453,262	2,556,206	17,585	151,421	26,005,838	32,653,000
1988	150,897	2,006,814	444,628	1,089,355	16,586	234,807	17,907,913	21,851,000
1989	25,543	6,599,991	2,403,586	1,138,490	3,562	1,697,316	44,867,512	56,736,000
1990	55,735	7,046,265	2,058,642	2,595,106	7,929	1,282,965	50,336,358	63,383,000
1991	24,751	6,337,102	2,023,848	1,859,390	3,604	1,200,807	43,906,498	55,356,000
1992	2,570	8,173,938	2,814,734	2,275,005	440	1,153,895	54,555,418	68,976,000
1993	0	8,143,720	3,240,319	2,071,864	0	1,394,842	51,846,255	66,697,000
1994	0	5,274,940	2,128,366	1,274,677	0	1,027,977	33,444,040	43,150,000
1995	0	152,411	56,324	0	0	4,094	990,171	1,203,000
1996	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
TOTAL	658,785	51,057,057	16,280,646	18,354,241	121,096	8,252,223	354,287,952	449,012,000

TABLE B-29

Capital Cost Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA							Total
	Antelope Valley – East Kern Water Agency	Coachella Valley Water District	Desert Water Agency	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District (a	The Metropolitan Water District of Southern California	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	19,891	1,541,583	491,567	554,176	3,656	0	10,697,140	13,308,013
1989	20,890	1,618,988	516,249	582,002	3,840	0	11,234,257	13,976,226
1990	20,892	1,619,203	516,318	582,079	3,840	0	11,235,748	13,978,080
1991	20,894	1,619,305	516,350	582,116	3,841	0	11,236,449	13,978,955
1992	43,995	3,409,684	1,087,251	1,225,730	8,087	0	23,660,003	29,434,750
1993	48,714	3,775,404	1,203,869	1,357,201	8,954	0	26,197,753	32,591,895
1994	48,714	3,775,454	1,203,885	1,357,219	8,954	0	26,198,097	32,592,323
1995	48,733	3,776,856	1,204,332	1,357,723	8,958	0	26,207,826	32,604,428
1996	48,758	3,778,814	1,204,956	1,358,427	8,962	0	26,221,413	32,621,330
1997	48,781	3,780,590	1,205,523	1,359,065	8,967	0	26,233,735	32,636,661
1998	48,770	3,779,772	1,205,262	1,358,771	8,965	0	26,228,059	32,629,599
1999	48,826	3,784,109	1,206,645	1,360,330	8,975	0	26,258,155	32,667,040
2000	48,871	3,787,616	1,207,763	1,361,591	8,983	0	26,282,494	32,697,318
2001	48,944	3,793,210	1,209,547	1,363,602	8,997	0	26,321,304	32,745,604
2002	48,993	3,797,006	1,210,757	1,364,966	9,006	0	26,347,650	32,778,378
2003	49,042	3,800,840	1,211,980	1,366,345	9,015	0	26,374,256	32,811,478
2004	49,108	3,805,955	1,213,611	1,368,184	9,027	0	26,409,750	32,855,635
2005	49,155	3,809,625	1,214,781	1,369,503	9,035	0	26,435,212	32,887,311
2006	49,216	3,814,310	1,216,275	1,371,187	9,047	0	26,467,724	32,927,759
2007	49,275	3,818,870	1,217,729	1,372,826	9,057	0	26,499,363	32,967,120
2008	49,324	3,822,717	1,218,956	1,374,209	9,067	0	26,526,063	33,000,336
2009	49,386	3,827,502	1,220,482	1,375,929	9,078	0	26,559,267	33,041,644
2010	49,449	3,832,384	1,222,038	1,377,684	9,089	0	26,593,139	33,083,783
2011	49,506	3,836,824	1,223,454	1,379,280	9,100	0	26,623,951	33,122,115
2012	49,577	3,842,295	1,225,199	1,381,247	9,113	0	26,661,915	33,169,346
2013	49,637	3,846,948	1,226,682	1,382,920	9,124	0	26,694,204	33,209,515
2014	49,720	3,853,357	1,228,726	1,385,224	9,139	0	26,738,675	33,264,841
2015	49,795	3,859,209	1,230,592	1,387,328	9,153	0	26,779,284	33,315,361
2016	49,879	3,865,715	1,232,667	1,389,666	9,168	0	26,824,425	33,371,520
2017	49,967	3,872,553	1,234,847	1,392,124	9,185	0	26,871,875	33,430,551
2018	50,086	3,881,778	1,237,789	1,395,441	9,207	0	26,935,887	33,510,188
2019	50,199	3,890,544	1,240,584	1,398,592	9,227	0	26,996,718	33,585,864
2020	50,343	3,901,685	1,244,136	1,402,597	9,254	0	27,074,021	33,682,036
2021	50,418	3,907,492	1,245,988	1,404,685	9,268	0	27,114,320	33,732,171
2022	50,515	3,914,994	1,248,380	1,407,381	9,285	0	27,166,380	33,796,935
2023	30,568	2,369,111	755,442	851,659	5,619	0	16,439,399	20,451,798
2024	31,680	2,455,222	782,901	882,615	5,823	0	17,036,935	21,195,176
2025	29,784	2,308,318	736,057	829,806	5,475	0	16,017,556	19,926,996
2026	4,794	371,562	118,481	133,571	881	0	2,578,292	3,207,581
2027	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0
TOTAL	1,705,089	132,147,404	42,138,051	47,505,001	313,421	0	916,978,694	1,140,787,660

a) Under Article 49(d)(4)(A) of its contract, San Bernardino Valley Municipal Water District elected to pay a portion of its allocated costs of East Branch Enlargement in advance rather than to participate in payment of Water System Revenue Bonds. This election made via a letter of agreement signed June 1, 1987. As of June 30, 1992, $5,479,000 has been received from the San Bernardino Valley Municipal Water District.

TABLE B-30

Minimum OMP&R Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA							Total
	Antelope Valley–East Kern Water Agency	Coachella Valley Water District	Desert Water Agency	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	The Metropolitan Water District of Southern California	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	36,083	10,784	12,394	0	7,287	248,152	314,700
1993	0	18,023	5,999	4,588	0	4,220	120,870	153,700
1994	0	39,722	13,684	4,701	0	3,322	263,400	324,829
1995	0	42,063	14,267	4,817	0	2,166	279,932	343,245
1996	0	9,322	2,032	4,817	0	619	67,840	84,630
1997	0	9,322	2,032	4,817	0	619	67,840	84,630
1998	0	9,322	2,032	4,817	0	619	67,840	84,630
1999	0	9,322	2,032	4,817	0	619	67,840	84,630
2000	0	9,322	2,032	4,817	0	619	67,840	84,630
2001	0	9,322	2,032	4,817	0	619	67,840	84,630
2002	0	9,322	2,032	4,817	0	619	67,840	84,630
2003	0	9,322	2,032	4,817	0	619	67,840	84,630
2004	0	9,322	2,032	4,817	0	619	67,840	84,630
2005	0	9,322	2,032	4,817	0	619	67,840	84,630
2006	0	9,322	2,032	4,817	0	619	67,840	84,630
2007	0	9,322	2,032	4,817	0	619	67,840	84,630
2008	0	9,322	2,032	4,817	0	619	67,840	84,630
2009	0	9,322	2,032	4,817	0	619	67,840	84,630
2010	0	9,322	2,032	4,817	0	619	67,840	84,630
2011	0	9,322	2,032	4,817	0	619	67,840	84,630
2012	0	9,322	2,032	4,817	0	619	67,840	84,630
2013	0	9,322	2,032	4,817	0	619	67,840	84,630
2014	0	9,322	2,032	4,817	0	619	67,840	84,630
2015	0	9,322	2,032	4,817	0	619	67,840	84,630
2016	0	9,322	2,032	4,817	0	619	67,840	84,630
2017	0	9,322	2,032	4,817	0	619	67,840	84,630
2018	0	9,322	2,032	4,817	0	619	67,840	84,630
2019	0	9,322	2,032	4,817	0	619	67,840	84,630
2020	0	9,322	2,032	4,817	0	619	67,840	84,630
2021	0	9,322	2,032	4,817	0	619	67,840	84,630
2022	0	9,322	2,032	4,817	0	619	67,840	84,630
2023	0	9,322	2,032	4,817	0	619	67,840	84,630
2024	0	9,322	2,032	4,817	0	619	67,840	84,630
2025	0	9,322	2,032	4,817	0	619	67,840	84,630
2026	0	9,322	2,032	4,817	0	619	67,840	84,630
2027	0	9,322	2,032	4,817	0	619	67,840	84,630
2028	0	9,322	2,032	4,817	0	619	67,840	84,630
2029	0	9,322	2,032	4,817	0	619	67,840	84,630
2030	0	9,322	2,032	4,817	0	619	67,840	84,630
2031	0	9,322	2,032	4,817	0	619	67,840	84,630
2032	0	9,322	2,032	4,817	0	619	67,840	84,630
2033	0	9,322	2,032	4,817	0	619	67,840	84,630
2034	0	9,322	2,032	4,817	0	619	67,840	84,630
2035	0	9,322	2,032	4,817	0	619	67,840	84,630
TOTAL	0	508,771	126,014	219,180	0	41,755	3,625,954	4,521,674

TABLE B-31

Total East Branch Enlargement Facilities Transportation Charge for Each Contractor

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA							Total
	Antelope Valley–East Kern Water Agency	Coachella Valley Water District	Desert Water Agency	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	The Metropolitan Water District of Southern California	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	19,891	1,541,583	491,567	554,176	3,656	0	10,697,140	13,308,013
1989	20,890	1,618,988	516,249	582,002	3,840	0	11,234,257	13,976,226
1990	20,892	1,619,203	516,318	582,079	3,840	0	11,235,748	13,978,080
1991	20,894	1,619,305	516,350	582,116	3,841	0	11,236,449	13,978,955
1992	43,995	3,445,767	1,098,035	1,238,124	8,087	7,287	23,908,155	29,749,450
1993	48,714	3,793,427	1,209,868	1,361,789	8,954	4,220	26,318,623	32,745,595
1994	48,714	3,815,176	1,217,569	1,361,920	8,954	3,322	26,461,497	32,917,152
1995	48,733	3,818,919	1,218,599	1,362,540	8,958	2,166	26,487,758	32,947,673
1996	48,758	3,788,136	1,206,988	1,363,244	8,962	619	26,289,253	32,705,960
1997	48,781	3,789,912	1,207,555	1,363,882	8,967	619	26,301,575	32,721,291
1998	48,770	3,789,094	1,207,294	1,363,588	8,965	619	26,295,899	32,714,229
1999	48,826	3,793,431	1,208,677	1,365,147	8,975	619	26,325,995	32,751,670
2000	48,871	3,796,938	1,209,795	1,366,408	8,983	619	26,350,334	32,781,948
2001	48,944	3,802,532	1,211,579	1,368,419	8,997	619	26,389,144	32,830,234
2002	48,993	3,806,328	1,212,789	1,369,783	9,006	619	26,415,490	32,863,008
2003	49,042	3,810,162	1,214,012	1,371,162	9,015	619	26,442,096	32,896,108
2004	49,108	3,815,277	1,215,643	1,373,001	9,027	619	26,477,590	32,940,265
2005	49,155	3,818,947	1,216,813	1,374,320	9,035	619	26,503,052	32,971,941
2006	49,216	3,823,632	1,218,307	1,376,004	9,047	619	26,535,564	33,012,389
2007	49,275	3,828,192	1,219,761	1,377,643	9,057	619	26,567,203	33,051,750
2008	49,324	3,832,039	1,220,988	1,379,026	9,067	619	26,593,903	33,084,966
2009	49,386	3,836,824	1,222,514	1,380,746	9,078	619	26,627,107	33,126,274
2010	49,449	3,841,706	1,224,070	1,382,501	9,089	619	26,660,979	33,168,413
2011	49,506	3,846,146	1,225,486	1,384,097	9,100	619	26,691,791	33,206,745
2012	49,577	3,851,617	1,227,231	1,386,064	9,113	619	26,729,755	33,253,976
2013	49,637	3,856,270	1,228,714	1,387,737	9,124	619	26,762,044	33,294,145
2014	49,720	3,862,679	1,230,758	1,390,041	9,139	619	26,806,515	33,349,471
2015	49,795	3,868,531	1,232,624	1,392,145	9,153	619	26,847,124	33,399,991
2016	49,879	3,875,037	1,234,699	1,394,483	9,168	619	26,892,265	33,456,150
2017	49,967	3,881,875	1,236,879	1,396,941	9,185	619	26,939,715	33,515,181
2018	50,086	3,891,100	1,239,821	1,400,258	9,207	619	27,003,727	33,594,818
2019	50,199	3,899,866	1,242,616	1,403,409	9,227	619	27,064,558	33,670,494
2020	50,343	3,911,007	1,246,168	1,407,414	9,254	619	27,141,861	33,766,666
2021	50,418	3,916,814	1,248,020	1,409,502	9,268	619	27,182,160	33,816,801
2022	50,515	3,924,316	1,250,412	1,412,198	9,285	619	27,234,220	33,881,565
2023	30,568	2,378,433	757,474	856,476	5,619	619	16,507,239	20,536,428
2024	31,680	2,464,544	784,933	887,432	5,823	619	17,104,775	21,279,806
2025	29,784	2,317,640	738,089	834,623	5,475	619	16,085,396	20,011,626
2026	4,794	380,884	120,513	138,388	881	619	2,646,132	3,292,211
2027	0	9,322	2,032	4,817	0	619	67,840	84,630
2028	0	9,322	2,032	4,817	0	619	67,840	84,630
2029	0	9,322	2,032	4,817	0	619	67,840	84,630
2030	0	9,322	2,032	4,817	0	619	67,840	84,630
2031	0	9,322	2,032	4,817	0	619	67,840	84,630
2032	0	9,322	2,032	4,817	0	619	67,840	84,630
2033	0	9,322	2,032	4,817	0	619	67,840	84,630
2034	0	9,322	2,032	4,817	0	619	67,840	84,630
2035	0	9,322	2,032	4,817	0	619	67,840	84,630
TOTAL	1,705,089	132,656,175	42,264,065	47,724,181	313,421	41,755	920,604,648	1,145,309,334

TABLE B-32

Equivalent Unit Transportation Costs of Water Delivered from or Through Each Aqueduct Reach (a

(in dollars per acre-foot)

Aqueduct Reach	Unit Costs of Reach(b						Cumulative Unit Costs from the Delta					
	Capital Costs	Water System Revenue Bond Surcharge (c	Minimum OMP&R	Off-Aqueduct Costs	Variable OMP&R	Total	Capital Costs	Water System Revenue Bond Surcharge (c	Minimum OMP&R	Off-Aqueduct Costs	Variable OMP&R	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
North Bay Aqueduct												
1	43.51	7.03	12.12	1.80	5.05	69.51	43.51	7.03	12.12	1.80	5.05	69.51
2	48.04	7.76	5.05	0.00	0.00	60.85	91.55	14.79	17.17	1.80	5.05	130.36
3A	9.47	1.53	12.47	3.42	6.85	33.74	101.02	16.32	29.64	5.22	11.90	164.10
3B	47.26	7.64	21.36	4.10	12.69	93.05	138.81	22.43	38.53	5.90	17.74	223.41
South Bay Aqueduct												
1	6.58	1.06	11.66	9.44	14.14	42.88	8.32	1.34	13.91	12.45	21.38	57.40
2	0.59	0.10	1.44	0.00	0.00	2.13	8.91	1.44	15.35	12.45	21.38	59.53
4	1.94	0.31	2.28	0.00	0.00	4.53	10.85	1.75	17.63	12.45	21.38	64.06
5	4.13	0.67	1.65	0.00	0.00	6.45	14.98	2.42	19.28	12.45	21.38	70.51
6	0.24	0.04	0.22	0.00	0.00	0.50	15.22	2.46	19.50	12.45	21.38	71.01
7	1.87	0.30	0.31	0.00	0.00	2.48	17.09	2.76	19.81	12.45	21.38	73.49
8	2.55	0.41	0.39	0.00	0.00	3.35	19.64	3.17	20.20	12.45	21.38	76.84
9	5.29	0.85	2.26	0.00	0.00	8.40	24.93	4.02	22.46	12.45	21.38	85.24
California Aqueduct												
1	1.74	0.28	2.25	3.01	7.24	14.52	1.74	0.28	2.25	3.01	7.24	14.52
2A	1.08	0.17	0.44	0.00	0.00	1.69	2.82	0.45	2.69	3.01	7.24	16.21
2B	0.55	0.09	0.18	0.00	0.00	0.82	3.37	0.54	2.87	3.01	7.24	17.03
3	0.47	0.08	0.16	0.00	0.00	0.71	3.84	0.62	3.03	3.01	7.24	17.74
4	0.77	0.12	1.06	1.40	3.33	6.68	4.61	0.74	4.09	4.41	10.57	24.42
5	0.59	0.10	0.22	0.00	0.00	0.91	5.20	0.84	4.31	4.41	10.57	25.33
6	0.15	0.02	0.10	0.00	0.00	0.27	5.35	0.86	4.41	4.41	10.57	25.60
7	0.66	0.11	0.27	0.00	0.00	1.04	6.01	0.97	4.68	4.41	10.57	26.64
8C	0.02	0.00	0.05	0.00	0.00	0.07	6.03	0.97	4.73	4.41	10.57	26.71
8D	0.34	0.05	0.22	0.00	0.00	0.61	6.37	1.02	4.95	4.41	10.57	27.32
9	0.28	0.05	0.20	0.00	0.00	0.53	6.65	1.07	5.15	4.41	10.57	27.85
10A	0.29	0.05	0.23	0.00	0.00	0.57	6.94	1.12	5.38	4.41	10.57	28.42
11B	0.42	0.07	0.16	0.00	0.00	0.65	7.36	1.19	5.54	4.41	10.57	29.07
12D	0.40	0.06	0.15	0.00	0.00	0.61	7.76	1.25	5.69	4.41	10.57	29.68
12E	0.27	0.04	0.25	0.00	0.00	0.56	8.03	1.29	5.94	4.41	10.57	30.24
13B	0.60	0.10	0.29	0.00	0.00	0.99	8.63	1.39	6.23	4.41	10.57	31.23
14A	2.27	0.37	2.13	2.40	6.07	13.24	10.90	1.76	8.36	6.81	16.64	44.47
14B	0.35	0.06	0.26	0.00	0.00	0.67	11.25	1.82	8.62	6.81	16.64	45.14
14C	0.30	0.05	0.20	0.00	0.00	0.55	11.55	1.87	8.82	6.81	16.64	45.69
15A	1.67	0.27	2.26	2.90	7.52	14.62	13.22	2.14	11.08	9.71	24.16	60.31
16A	2.75	0.44	3.45	6.27	16.19	29.10	15.97	2.58	14.53	15.98	40.35	89.41
17E	9.31	1.50	9.94	21.90	57.47	100.12	25.28	4.08	24.47	37.88	97.82	189.53
17F	2.43	0.39	0.14	0.00	0.00	2.96	27.71	4.47	24.61	37.88	97.82	192.49
18A	2.35	0.38	1.27	0.00	(2.45)	1.55	30.06	4.85	25.88	37.88	95.37	194.04
19	1.71	0.28	0.86	0.00	0.00	2.85	31.77	5.13	26.74	37.88	95.37	196.89
19C	0.00	0.00	0.00	0.00	0.00	0.00	31.77	5.13	26.74	37.88	95.37	196.89
20A	1.35	0.22	0.91	0.00	0.00	2.48	33.12	5.35	27.65	37.88	95.37	199.37
20B	1.61	0.26	0.69	0.00	0.00	2.56	34.73	5.61	28.34	37.88	95.37	201.93
21	0.81	0.13	0.59	0.00	0.00	1.53	35.54	5.74	28.93	37.88	95.37	203.46
22A	0.84	0.14	0.37	0.00	0.00	1.35	36.38	5.88	29.30	37.88	95.37	204.81
22B	8.17	1.32	8.60	6.84	17.82	42.75	44.55	7.20	37.90	44.72	113.19	247.56
23	1.91	0.31	0.59	0.00	(5.36)	(2.55)	46.46	7.51	38.49	44.72	107.83	245.01
24	4.41	0.71	1.64	0.00	0.00	6.76	50.87	8.22	40.13	44.72	107.83	251.77
25	3.11	0.50	0.33	0.00	0.00	3.94	53.98	8.72	40.46	44.72	107.83	255.71
26A	3.08	0.50	5.35	0.00	(24.99)	(16.06)	57.06	9.22	45.81	44.72	82.84	239.65
28G	5.62	0.91	1.71	0.00	0.00	8.24	62.68	10.13	47.52	44.72	82.84	247.89
28H	5.41	0.87	1.20	0.00	0.00	7.48	68.09	11.00	48.72	44.72	82.84	255.37
28J	72.37	11.69	38.90	0.00	0.00	122.96	140.46	22.69	87.62	44.72	82.84	378.33
West Branch												
29A	2.84	0.46	5.01	2.80	7.46	18.57	30.55	4.93	29.62	40.68	105.28	211.06
29F	2.05	0.33	0.69	0.00	0.00	3.07	32.60	5.26	30.31	40.68	105.28	214.13
29G	6.94	1.12	2.63	0.00	(12.74)	(2.05)	39.54	6.38	32.94	40.68	92.54	212.08
29H	4.32	0.70	2.86	0.00	0.00	7.88	43.86	7.08	35.80	40.68	92.54	219.96
29J	7.30	1.18	0.73	0.00	(23.04)	(13.83)	51.16	8.26	36.53	40.68	69.50	206.13
30	11.69	1.89	2.33	0.00	0.00	15.91	62.85	10.15	38.86	40.68	69.50	222.04
Coastal Branch												
31A	6.25	1.01	14.77	2.80	5.04	29.87	12.62	2.03	19.72	7.21	15.61	57.19
33A	223.75	36.16	82.17	15.92	63.85	421.85	236.37	38.19	101.89	23.13	79.46	479.04
34	42.04	6.79	21.92	0.00	0.00	70.75	278.41	44.98	123.81	23.13	79.46	549.79
35	45.24	7.31	23.34	0.00	0.00	75.89	323.65	52.29	147.15	23.13	79.46	625.68

a) Representative of transportation unit costs only; does not include a unit cost of conservation. The Delta Water Rate should be added to these values in order to approximate unit costs at canalside. Includes surplus water prior to May 1, 1973.

b) 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 rate at the Project Interest Rate of 4.621 percent per annum.

c) The Water System Revenue Bond Surcharge equivalent unit rate is calculated by dividing the WSRB surcharge for 1993 (from 132-92, Table B-22) by the total Transportation Capital (132-92, B-15) and the Capital component of the Delta Water Charge (132-92, B-4 * 12.12188306). This rate is multiplied by the equivalent rate for the Transportation Capital cost (column 1).

TABLE B-33

Power Costs for Pumping Surplus Water

(in dollars)

Calendar Year	NORTH BAY AQUEDUCT			SOUTH BAY AQUEDUCT	CALIFORNIA AQUEDUCT							Combined Total
	Reach 1	Reach 3A	Reach 3B	Reach 1	Reach 1	Reach 4	Reach 14A	Reach 15A	Reach 16A	Reach 17E	Reach 31A	
	Barker Slough Pumping Plant	Cordelia Solano Pumping Plant	Cordelia Napa Pumping Plant	South Bay and Del Valle Pumping Plants	Banks Pumping Plant	Dos Amigos Pumping Plant	Buena Vista Pumping Plant	Wheeler Ridge Pumping Plant	Chrisman Pumping Plant	Edmonston Pumping Plant	Las Perillas and Badger Hill Pumping Plants	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
1973(a												
Capacity	0	0	0	5,290	0	37,033	25,622	29,816	0	0	15,588	113,349
Energy	0	0	0	6,302	231,691	102,725	53,375	12,819	1,697	526	24,245	433,380
Total	0	0	0	11,592	231,691	139,758	78,997	42,635	1,697	526	39,833	546,729
1974												
Capacity	0	0	0	21,773	0	81,328	69,381	62,301	0	0	31,511	266,294
Energy	0	0	0	7,561	374,506	181,827	95,596	22,550	5,599	450	33,406	721,495
Total	0	0	0	29,334	374,506	263,155	164,977	84,851	5,599	450	64,917	987,789
1975												
Capacity	0	0	0	32,288	298,709	126,806	99,676	30,049	0	0	32,231	619,759
Energy	0	0	0	47,597	617,396	264,000	99,745	313	661	2,391	49,501	1,081,604
Total	0	0	0	79,885	916,105	390,806	199,421	30,362	661	2,391	81,732	1,701,363
1976												
Capacity	0	0	0	41,897	60,502	63,788	85,415	8,579	0	0	30,449	290,630
Energy	0	0	0	83,722	597,636	225,126	103,213	4,885	5,385	0	45,101	1,065,068
Total	0	0	0	125,619	658,138	288,914	188,628	13,464	5,385	0	75,550	1,355,698
1977												
Capacity	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
1978												
Capacity	0	0	0	0	144,188	51,403	0	0	0	0	0	195,591
Energy	0	0	0	0	15,039	6,591	0	0	0	0	0	21,630
Total	0	0	0	0	159,227	57,994	0	0	0	0	0	217,221
1979												
Capacity	0	0	0	27,116	382,070	232,001	35,743	6,771	3,165	0	8,769	695,635
Energy	0	0	0	39,517	599,886	256,188	51,045	8,205	4,194	0	11,808	970,843
Total	0	0	0	66,633	981,956	488,189	86,788	14,976	7,359	0	20,577	1,666,478
1980												
Capacity	0	0	0	30,319	530,982	227,837	28,682	3,559	5,146	0	3,228	829,753
Energy	0	0	0	35,268	373,023	162,404	73,422	11,451	9,753	0	22,755	688,076
Total	0	0	0	65,587	904,005	390,241	102,104	15,010	14,899	0	25,983	1,517,829
1981												
Capacity	0	0	0	36,749	625,106	281,362	69,202	22,262	24,138	1,054	26,168	1,086,041
Energy	0	0	0	44,229	806,574	366,945	85,341	27,489	29,847	1,629	34,020	1,396,074
Total	0	0	0	80,978	1,431,680	648,307	154,543	49,751	53,985	2,683	60,188	2,482,115
1982												
Capacity	0	0	0	40,355	1,704,800	578,744	176,362	16,932	2,612	0	6,148	2,525,953
Energy	0	0	0	3,225	192,415	88,494	19,390	2,109	296	0	5,278	311,207
Total	0	0	0	43,580	1,897,215	667,238	195,752	19,041	2,908	0	11,426	2,837,160
1983												
Capacity	0	0	0	0	40,303	16,941	0	0	0	0	0	57,244
Energy	0	0	0	0	43,045	20,026	0	0	0	0	0	63,071
Total	0	0	0	0	83,348	36,967	0	0	0	0	0	120,315
1984												
Capacity	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	51,632	1,865,605	769,718	0	0	0	0	37,407	2,724,362
Total	0	0	0	51,632	1,865,605	769,718	0	0	0	0	37,407	2,724,362
1985												
Capacity	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	301,663	2,835,778	1,180,255	0	0	0	0	46,140	4,363,836
Total	0	0	0	301,663	2,835,778	1,180,255	0	0	0	0	46,140	4,363,836
1986												
Capacity	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	43,007	227,832	99,593	0	0	0	0	20,176	390,608
Total	0	0	0	43,007	227,832	99,593	0	0	0	0	20,176	390,608
1987												
Capacity	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	98,970	610,046	273,559	59,496	15,365	6,776	0	12,700	1,076,912
Total	0	0	0	98,970	610,046	273,559	59,496	15,365	6,776	0	12,700	1,076,912
1988												
Capacity	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
1989												
Capacity	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
1990												
Capacity	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	0	485	0	0	0	0	0	0	485
Total	0	0	0	0	485	0	0	0	0	0	0	485
1991												
Capacity	0	0	0	0	0	0	0	0	0	0	0	0
Energy	32,766	14,685	18,043	0	0	0	0	0	0	0	0	65,494
Total	32,766	14,685	18,043	0	0	0	0	0	0	0	0	65,494
GRAND TO	32,766	14,685	18,043	998,480	13,177,617	5,694,694	1,230,706	285,455	99,269	6,050	496,629	22,054,394

a) May through December only.

TABLE B-34

Power, Replacement, and Administrative Charges for Surplus Water Deliveries

(in dollars)

Calendar Year	NORTH BAY AREA		SOUTH BAY AREA		SAN JOAQUIN VALLEY AREA						SOUTHERN CALIFORNIA AREA				Total
	NCFC&WCD	SCWA	ACWD	SCVWD	CLWA	DRWD	EWSID	KCWA(a	OFWD	TLBWSD	AVEK	LCID	CVWD	DWA	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
1978															
Capacity	0	0	0	3,275	0	14,642	0	154,051	4	23,619	0	0	0	0	195,591
Energy	0	0	0	0	0	10,119	0	11,505	6	0	0	0	0	0	21,630
Replacement	0	0	0	0	0	248	0	281	0	0	0	0	0	0	529
Administrative	0	0	0	0	0	3,793	0	4,312	3	0	0	0	0	0	8,108
Total	0	0	0	3,275	0	28,802	0	170,149	13	23,619	0	0	0	0	225,858
1979															
Capacity	0	0	0	37,413	0	37,615	0	547,875	417	72,315	0	0	0	0	695,635
Energy	0	0	0	54,354	0	51,418	0	774,587	651	89,833	0	0	0	0	970,843
Replacement	0	0	0	413	0	886	0	7,633	5	2,042	0	0	0	0	10,979
Administrative	0	0	0	4,005	0	20,051	0	116,977	176	46,075	0	0	0	0	187,284
Total	0	0	0	96,185	0	109,970	0	1,447,072	1,249	210,265	0	0	0	0	1,864,741
1980															
Capacity	0	0	0	41,641	8,485	40,160	0	636,135	432	102,900	0	0	0	0	829,753
Energy	0	0	0	48,510	13,101	52,131	0	553,902	666	19,766	0	0	0	0	688,076
Replacement	0	0	0	533	3,332	1,255	0	149,588	134	5,705	0	0	0	0	160,547
Administrative	0	0	0	5,638	3,815	21,859	0	281,776	666	22,258	0	0	0	0	336,012
Total	0	0	0	96,322	28,733	115,405	0	1,621,401	1,898	150,629	0	0	0	0	2,014,388
1981															
Capacity	0	0	0	50,706	14,608	40,674	2,520	784,875	1,601	189,238	0	1,819	0	0	1,086,041
Energy	0	0	0	61,028	22,575	42,078	3,897	980,142	2,475	281,071	0	2,808	0	0	1,396,074
Replacement	0	0	0	3,538	4,099	12,446	1,152	275,232	521	83,132	0	431	0	0	380,551
Administrative	0	0	725	11,192	6,160	19,221	1,869	348,397	1,950	146,357	0	123	0	0	535,994
Total	0	0	725	126,464	47,442	114,419	9,438	2,388,646	6,547	699,798	0	5,181	0	0	3,398,660
1982															
Capacity	0	0	0	55,431	20,739	74,514	6,103	1,658,571	434	339,639	370,522	0	0	0	2,525,953
Energy	0	0	0	4,386	13,578	18,876	1,208	184,594	643	87,922	0	0	0	0	311,207
Replacement	0	0	0	105	2,462	5,596	361	54,018	135	26,070	0	0	0	0	88,747
Administrative	0	0	0	7,328	3,710	5,487	698	185,494	676	50,524	0	0	0	0	253,917
Total	0	0	0	67,250	40,489	104,473	8,370	2,082,677	1,888	504,155	370,522	0	0	0	3,179,824
1983															
Capacity	0	0	0	1,698	187	3,850	60	48,348	0	3,101	0	0	0	0	57,244
Energy	0	0	0	0	0	62,996	0	0	75	0	0	0	0	0	63,071
Replacement	0	0	0	0	0	5,851	0	0	6	0	0	0	0	0	5,857
Administrative	0	0	0	0	0	6,510	0	0	14	0	0	0	0	0	6,524
Total	0	0	0	1,698	187	79,207	60	48,348	95	3,101	0	0	0	0	132,696
1984															
Capacity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	70,885	98,169	222,456	0	2,322,714	10,138	0	0	0	0	0	2,724,362
Replacement	0	0	0	782	3,334	8,763	0	103,670	351	0	0	0	0	0	116,900
Administrative	0	0	2,450	7,160	6,800	9,380	0	36,460	6,340	0	0	0	0	0	68,590
Total	0	0	2,450	78,827	108,303	240,599	0	2,462,844	16,829	0	0	0	0	0	2,909,852
1985															
Capacity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	414,281	124,603	107,436	0	2,444,591	6,373	1,266,552	0	0	0	0	4,363,836
Replacement	0	0	0	2,053	2,737	3,429	0	83,732	163	43,502	0	0	0	0	135,616
Administrative	0	0	0	4,811	4,596	5,227	0	18,251	4,245	11,883	0	0	0	0	49,013
Total	0	0	0	421,145	131,936	116,092	0	2,546,574	10,781	1,321,937	0	0	0	0	4,548,465
1986															
Capacity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	58,939	52,904	7,658	12,104	113,630	1,267	144,106	0	0	0	0	390,608
Replacement	0	0	0	553	1,783	405	507	6,729	53	5,742	0	0	0	0	15,772
Administrative	0	0	2263	3468	6051	3995	1550	7533	3545	5470	0	0	0	0	33,875
Total	0	0	2,263	62,960	60,738	12,058	14,161	127,892	4,865	155,318	0	0	0	0	440,255
1987															
Capacity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	135,461	32,558	0	14,941	500,919	1,367	391,666	0	0	0	0	1,076,912
Replacement	0	0	0	1,974	1,508	0	1,099	37,897	72	30,007	0	0	0	0	72,557
Administrative	0	0	0	1392	1240	711	1298	4135	1252	2769	0	0	0	0	12,797
Total	0	0	0	138,827	35,306	711	17,338	542,951	2,691	424,442	0	0	0	0	1,162,266
1988															
Capacity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Replacement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative	0	0	0	839	838	839	838	839	838	839	0	0	839	839	7,548
Total	0	0	0	839	838	839	838	839	838	839	0	0	839	839	7,548
1989															
Capacity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Replacement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative	0	0	0	490	490	490	490	490	490	490	0	0	490	490	4,410
Total	0	0	0	490	490	490	490	490	490	490	0	0	490	490	4,410
1990															
Capacity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	0	0	0	0	0	485	0	0	0	0	0	485
Replacement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	485	0	0	0	0	0	485
1991															
Capacity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy	25,190	40,304	0	0	0	0	0	0	0	0	0	0	0	0	65,494
Replacement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	25,190	40,304	0	0	0	0	0	0	0	0	0	0	0	0	65,494
GRAND TOTAL	25,190	40,304	5,438	1,094,282	454,462	923,065	50,695	13,439,883	48,669	3,494,593	370,522	5,181	1,329	1,329	19,954,942

a) 1982 costs are preliminary and may change when 1982 exchange is taken into consideration.